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Alaska Salmon Fisheries Enhancement Annual Report 2021

by

Lorna Wilson

March 2022

Alaska Department of Fish and Game **Division of Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, Special Publications and the Division of Commercial Fisheries Regional Reports. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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Lorna Wilson
Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau

Alaska Department of Fish and Game
Division of Commercial Fisheries
1255 W. 8th St., P.O. Box 11526, Juneau, Alaska 99811-5526

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Lorna Wilson
Alaska Department of Fish and Game, Division of Commercial Fisheries,
1255 W. 8th St., P.O. Box 115526, Juneau, AK 99811-5526, USA

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ABSTRACT

This annual report reviews the Alaska salmon fisheries enhancement program. This program's success is attributable to the development of statutes, regulations, and policies that require hatcheries to be located away from important natural salmon stocks and to use local broodstock sources. To maintain genetic diversity, Alaska hatcheries do not selectively breed for size or other traits and use large numbers of broodstock. Most hatchery releases are marked so that fishery managers can estimate the strength of wild stocks in the harvest inseason and manage wild stocks conservatively. Hatchery production is intended to supplement—not replace—wild stock production. Harvests in 2013, 2015, and 2017 were 3 of the 4 highest wild stock salmon harvests dating back to the late 1800s. Abundance-based wild stock management priority, habitat protection, and record wild-stock harvests reflect the state's commitment to conservation of wild stocks and provide the foundation of its salmon fisheries enhancement program.

Currently, 30 salmon hatcheries are operating in the state. Twenty-six facilities are operated by private nonprofit (PNP) corporations, which are funded primarily from the sale of a portion of hatchery returns. Of these, 11 are state-owned and are operated by PNPs on the state's behalf at no cost to the state. Non-PNP hatcheries include two sport fish hatcheries operated by the state, one research hatchery operated by the National Marine Fisheries Service, and one hatchery operated by the Metlakatla Indian Community.

In 2021, the commercial fleet caught 64 million hatchery-produced salmon worth an estimated $142 million dollars in exvessel value. Hatchery fish contributed 28% of the statewide commercial salmon harvest and 25% of the statewide commercial harvest exvessel value. An additional 220 thousand Alaska hatchery fish were caught in the sport, personal use, and subsistence fisheries. In preparation for future production, Alaska hatcheries took 2.1 billion salmon eggs and released 1.7 billion juvenile salmon.

Keywords: Alaska salmon hatchery, hatchery, pink salmon, chum salmon, Chinook salmon, coho salmon, sockeye salmon

PREFACE

This report is a review of Alaska's hatchery production based on information provided by hatchery operators, preliminary fish ticket data, and reports from area managers. The report is intended to update the Alaska State Legislature on the status of Alaska's hatchery program in fulfillment of Alaska Statute 16.05.092.

In this document, *wild* fish refer to fish that are offspring of parents that naturally spawned in watersheds and intertidal areas. *Hatchery* fish are fish reared in a hatchery to a juvenile stage and released. *Farmed* fish are fish reared in captivity to market size for sale. Farming of finfish, including salmon, is not legal in Alaska. Also note that a small number (less than 200,000) in the overall statewide catch—primarily in the Southeast Alaska Chinook salmon harvest—are hatchery fish from hatcheries outside Alaska; these fish are included with the wild catch. *Broodstock* are fish used for egg and milt collection at the hatchery.

The *commercial harvest* is composed of the *common property* and *cost-recovery* harvests. The *commercial common property* harvest is fish available for harvest by commercial fishing permit holders. Sport, personal use, and subsistence users also harvest *common property* fish. The *cost-recovery* harvest is fish harvested in designated special harvest areas to pay for hatchery operations.[1] A *tender* vessel is a boat that transports the catch from a fishing boat to a processing facility. Tenders are usually larger vessels that can transport the catch from numerous fishing boats to a shore-based processor so that the fishing vessels can stay on the fishing grounds and continue fishing.

[1] Fish harvested in regulatory designated special harvest areas in a commercial common property fishery may be subject to a special cost-recovery fishery assessment tax to pay for operations.

Exvessel value is the value paid to fishermen by a processor for their harvest and are presented in this report. *First wholesale value* is the value of processed product sold by a processor. Exvessel values by region were estimated as the percentage of the hatchery harvest in the region for each species multiplied by the total exvessel value for that species in the region, by year.

Values and numbers of hatchery fish are for Alaska hatcheries only, and do not include harvest in Alaska from non-Alaska hatcheries, such as hatcheries in Canada or the Pacific Northwest states. Numbers in tables may be rounded for clarity. Monetary values are not adjusted for inflation unless otherwise noted. Contributions of hatchery fish are in numbers of fish, and not weight of fish.

References in this document to the ADF&G commissioner refer to the commissioner or delegates.

INTRODUCTION

ALASKA HATCHERY HISTORY

Alaska's modern hatchery program was developed in response to historically low salmon abundance in the early 1970s (Figure 1). Alaska's modern hatchery program began in 1971, when the Alaska Legislature established the Division of Fisheries Rehabilitation, Enhancement and Development (FRED) within the Alaska Department of Fish and Game (ADF&G). See Appendix A1 for a fisheries enhancement timeline of events.

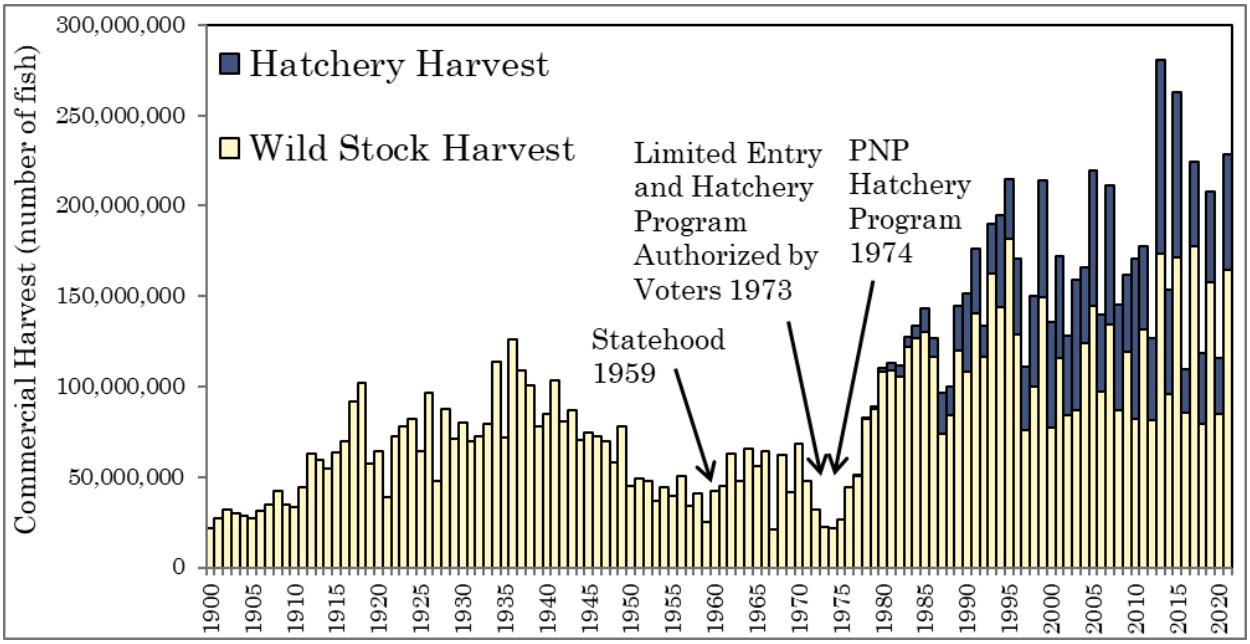

Figure 1.–Commercial salmon harvest in Alaska, 1900–2021.

In 1972, Alaska voters amended Article 8, Section 15 of Alaska's Constitution to provide tools for restoring and maintaining the state's fishing economy. The amendment provided an exemption to the "no exclusive right of fishery" clause in the state constitution, enabling limited entry to Alaska's state fisheries and allowing the development of aquaculture in the state. Alaska's salmon hatchery program developed under this authority and was designed to supplement—not replace—sustainable natural production. Alaska's salmon fishery harvests were just 22 million fish in 1973 and 1974 (Figure 1).

In 1974, the Alaska Legislature expanded the hatchery program, authorizing private nonprofit (PNP) corporations to operate salmon hatcheries:

> It is the intent of this Act to authorize the private ownership of salmon hatcheries by qualified nonprofit corporations for the purpose of contributing, by artificial means, to the rehabilitation of the state's depleted and depressed salmon fishery. The program shall be operated without adversely affecting natural stocks of fish in the state and under a policy of management which allows reasonable segregation of returning hatchery-reared salmon from naturally occurring stocks.[2]

This means that PNP hatcheries have a fishery enhancement objective and hatchery permits are issued for production-scale hatcheries.

The State of Alaska funded the construction of 18 hatcheries between 1969 and 1983 with general obligation bonds. These state-built hatcheries were initially operated by ADF&G FRED Division. PNP corporations began building hatcheries in the mid-1970s. In 1988, the legislature passed an act that allowed the state hatcheries to be operated by PNP hatchery corporations (AS 16.10.480). Since then, all state-owned commercial production hatcheries still in operation have been contracted to PNP hatchery operators. PNP corporations hold their own hatchery permits[3] to operate the facilities and are responsible for funding hatchery operations. In 1993, FRED Division was merged with the Division of Commercial Fisheries. Two Division of Sport Fish hatcheries continue under state operation.

ADF&G, PNP hatcheries, and other agencies such as the U.S. Forest Service, engaged in a variety of activities to increase salmon production. New hatcheries were built to raise salmon. Fish ladders were constructed around barriers to provide adult salmon access to new spawning and rearing areas. Lakes with waterfall outlets too high for adult salmon to ascend were stocked with salmon fry. Log jams were removed in streams to enable returning adults to reach spawning areas. Nursery lakes were fertilized to increase the available feed for juvenile salmon.

A combination of favorable environmental conditions, limited fishing effort, abundance-based harvest management, habitat improvement and protection, and hatchery production gradually boosted salmon catches. Recent commercial salmon harvests (2012–2021) annually averaged 182 million fish—an increase of 469% from the 10 years of harvests before hatchery contribution (1967–1976). Alaska's hatchery program has produced significant contributions to the fisheries alongside sustainable, healthy, well-managed wild production. The 5 largest wild stock harvests in Alaska history occurred, in order of descending rank, in 1995, 2017, 2013, 2015, and 2021.

ALASKA PRIVATE NONPROFIT HATCHERY PLANNING

Regional Aquaculture Associations

Regional Aquaculture Associations (RAAs) exist for many of Alaska's salmon planning regions (5 AAC 40.300–40.370). the ADF&G commissioner determines if an RAA is qualified and can assist in the formation of one for each region. Where RAAs operate hatcheries, they also form PNP corporations, and have a board of directors whose membership is composed of commercial salmon

[2] Alaska Legislature 1974. An act authorizing the operation of private nonprofit salmon hatcheries. Section 1, Chapter 111, SLA 1974, in the Temporary and Special Acts.

[3] An exception to this is the Crystal Lake Hatchery in Petersburg, which is owned by the state, operated by the Southern Southeast Regional Aquaculture Association, and has no hatchery permit.

fishing permit holders and representatives of other stakeholder groups such as sport and subsistence harvesters, processors, and city officials. PNP boards establish hatchery production goals and oversee business operations.

Salmon fishery enhancement efforts are guided by comprehensive salmon plans for each region. These plans are developed by Regional Planning Teams (RPTs). RPTs are composed of 6 voting members: 3 from ADF&G and 3 appointed by the RAA's board of directors. Plans are developed in a public process based on the needs of fishery user groups and communities of the region. The plans can be periodically reviewed and updated to meet changing needs. RPT meetings are public.

Commercial salmon fishing permit holders may vote to impose a salmon enhancement tax on sale of salmon in their region. These funds are collected by the state and distributed to the RAA to finance hatchery operations or other enhancement and rehabilitation activities. Independent PNP corporations,[4] not affiliated with an RAA, also operate hatcheries in several areas of the state. The RAAs and independent PNP hatchery organizations may contract processors to harvest hatchery salmon in designated areas[5] to pay for operations. Such harvests are called *cost-recovery* fisheries, in contrast to *common property* fisheries, which are fisheries open to all qualified commercial, subsistence, personal use, and sport harvesters.

Private Nonprofit Hatchery Permit Process

Each hatchery is permitted separately. Acquisition of a hatchery permit is an extensive process (5 AAC 40.110–40.230). A hatchery application consists of production goals, hatchery site information, water flow, water chemistry data, land ownership, water rights, hatchery design, initial proposed broodstock for the hatchery, and a financial plan. ADF&G staff draft a fishery management feasibility analysis for the proposed hatchery. The PNP Hatchery Program Coordinator reviews the application with the applicant, who addresses any deficiencies. ADF&G management and regional staff review the application. The application is then provided for public review.

The RPT reviews hatchery permit applications within their region. The RPT determines if the hatchery operation is compatible with the regional comprehensive salmon plan. Following review by the RPT, a public hearing is held regarding the hatchery permit. At the public hearing, the hatchery applicant describes the proposed hatchery plan, and ADF&G staff present the basic management plan (BMP, described in the next section) for the hatchery. Public testimony and questions follow the presentations. ADF&G must respond in writing to any specific objections to the proposed permit.

The application is then sent to the ADF&G commissioner for final review. By regulation (5 AAC 40.220), the commissioner's decision is based on consideration of (1) the suitability of the site for making a reasonable contribution to the common property fishery, not adversely affecting management of wild stocks, and not requiring significant alterations of traditional fisheries; (2) the operation of the hatchery makes the best use of the site's potential to benefit the common property fishery; (3) the harvest area size at the hatchery is sufficient in size to provide a segregated harvest of hatchery fish of acceptable quality for sale; (4) proposed donor sources can meet broodstock needs for the hatchery for the first cycle; (5) water sources for the hatchery are

[4] Independent PNP operators do not receive salmon enhancement tax funds; only RAAs receive the tax funds.

[5] Designated areas are called special harvest areas.

secured by permit and are of appropriate quality and quantity; and (6) the hatchery has a reasonable level of operational feasibility and an acceptable degree of potential success.

Hatchery permits cannot be transferred. When hatcheries change operators, a new permit must be issued by the process described above.

Hatchery Permits and Plans

Alaska PNP hatcheries operate under 4 documents: *PNP hatchery permit*, *basic management plan* (BMP), *fish transport permits* (FTP), and *annual management plans* (AMP). Each of these documents are approved by the commissioner.

The *PNP hatchery permit* (AS 16.10.400–16.10.470) authorizes operation of the hatchery and specifies the species, egg source, release location(s), and other conditions. Hatchery permits remain in effect unless relinquished by the permit holder or revoked by the ADF&G commissioner.

The *basic management plan* (BMP; 5 AAC 40.820) is an addendum to the hatchery permit and specifies the maximum number of eggs of each species that a facility can incubate, the authorized release locations, and may identify stocks for broodstock. Hatchery permits and BMPs may be amended by the permit holder through a *permit alteration request* (PAR). Requested changes are reviewed by the RPT and ADF&G staff. Recommendations to approve PARs are sent to the ADF&G commissioner for consideration.

A *fish transport permit* (FTP; 5 AAC 41.001–41.060) is required for egg collection, transport, and release of live fish. An FTP authorizes specific activities described in the hatchery permit and management plans including broodstock source, gamete collection, and release site, and must be consistent with the previously approved guiding documents for the program, such as the PNP Hatchery Permit. FTP applications are reviewed by the ADF&G fish pathologist, fish geneticist, regional resource development biologist, and other ADF&G staff as delegated by the ADF&G commissioner. Reviewers ensure activities described in the FTP are consistent with ADF&G policies and may suggest conditions for the FTP. Reviewers recommend approval, and final consideration of the application is made by the ADF&G commissioner. FTPs are issued for a fixed period. When an FTP is renewed or amended, the FTP application goes through the same review process as the original FTP. Continual review of hatchery activities provides an ongoing assessment of all hatchery projects over time.

An *annual management plan* (AMP; 5 AAC 40.840) outlines operation for the current year and is written cooperatively among ADF&G regional and PNP hatchery staff in a process that is coordinated by the PNP Hatchery Coordinator. Typically, AMPs include the current year's egg-take goals, juvenile releases, remaining fish inventory, expected adult returns, harvest management plans, FTPs required or in place, production strategies, and evaluation plans. AMPs must be consistent with the PNP Hatchery Permit and BMP. Final consideration of the plan is made by the ADF&G commissioner.

ALASKA HATCHERY POLICIES

The success of Alaska's hatchery program can be attributed to the various policies, statutes, and regulations that were instituted by ADF&G, the legislature, and the Alaska Board of Fisheries to control hatchery development and concurrently to protect wild stocks (Evenson et al. 2018). Numerous Alaska mandates and policies for hatchery operations were specifically developed to

minimize potential adverse effects to wild stocks. Through a comprehensive permitting and planning process, PNP hatchery operations are subject to continual review by ADF&G staff.

Genetic Policy

The ADF&G *Genetic Policy* (Davis et al. 1985) sets out restrictions and guidelines for stock transport, protection of wild stocks, and maintenance of genetic variance. Policy guidelines include banning importation of salmonids from outside the state (except U.S./Canada transboundary rivers); restricting transportation of stocks between the major geographic areas in the state (Southeast, Kodiak Island, Prince William Sound, Cook Inlet, Bristol Bay, Arctic-Yukon-Kuskokwim, and Interior); requiring the use of local broodstock; maintaining genetic diversity by use of large populations of broodstock collected across the entire run and without regard to any physical trait such as size; and limiting the number of hatchery stocks derived from a single donor stock.

Fish Health and Disease Policy

The Alaska Fish Health and Disease Control Policy (5 AAC 41.080) is designed to protect fish health and prevent spread of infectious disease in fish and shellfish. The policy is used by ADF&G fish pathologists to review hatchery plans and permits. The policy and associated guidelines are discussed in *Policies and Guidelines for Alaska Fish and Shellfish Health and Disease Control* (Meyers 2010), which includes policy guidelines for fish transport permits, broodstock screening, disease histories, and transfers between hatcheries. Previously suggested regulation changes published in an earlier description of the Alaska hatchery program were codified into state regulations in Title 5 of the Alaska Administrative Code in February 2011. These regulations and guidelines are used by ADF&G fish pathologists to review hatchery plans and permits.

Fishery Management Policies

The Alaska state constitution, statutes, and regulations mandate that ADF&G manage salmon returns for wild stock conservation. This means that escapement goals are established for important salmon systems, and the fisheries are managed to meet these goals. The Alaska Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222), the Policy for the Management of Mixed-Stock Salmon Fisheries (5 AAC 39.220), the Salmon Escapement Goal Policy (5 AAC 39.223), and local fishery management plans (5 AAC 39.200) guide fisheries management for the protection of wild salmon stocks. These regulations require fishery managers to consider the interactions of wild and hatchery salmon stocks when reviewing hatchery management plans and permits.

ABOUT HATCHERIES

Economy of Scale

There are tradeoffs between the costs of production and the value of fish at harvest that make some salmon more economical to produce than others. Hatchery production is limited by the available freshwater capacity, freshwater rearing space, rearing time, and costs of production. Costs of production include feed, the rearing facility, and facility operations. The potential value of fish at harvest is limited by the value of fish at return and the number of fish that return. Hatcheries balance fish production costs with potential value of harvest when making production decisions.

Some salmon species are more economical to rear. Pink salmon are the most economical to rear because they have a short rearing time—1 winter in the hatchery—and have the shortest life cycle

of Pacific salmon, 2 years. This means pink salmon provide a quick return on investment and provide the highest economic return for the production costs. Chum salmon have the same rearing time in the hatchery but have a longer life cycle (3–4 years); therefore, they have a longer return on investment. Pink and chum salmon are the bulk of Alaska hatchery production because they have the highest return on investment for the cost of production. Chinook, sockeye, and coho salmon are less economical to produce than pink and chum because they have long rearing times at the hatchery, typically a year or more, and have longer life cycles, so they have a long return on investment. Although Chinook, sockeye, and coho salmon garner higher prices per pound at harvest, the longer rearing time required at the hatchery mean that they are expensive to rear and less economical to produce.

Hatcheries and Fishery Managers Work Together

Hatchery egg takes, rearing strategies, and releases are planned with the goal of eventual harvest; accordingly, hatchery activities are integrated with harvest management. Harvests of hatchery-produced salmon occur at specific locations because juvenile salmon imprint on the water at release and then, when salmon return as adults, they recognize the water and home to that location (Dittman and Quinn 1996). Release site selection allows hatcheries to anticipate the number of salmon that will return to an area and allows hatcheries and fishery managers to plan for hatchery salmon contribution to various fisheries.

Segregation of hatchery-origin and naturally spawned returns allows fishery managers to work towards fishery objectives for wild stocks, such as salmon escapement goals, and increases diversity in fishing opportunities. When wild stock production provides surplus fish for harvest, fishers may target those fish during open fishing periods in traditional fishing areas. Hatchery returns may be intercepted in traditional fisheries. When traditional wild stock fishing periods close, fishers can move to the hatchery release sites that remain open and continue fishing until the wild stock areas reopen. In some seasons, fishers may exclusively target hatchery fish in the terminal harvest areas, even when wild stock areas are open, which may reduce harvest rates on wild stocks. Hatchery salmon return areas provide the fishing fleet with more time and area to fish.

Although most of the harvest of a species in a region may be made up of hatchery production—pink salmon in Prince William Sound or chum salmon in Southeast Alaska, for example—this does not mean that hatchery production is intended to replace wild stock production. Hatchery production grew at a pace that allowed managers to assess all salmon returns and understand how to manage for wild stock returns in the presence of hatchery returns and provide for adequate escapement of wild stocks.

Salmon Return Evaluation

Alaska's PNP hatchery salmon return evaluation program has a track record of active assessment and innovation. Hatcheries use coded wire tags, otolith marks, or both, to differentially mark releases. Differentially marking salmon allows for apportioning the commercial fishery catch between hatchery and wild salmon where both hatchery and wild stocks return simultaneously (Hagen et al. 1995). Marked salmon caught on the high seas can be used to determine origins and migration patterns, and salmon carcasses can be collected during stream surveys to assess straying.

Over time, Alaska hatcheries have increased the proportion of juvenile salmon releases that are marked (Figure 2). Starting in the 1970s, few hatchery salmon releases had any type of mark, although some had 1 or 2 fins clipped. In the 1980s, hatcheries started tagging juvenile salmon by

inserting a coded wire tag (CWT) into the nose of a portion of released salmon (Jefferts 1963). CWTs are etched with a numeric code that can be read when the fish is recovered as an adult; the numeric code can determine the salmon's release group and estimate that release group's contribution to fisheries. In Alaska, fish that are CWT-tagged also receive an external mark: their adipose fin (a small fatty fin on the fish's back) is clipped to allow visual separation of fish that have a CWT from those that do not.

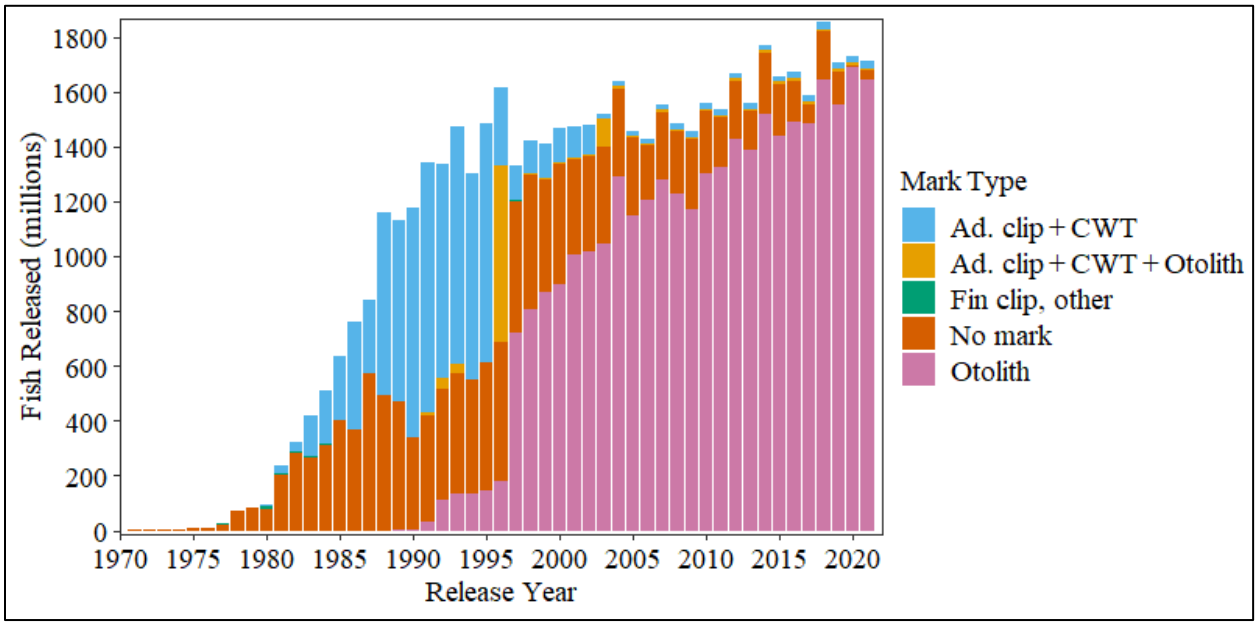

Figure 2.–Juvenile salmon released by Alaska hatcheries by mark type, 1970–2021.

Otolith marking was first used on a production scale in 1988 at Snettisham Hatchery near Juneau. Cook Inlet hatcheries began releasing otolith-marked salmon in 1991 and Northern Southeast hatcheries began releasing otolith-marked fish in 1992. Prince William Sound hatcheries released juvenile salmon that were otolith marked, CWT-tagged, and adipose clipped in 1996 before transitioning to only otolith marks in 1997. Southern Southeast hatcheries started consistently releasing otolith-marked salmon in 2002. Kodiak hatcheries released their first otolith-marked fish in 2014, and by 2020 nearly all (97.8%) salmon releases from Alaska were otolith marked.

Otolith marking is commonly performed by alternating warmer and colder incubation water over a 12-hour to 6-day period, usually during the egg stage. This action will lay down alternating dense and less dense patterns of growth on the fish's ear bone (called the otolith), similar to rings on a tree (Figure 3; Volk et al. 1999). Growth patterns on otoliths of naturally spawned salmon are less distinct and irregular, so hatchery and natural-produced salmon can be separated by visual inspection of their otoliths. Regulation of temperature or stress means fish can be marked with distinct marks, allowing for separation of stocks among hatcheries, release sites, and brood years. As manipulation of rearing area is used to mark the fish, 100% of the fish are marked. This allows for high accuracy in the assessment of the number of hatchery fish in a sample and is an improvement over marking fish with coded wire tags, which can only be applied to a fraction of the release.

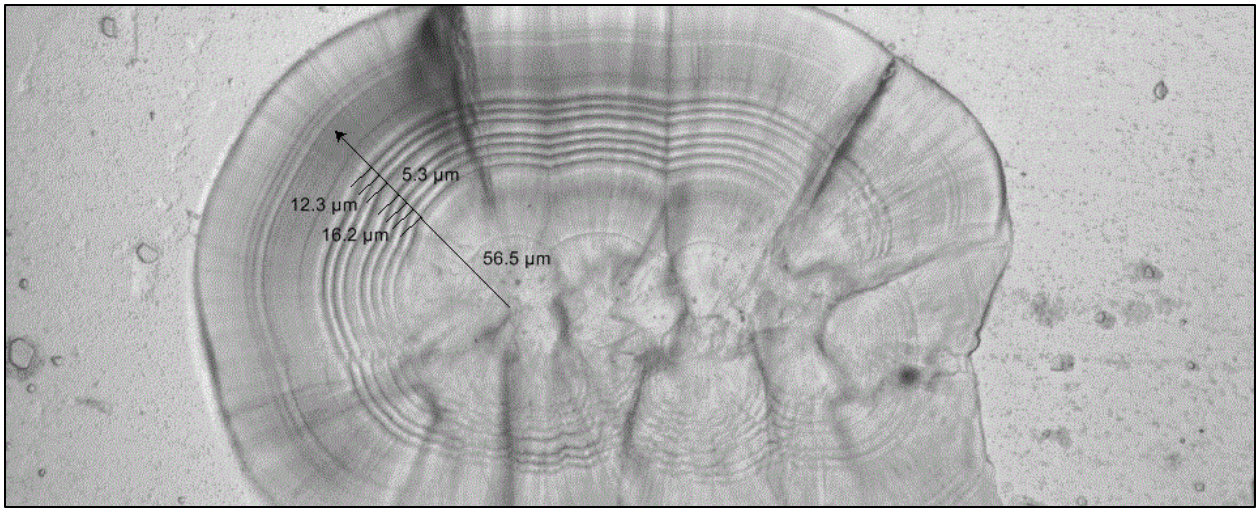

Figure 3.–Salmon otolith (ear stone) with a thermal mark. This otolith was taken from a juvenile sockeye salmon at Snettisham Hatchery in Juneau, AK.

Source: Mark Characteristic Report. https://mtalab.adfg.alaska.gov/OTO/reports/VoucherSummary.aspx?mi=TAHLTAN16 (accessed 3/3/2021).

All PNPs and nearly all Alaska hatcheries' release data are publicly available in online reports maintained by the ADF&G Mark, Tag, and Age Laboratory. The release report shows species, number of fish released, the type of mark applied to the fish, and other release data.[6] The thermal mark voucher report characterizes each thermal mark applied at a hatchery so that upon recovery, a thermal mark can be matched to its release group.[7]

The ADF&G Mark, Tag, and Age Laboratory maintains several online reports that summarize fishery data in different ways, including recovery of marked fish released by hatcheries. The Agency Report lists coded wire tag recoveries by release group and provides their contribution to fisheries.[8] The Mark Summary Report provides information regarding the number of otolith-marked salmon recovered in Alaska and Canada in commercial and test fisheries, as well as other samples.[9]

Hatchery and Wild Salmon Interaction

Straying of hatchery-produced fish to wild stock systems has been monitored for many years. Hatchery chum salmon straying has been assessed in Southeast Alaska (Piston and Heinl 2012a, 2012b) and Prince William Sound systems (Brenner et al. 2012). Hatchery Chinook salmon straying has been monitored on several Southeast Alaska systems for decades (Ed Jones, ADF&G Fishery Biologist, Juneau, personal communication). Hatchery sockeye salmon straying studies have been conducted on Kodiak Island (Baer and Honnold 2002), in the Copper River basin (Bidlack and Valentine 2009), and the Kenai River (Habicht et al. 2013; Stopha 2012). Pink salmon straying has been monitored in Prince William Sound (Brenner et al. 2012) and Cook Inlet (Hollowell et al. 2017).

[6] Hatchery Release Report Form. https://mtalab.adfg.alaska.gov/CWT/reports/hatcheryrelease.aspx (accessed March 3, 2021).

[7] Find Voucher Information. https://mtalab.adfg.alaska.gov/OTO/reports/VoucherSummary.aspx (accessed March 3, 2021).

[8] Agency Report Form. https://mtalab.adfg.alaska.gov/CWT/reports/agency.aspx (accessed March 3, 2021).

[9] Mark Summary Report Form. https://mtalab.adfg.alaska.gov/OTO/reports/MarkSummary.aspx (accessed March 3, 2021).

A long-term study is underway to investigate interactions between hatchery and wild salmon in Alaska.[10] A panel composed of scientists with broad experience in salmon fishery enhancement, research, and management—from ADF&G, University of Alaska, aquaculture associations, and National Marine Fisheries Service—was assembled by ADF&G in 2011. The panel designed and guides a research program entitled *Interactions of Wild and Hatchery Pink and Chum Salmon in Prince William Sound and Southeast Alaska*. Study funding is shared between the PNP operators, salmon processors, and the State of Alaska, and is administered by ADF&G. Field work is conducted by the Prince William Sound Science Center and the Sitka Sound Science Center. The study will improve understanding of hatchery and wild stock interactions and provide Alaska-specific scientific guidance for assessing Alaska's hatchery program.

NON-PRIVATE NONPROFIT SALMON PROPAGATION

ADF&G Division of Sport Fish hatcheries in Anchorage and Fairbanks are not PNP hatcheries, but produce fish for sport fisheries in Cook Inlet, Resurrection Bay, Prince William Sound, Southeast, and the Interior. The hatcheries are primarily funded from the federal excise tax on fishing-related equipment under the Dingell-Johnson Sport Fish Restoration Act. The funding, policy, and planning for these hatcheries is described in the current Statewide Stocking Plan.[11] The Division of Sport Fish hatchery plans are reviewed twice, first during each year's drafting of the Statewide Stocking Plan, and second during the FTP application process.

A non-ADF&G agency may propagate salmon under only 2 types of permits: a PNP salmon hatchery permit, or an aquatic resource permit (ARP). ARPs have a scientific or educational objective and are governed by 5 AAC 41.600. ARPs are issued for feasibility studies for potential PNP hatchery production, vocational programs, small-scale production for the purpose of salmon research, and the extensive *Salmon in the Classroom* program conducted in schools across the state. The Little Port Walter federal research hatchery operates under an ARP.

Tamgas Creek Hatchery operated by Metlakatla Indian Community is on Annette Island, the only Indian Reserve in Alaska, and is not subject to Alaska Fish and Game statutes and regulations.

2021 SUMMARY

CURRENT HATCHERIES

Currently, there are 30 production hatcheries and one research hatchery operating in Alaska (Figure 4, Appendices C1 and C2). Most (26) hatcheries are operated by PNPs. Of these, 11 are owned by the state and 15 are owned by PNPs. The 11 hatcheries owned by the state are operated by PNPs on the state's behalf at no cost to the state. There are several non-PNP hatcheries in Alaska. There is a joint use agreement between the National Marine Fisheries Service (NMFS) and Armstrong Keta Inc. (AKI) for activities at the Little Port Walter research facility in lower Chatham Strait. Little Port Walter operations by NMFS are authorized for research and are not PNP operations. ADF&G operates 2 sport fish hatcheries, William Jack Hernandez Hatchery in Anchorage and Ruth Burnett Hatchery in Fairbanks. Metlakatla Indian Community governs and operates Tamgas Creek Hatchery. Activities at non-PNP hatcheries are included in this report, as available. There are 3 PNP hatchery facilities that are permitted but did not take eggs or contribute

[10] Study findings can be found at http://www.adfg.alaska.gov/index.cfm?adfg=fishingHatcheriesResearch.findings_updates (accessed February 23, 2022).

[11] https://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.stockingPlan (accessed February 23, 2022).

to salmon returns in 2021: Perry Island Hatchery (Prince William Sound), Eklutna Hatchery (Cook Inlet), and Little Port Walter operated by AKI.

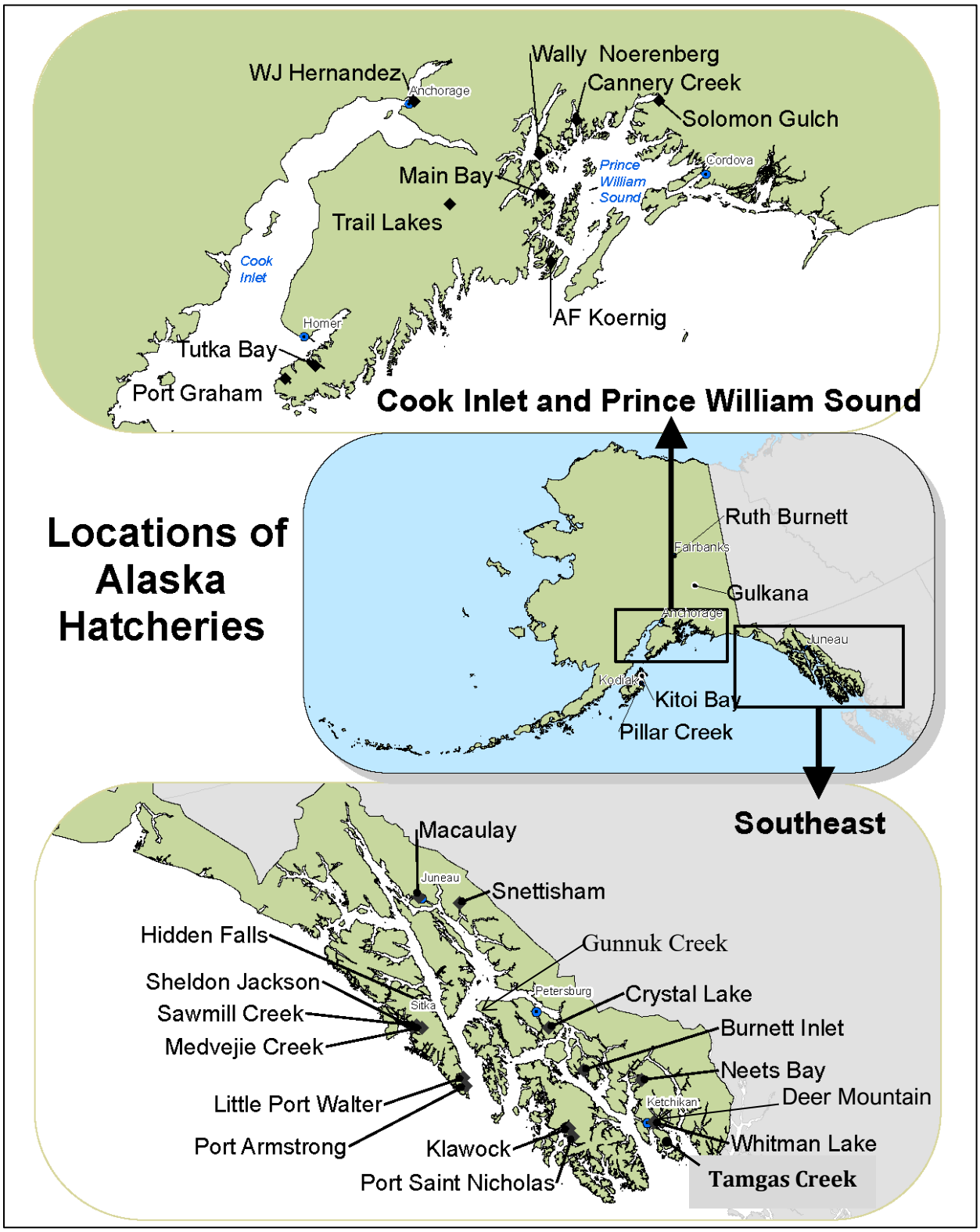

Figure 4.–Salmon hatcheries currently operating in Alaska.

FISHERY ENHANCEMENT PLANS

There are 12 planning regions established by the commissioner: Northern Southeast, Southern Southeast, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Chignik, Bristol Bay, Alaska Peninsula/Aleutian Islands/Area M, Kuskokwim, Yukon, and Norton Sound/Bering Strait. Regional planning teams have developed comprehensive salmon plans for Southeast (Duckett et al. 2010), Yakutat (YRPT 2014), Prince William Sound (ADF&G 1994), Cook Inlet (CIRPT 2007), Kodiak (KRPT 2011), Chignik (ADF&G 1993b), Alaska Peninsula/Aleutian Islands/Area M (ADF&G 1993a), Bristol Bay (ADF&G 1989), Yukon (Holder and Senecal-Albrecht 1998), and Norton Sound (NSBSRPT 2015). Commercial fishing participants elected for a salmon enhancement tax (SET) in 8 of these regions: Southern Southeast (3%), Northern Southeast (3%), Cook Inlet (2%), Prince William Sound (2%), Kodiak (2%), Chignik (2%), and Yakutat (2%). Of regions with SET, there are fishery enhancement activities in Southern Southeast, Northern Southeast, Cook Inlet, Prince William Sound, and Kodiak.

STATEWIDE HATCHERY PRODUCTION

Hatchery Return

About 68.9 million adult hatchery salmon returned to Alaska waters in 2021 (Table 1, Figure 5). Pink and chum salmon were the dominant species to return from Alaska hatchery production, followed by sockeye, coho, and Chinook salmon.

Table 1.–Estimated total salmon returns attributed to Alaska hatcheries (including common property harvest, cost-recovery harvest, broodstock, and other) as reported by operators, by area and species, in 2021.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	59,986	87,637	603,331	657,130	6,786,292	8,194,376
Prince William Sound	0	809,386	73,837	44,775,112	2,540,112	48,198,447
Cook Inlet	8,621	311,457	13,098	494,591	0	827,767
Kodiak	60	282,002	109,364	11,152,108	110,908	11,654,442
Total	68,667	1,490,482	799,630	57,078,941	9,437,312	68,875,032

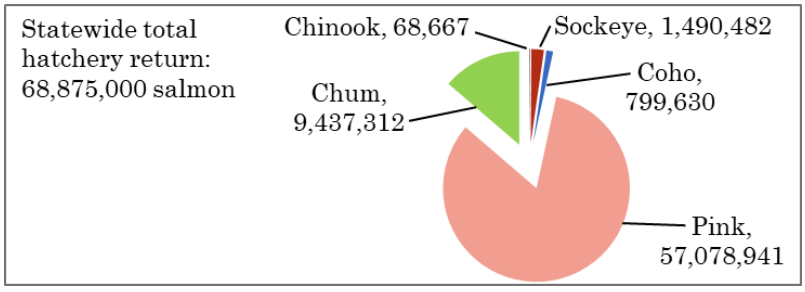

Figure 5.–Alaska hatchery total salmon return as reported by operators by species, 2021.

The total return includes commercial common property, commercial cost recovery, sport, personal use, and subsistence harvests; broodstock taken at the hatchery; and other (e.g., escapement, sealion mortality, lagoon die-off) returns.

Alaska hatcheries contributed approximately 64 million hatchery-produced salmon to commercial fisheries[12] had an estimated exvessel value of $142 million and made up 25% of the statewide commercial harvest exvessel value (Appendix D1). The exvessel value of the commercial hatchery harvest was 47% pink salmon, followed by chum (36%), sockeye (9%), coho (5%), and Chinook salmon (2%; Figure 6).[13] The total commercial harvest of hatchery-produced salmon, including cost recovery, was the 8th largest since 1977 (Appendix K1) and was approximately 28% of the statewide commercial salmon harvest (Appendix D1).

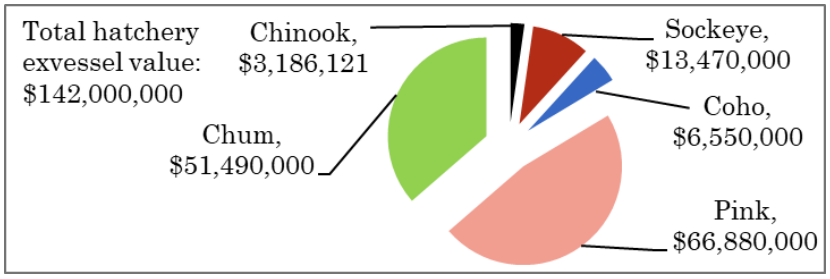

Figure 6.–Species composition of the 2021 Alaska hatchery contribution to the commercial harvest, with the exvessel value by species.

Note: Exvessel value for hatchery harvest total commercial harvest multiplied by the hatchery percent of the commercial harvest. Exvessel value source: https://www.adfg.alaska.gov/Static/fishing/pdfs/commercial/2021_preliminary_salmon_summary_table.pdf (accessed 12/30/2021).

Alaska hatchery salmon contributed approximately 53 million fish to commercial common property fisheries and approximately 11 million fish in cost-recovery fisheries (Figure 7). Approximately 4 million salmon were taken for broodstock in preparation for future production.

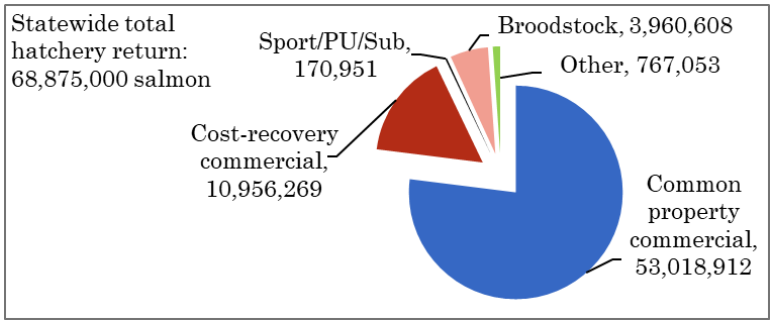

Figure 7.–Alaska salmon hatchery returns as reported by operators by return category, 2021. *Other* includes escapement, sea lion mortality, lagoon die-off, etc. *PU* is Personal Use and *Sub* is Subsistence. Some broodstock sold as commercial cost-recovery harvest and is shown here as broodstock.

[12] The commercial fishery is composed of 2 components: (1) the common property fisheries, which are open to fishermen holding salmon permits, and (2) cost-recovery fisheries, which are fish harvested to pay for PNP hatchery operations. Some broodstock sold as commercial cost recovery harvest and is shown here as broodstock.

[13] Note that hatchery contribution to the statewide harvest can differ from the contribution to the statewide exvessel value because of differences in exvessel values paid for salmon in different regions of the state. For example, Chinook salmon and chum salmon hatchery production is largely in Southeast Alaska, where exvessel price per pound is usually among the highest in the state for these 2 species.

Hatchery-produced salmon harvested in the commercial common property fisheries had an estimated exvessel value of $111 million and made up 19% of the statewide commercial harvest exvessel value (Appendix D2). Cost-recovery harvest, which pays for hatchery operations, had an estimated exvessel value of $31 million, was 5% of the total commercial harvest exvessel value, and 22% of the hatchery harvest exvessel value of commercial fisheries (Figure 6, Appendix I1).

An estimated 219,900 hatchery-produced salmon, rainbow trout, Arctic char, and grayling were harvested by sport, personal use, and subsistence users in 2021 (Table 2). Hatchery-produced coho salmon were the greatest part of this harvest (77,600), followed by sockeye salmon (68,800), rainbow trout (33,500), Chinook salmon (19,800), pink salmon (11,900), landlocked salmon (3,300), chum salmon (2,700), Arctic char (1,800), and Arctic grayling (500).

Table 2.–Estimated sport, personal use, and subsistence harvest of hatchery-produced fish, 2021.

Region	Chinook	Sockeye	Coho	Pink	Chum	Arctic char	Rainbow trout	Arctic grayling	Landlocked salmon	Total
Southeast	6,098	4,481	40,990	1,516	2,726	0	0	0	0	55,811
Prince William Sound	9,922	32,070	20,208	10,067	0	0	0	0	0	72,267
Cook Inlet	3,815	31,900	7,821	350	0	0	0	0	0	43,886
Kodiak	9	353	8,550	0	0	0	0	0	0	8,912
Southcentral lakes	0	0	0	0	0	688	16,898	0	0	17,586
Interior lakes	0	0	0	0	0	1,101	16,550	489	3,342	21,482
Total	19,844	68,804	77,569	11,933	2,726	1,789	33,448	489	3,342	219,944

Hatchery Egg Takes

Hatcheries in Alaska are currently permitted to take a total of 2.6 billion eggs (Appendix B1). Prince William Sound hatcheries are permitted to take the highest number of eggs (1.019 billion), followed by Southeast (975.1 million), Cook Inlet (309 million), and Kodiak (275 million). Although hatcheries are permitted to take a certain number of eggs of a species and stock each year, hatcheries do not always take their permitted capacity. Failure to take their permitted capacity can be due to low numbers of returning salmon, shifting program priorities, the hatchery building their rearing capacity, building their broodstock returns, or other reasons. Eggs also are taken for production at non-PNP hatcheries, including William Jack Hernandez Sport Fish Hatchery in Anchorage, Ruth Burnett Sport Fish Hatchery in Fairbanks, and Tamgas Creek Hatchery operated by Metlakatla Indian Community on Anette Island. Egg collections grew steadily from the late 1970s until about 1995, when production leveled off (Figure 8).

In 2021, 2.1 billion eggs were collected for Alaska hatcheries (Figures 8 and 9, Table 3). Most of these eggs were from pink salmon (1.158 billion), followed by chum (871 million), sockeye (58 million), coho (45 million), and Chinook salmon (14 million). The number of eggs by area, operator, species, and location are in Appendix G1.

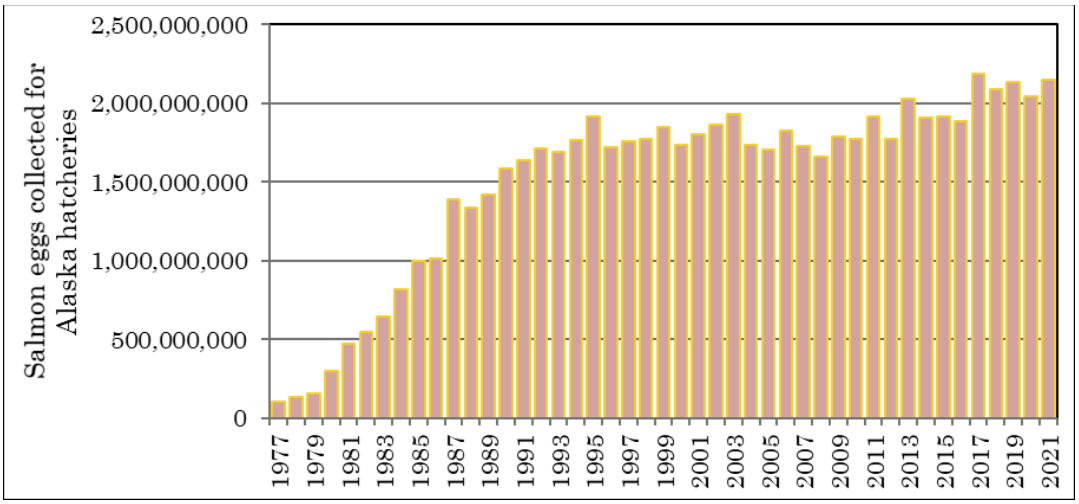

Figure 8.–Salmon eggs collected for Alaska salmon hatchery programs, 1977–2021.

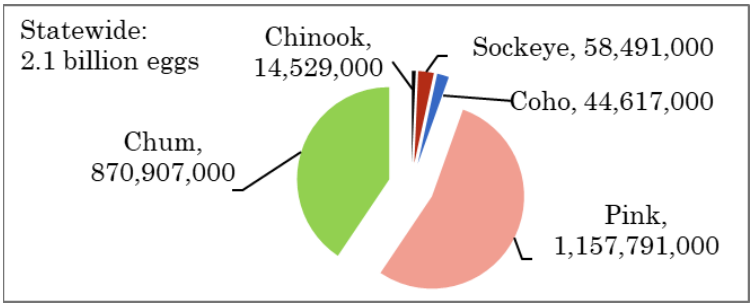

Figure 9.–Salmon eggs collected for Alaska hatchery programs by species, 2021. Eggs taken from rainbow trout, lake trout, and Arctic char are not shown.

Table 3.–Estimated salmon egg takes for Alaska hatcheries as reported by operators, by region, 2021.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	11,521,695	16,652,500	35,849,197	74,456,463	681,273,163	819,753,018
Prince William Sound	0	24,800,900	6,028,480	799,200,080	153,320,000	983,349,460
Cook Inlet	2,895,446	12,111,199	1,821,755	68,069,114	0	89,380,615[a]
Interior	50,008	0	90,000	0	0	798,008[a]
Kodiak	62,237	4,926,195	827,500	216,065,572	36,313,632	258,195,136
Total	14,529,386	58,490,794	44,616,932	1,157,791,229	870,906,795	2,151,476,237

[a] Includes Arctic char (126,005), rainbow trout (4,962,096), and lake trout (53,000) eggs taken in in Cook Inlet and Interior areas.

Hatchery Releases

Since 1995, annual hatchery releases have ranged from about 1.4 to 1.8 billion juvenile salmon (Figure 9). About 1.7 billion juvenile salmon were released in 2021 (Figure 10, Table 4). Most of the 2021 releases were from eggs collected in 2020 and were pink (870 million) and chum (750 million) salmon. The remainder of the releases were from eggs taken mainly in 2019 and were sockeye (43 million), coho (37 million), and Chinook (10 million) salmon.

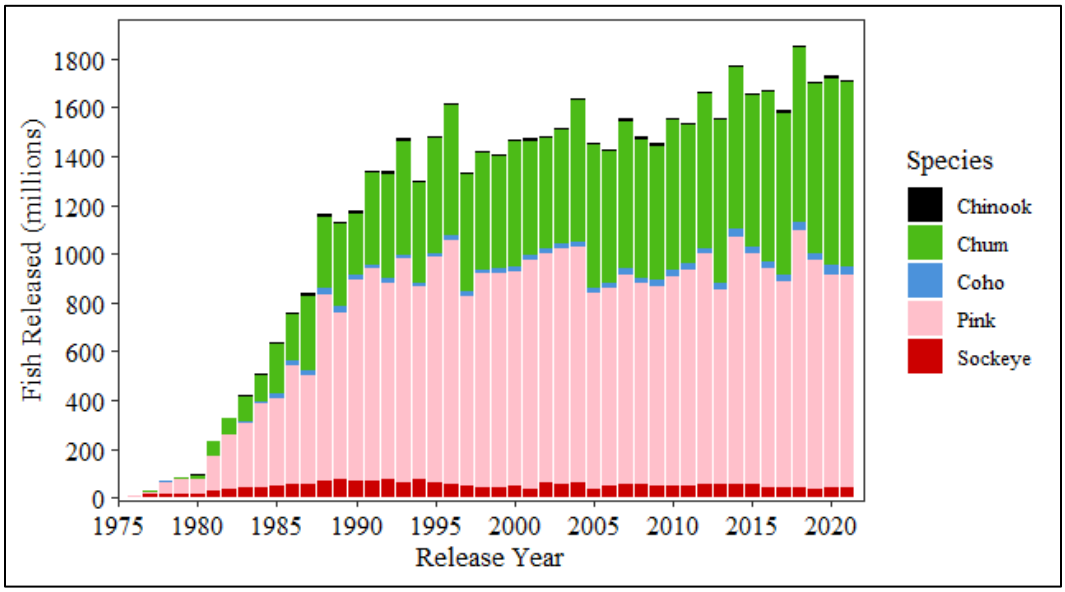

Figure 10.–Total salmon released for Alaska hatchery programs, 1975–2021.

Table 4.–Estimated juvenile salmon releases from Alaska hatcheries by region, 2021.

Area	Chinook	Sockeye	Coho	Pink	Chum	Rainbow trout	Total[a]
Southeast	7,636,016	11,330,000	28,520,094	65,193,570	583,338,073	46,359	696,064,112
Prince William Sound	46,900	22,952,392	4,864,213	583,187,381	137,206,000	1,226	748,258,112
Cook Inlet	2,164,452	6,626,215	1,533,874	94,289,844	0	700,019	105,368,903
Interior	43,706	0	79,316	0	0	237,644	407,910
Kodiak	26,782	2,499,871	1,902,156	127,883,209	30,063,418	0	162,375,436
Total	9,917,856	43,408,478	36,899,653	870,554,004	750,607,491	985,248	1,712,474,473

[a] Includes Arctic char releases (101,743) in Cook Inlet and Interior areas.

Projected Hatchery Return in 2022

Hatchery operators forecast a total return of about 44.1 million salmon in 2022. This includes returns of 30.0 million pink, 11.4 million chum, 1.6 million sockeye, 1.1 million coho, and 91 thousand Chinook salmon to hatchery projects. Details of forecasted returns by area and project are in Appendix E1.

The 2021 hatchery return was 68.9 million fish, 105% the forecast of 65.8 million fish (Wilson 2021). Returns of all species but pink salmon were less than forecasted; returns were 87% of forecasted chum, 77% of sockeye, 72% of Chinook, 70% of coho, and 110% of forecasted pink salmon.

The forecasted hatchery returns in 2022 for most species and areas are about the same or slightly more than the 2021 returns. Exceptions are Prince William Sound coho salmon are approximately 5 times higher and Cook Inlet pink salmon forecasted returns are approximately 8 times higher than the 2021 returns. Prince William Sound and Kodiak forecasted pink salmon returns are

approximately half of the 2021 returns. Kodiak chum salmon forecasted return is approximately twice the 2021 return.

For comparison, the National Oceanic and Atmospheric Administration-ADF&G 2022 Southeast Alaska pink salmon commercial harvest forecast, which includes hatchery and naturally spawned fish, is 16 million pink salmon.[14] The 2021 Southeast area pink salmon harvest, which was an estimated 1% hatchery production, was 46 million pink salmon and was 164% of the forecast of 28 million pink salmon.

PROPAGATIVE RESEARCH

In 2021, ARPs were issued for small-scale production, including for salmon research, feasibility studies for potential hatchery production, vocational programs, and the extensive salmon in the classroom program conducted in schools across the state (Appendix F1).

HATCHERY ACTIVITY BY REGION

Southeast

Southeast Alaska has 2 planning regions: Northern Southeast and Southern Southeast. Hatchery production from both planning regions is presented together.

The Southern Southeast Alaska PNP hatcheries operated by Southern Southeast Regional Aquaculture Association (SSRAA) are Burnett Inlet, Neets Bay, Whitman Lake, Deer Mountain, Klawock River, and Port Saint Nicholas (Figure 4). Since 2000, ADF&G has contracted SSRAA to operate the Crystal Lake Hatchery. Metlakatla Indian Community operates Tamgas Creek Hatchery, located on Annette Island (the only Indian Reserve in the State of Alaska) and is not a PNP hatchery.

The Northern Southeast Alaska PNP hatcheries operated by Northern Southeast Regional Aquaculture Association (NSRAA) are Gunnuk Creek, Hidden Falls, Medvejie Creek, and Sawmill Creek. Other PNP hatcheries in Northern Southeast are Port Armstrong operated by Armstrong Keta Incorporated, Macaulay and Snettisham operated by Douglas Island Pink and Chum, Incorporated (DIPAC), and Sheldon Jackson operated by the Sitka Sound Science Center. There is a joint use agreement between NMFS and AKI for Little Port Walter Hatchery in lower Chatham Strait. Little Port Walter Hatchery operated by AKI is a PNP hatchery. Little Port Walter hatchery operations under NMFS are authorized for research and not PNP operations.

Hatchery-produced chum salmon are caught in fisheries that are managed for sockeye or pink salmon. Chum salmon that are not harvested in the sockeye and pink salmon fisheries return to isolated release sites in bays where they can be harvested with minimal impact to wild stocks.

In 2021, there were 4 stocks of concern located in Southeast Alaska: 3 Chinook salmon stocks (Chilkat, King Salmon, and Unuk Rivers), and 1 sockeye salmon stock (McDonald Lake).[15] Management actions to reduce harvest of these stocks were taken across all Southeast Alaska fisheries that harvest these stocks, including sport, commercial, personal use, and subsistence.

[14] *Source*: https://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1346706110.pdf (accessed December 30, 2021).
[15] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed December 30, 2021).

Hatchery returns in Southeast

In 2021, southeast Alaska had the 3rd-ranked hatchery return out of the 4 planning areas, with a total return of 8.2 million salmon (Table 1).

About 4.9 million hatchery fish were caught in the Southeast Alaska commercial common property fisheries in 2021, worth an estimated exvessel value of $32 million, or 27% of the exvessel value for commercial common property salmon fisheries in the region (Figure 11, Appendices D1 and D2). Chum salmon contributed most to the value of the commercial common property harvest ($25 million), followed by coho ($4.4 million), Chinook salmon ($2.2 million), sockeye ($255 thousand), and pink salmon ($211 thousand). The 4.9 million hatchery-produced salmon harvested in the Southeast commercial common property fishery accounted for 9% of the total commercial common property catch in the region (Appendix D1). By species, hatcheries contributed an estimated 88% of the chum, 26% of the coho, 15% of the Chinook, 2% of the sockeye, and 0.4% of the pink salmon harvest, in numbers of fish, to commercial common property fisheries.

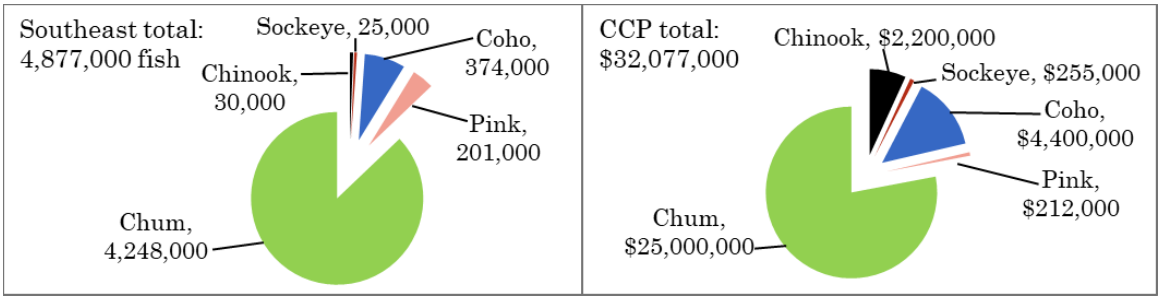

Figure 11.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Southeast Alaska, 2021.

An additional 2.3 million salmon were harvested from hatchery returns for cost recovery. Hatchery harvest including cost recovery accounted for 13% of the commercial harvest and 35% of the total commercial harvest value in Southeast Alaska. The total commercial harvest of hatchery-produced salmon, including cost recovery, was 7.2 million fish, the 27th largest for Southeast Alaska since 1977 (Appendix K2).

For the sport, personal use, and subsistence fisheries, coho salmon contributed the most hatchery-produced fish (41,000), followed by Chinook (6,100), sockeye (4,500), chum (2,700), and pink salmon (1,500; Table 2).

Details of the salmon returns to the southeast region, by return type and project for Chinook, sockeye, coho, pink, and chum salmon as reported by operators are in Appendices J1–J5.

Egg takes and releases in Southeast

In 2021, there were 820 million eggs taken in Southeast Alaska: 681 million chum, 74 million pink, 36 million coho, 17 million sockeye, and 11 million Chinook salmon eggs (Figure 12, Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

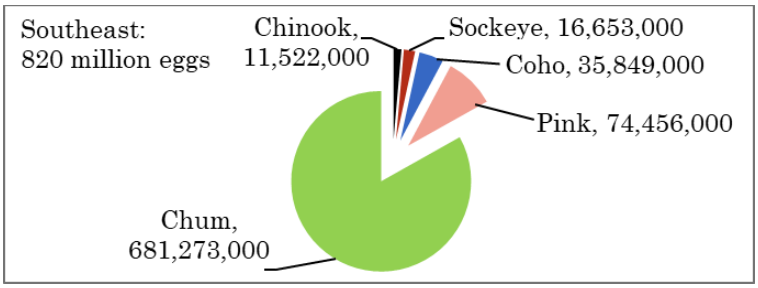

Figure 12.–Eggs collected, by species, for salmon hatchery programs in Southeast Alaska, 2021.

There were 696 million salmon released in Southeast Alaska in 2021: 583 million chum, 65 million pink, 28 million coho, 11 million sockeye, and 8 million Chinook salmon (Figure 13, Table 4). There were 46 thousand rainbow trout stocked in southeast lakes. The number of releases by area, operator, hatchery, release site, and species are in Appendix H1.

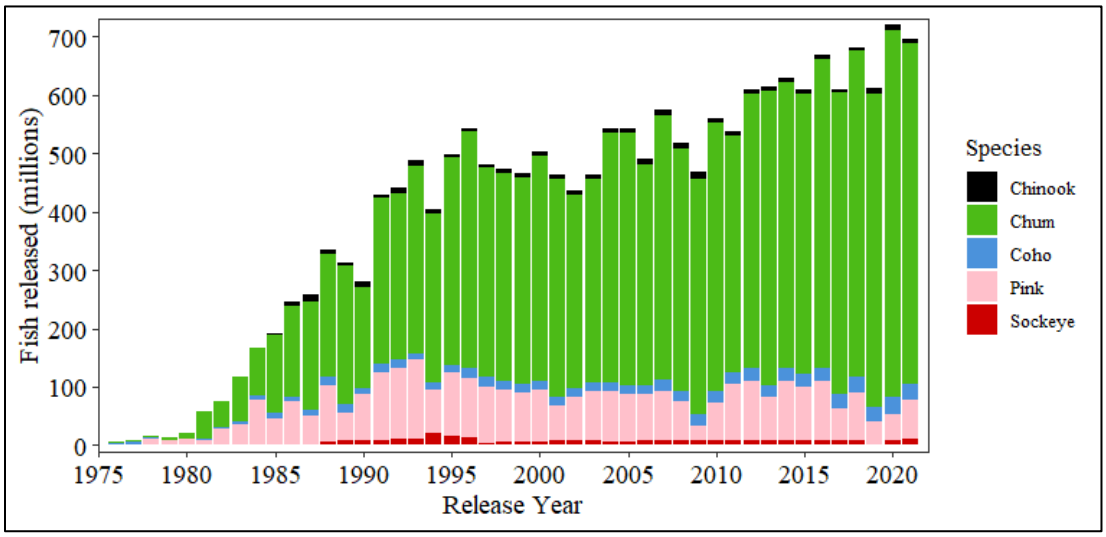

Figure 13.–Total salmon released for Southeast Alaska hatchery programs, 1975–2021.

Permit alterations for Southeast hatcheries

Southern Southeast

In Southern Southeast, 3 PNP Hatchery PARs were submitted for review and were approved SSRAA PARs were approved that allow for optimal rearing location and survival.

Whitman Lake Hatchery (WLH) permitted capacity for Chinook salmon was increased by 200,000 green eggs for release at Port Saint Nicholas, from 2.1 million to 2.3 million Chinook salmon eggs. This permit alteration allowed for relocation of egg incubation and transport of fed fry instead of eggs from WLH to Port Saint Nicholas Hatchery before release. There was no overall change in release numbers.

Deer Mountain Hatchery permitted capacity for rainbow trout eggs increased from 100,000 to 200,000 to account for poor survival of certified all-female triploid eggs shipped from Anchorage to Ketchikan; there was no change in release numbers or stocking locations.

The Klawock River Hatchery permitted coho salmon release at Klawock River was increased for one year, brood year 2019, to allow the release of coho salmon originally intended for Port Asumcion (the Port Asumcion coho program was suspended).

Northern Southeast

In Northern Southeast, no PARs were submitted for review.

Prince William Sound

Most of Alaska's hatchery production is in Prince William Sound, where pink, chum, and sockeye salmon are the primary species produced at hatcheries. Hatcheries operated by Prince William Sound Aquaculture Corporation are Armin F. Koernig, Cannery Creek, Gulkana, Main Bay, and Wally Noerenberg. Solomon Gulch Hatchery is operated by Valdez Fisheries Development Association (Figure 4).

Coghill Lake sockeye salmon stock in Prince William Sound has been a concern for Prince William Sound fishery managers in recent years. Although the total run to Coghill Lake (catch plus escapement) was estimated to be well above escapement needs each year between 2013 and 2016, escapements to the lake were below the lower bound of the escapement goal in 2013, 2015, and 2016. Although no fishery openings occurred to target Coghill Lake sockeye salmon in any of these years, Coghill Lake sockeye salmon were harvested along their migration routes in fisheries targeting primarily hatchery returns. Managers were more restrictive in the amount of fishing area opened along the Coghill Lake sockeye salmon migration corridors in 2017 and 2018 and were successful in achieving the escapement goal. In 2021, the Coghill River escapement was 101,200 sockeye salmon, 69% above the upper end of the sustainable escapement goal range of 20,000–60,000 fish.[16] There are no longer any stocks of concern in Prince William Sound.

Hatchery returns in Prince William Sound

In 2021, Prince William Sound had the highest-ranked hatchery return of 4 planning areas with active hatcheries with a total return of 48.2 million salmon (Table 1).

About 39.8 million hatchery fish were caught in the commercial common property fisheries, worth an estimated exvessel value of $68 million, or 62% of the exvessel value for commercial common property salmon fisheries in the region (Figure 14, Appendices D1 and D2). Pink salmon contributed most to the value of the commercial common property harvest ($49 million), followed by chum ($12.6 million), sockeye ($6.2 million), and coho salmon ($473 thousand). The 39.8 million hatchery-produced salmon harvested in the commercial common property fishery accounted for 63% of the total commercial common property catch in the region (Appendix D1). By species, hatcheries contributed an estimated 63% of the pink, 92% of the chum, 46% of the sockeye, and 16% of the coho salmon harvest in numbers of fish, to commercial common property fisheries.

An additional 5.1 million salmon were harvested for cost recovery. Hatchery harvest including cost recovery accounted for 66% of the commercial harvest and 66% of the total commercial harvest value in Prince William Sound. The total hatchery commercial harvest, including cost recovery, was the 8th largest for Prince William Sound since 1977 (Appendix K3).

[16] *Source*: 2021 Prince William Sound salmon season summary news release. https://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1345740870.pdf (accessed December 30, 2021).

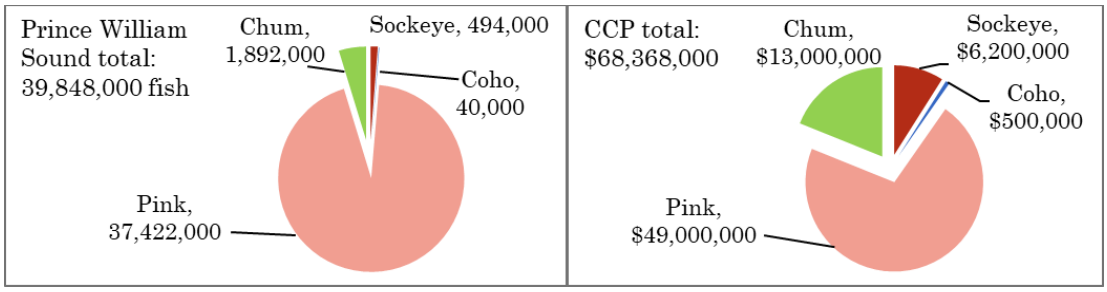

Figure 14.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Prince William Sound, Alaska, 2021.

For the sport, personal use, and subsistence fisheries, sockeye salmon contributed the most hatchery-produced fish (32,100), followed by coho (20,200), pink (10,100), and Chinook salmon (9,900; Table 2).

Details of the salmon returns to the Prince William Sound region, by return type and project for Chinook, sockeye, coho, pink, and chum salmon as reported by operators are in Appendices J1–J5.

Egg takes and releases in Prince William Sound

In 2021, there were 983 million eggs taken in Prince William Sound: 799 million pink, 153 million chum, 25 million sockeye, and 6 million coho salmon (Figure 15, Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

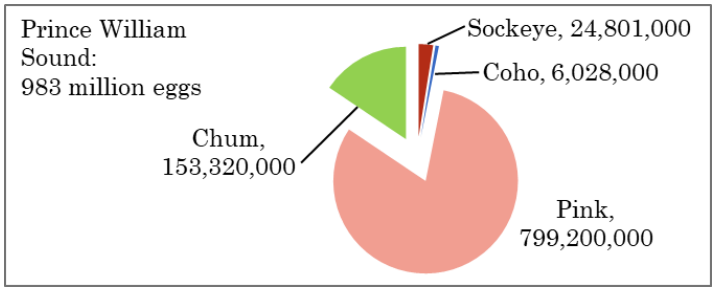

Figure 15.–Eggs collected by species for salmon hatchery programs in Prince William Sound, Alaska, 2021.

In 2021, there were 748 million juvenile salmon released in the Prince William Sound area: 583 million pink, 137 million chum, 5 million coho, and 23 million sockeye salmon (Figure 16, Table 4). The number of releases by area, operator, hatchery, release site, and species are in Appendix H1.

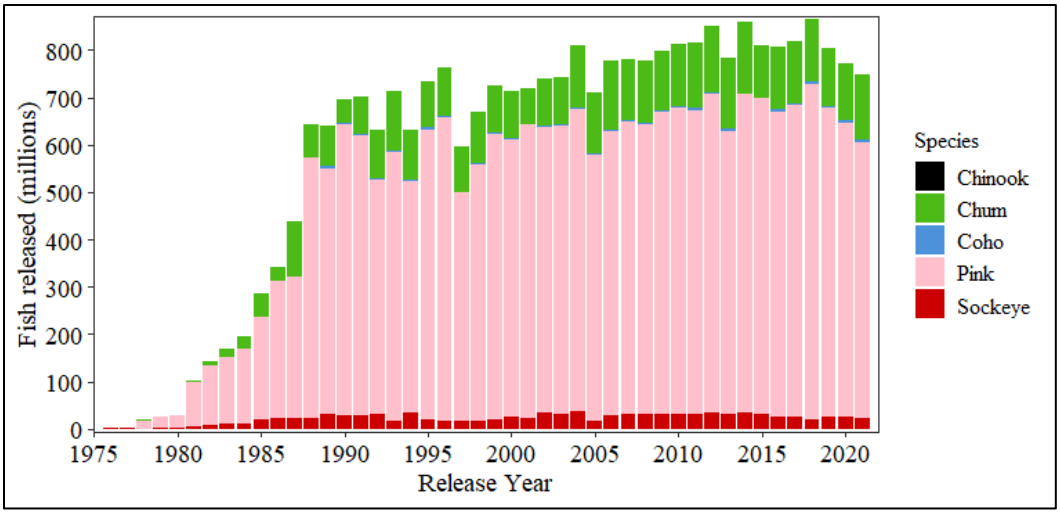

Figure 16.–Total salmon released for Prince William Sound Alaska hatchery programs, 1975–2021.

Permit alterations for Prince William Sound hatcheries

There were no PARs submitted for consideration in 2021 for Prince William Sound area hatcheries.

Cook Inlet

The hatcheries in Cook Inlet operated by Cook Inlet Aquaculture Association are Trail Lakes, Tutka Bay Lagoon, and Port Graham (Figure 4). Cook Inlet hatcheries produce primarily sockeye and pink salmon. Additionally, ADF&G operates the William Jack Hernandez Sport Fish Hatchery in Anchorage.

In Cook Inlet, there are 4 Chinook salmon and 1 chum salmon stocks of concern.[17] The Chinook salmon stocks of concern are the Chuitna River, Theodore River, Alexander Creek, and East Susitna River stocks. The chum salmon stock of concern is the McNeil River stock.

Hatchery returns in Cook Inlet

In 2021, Cook Inlet had the 4th-ranked hatchery return of the 4 planning areas with active hatcheries with a total return of 827 thousand salmon (Table 1).

About 134 thousand hatchery fish were caught in the Cook Inlet commercial common property fisheries, worth an estimated exvessel value of $946,000, or 5% of the exvessel value for commercial common property salmon fisheries in the region (Figure 17, Appendices D1 and D2). Sockeye salmon contributed most to the value of the commercial common property harvest ($908,000), followed by pink salmon ($38,000). The 134 thousand hatchery-produced salmon harvested in the Cook Inlet commercial common property fishery accounted for 4% of the total commercial common property catch in the region (Appendix D1). By species, hatcheries contributed an estimated 6% of the sockeye, and 2% of the pink salmon harvest, in numbers of fish, to commercial common property fisheries.

[17] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed February 11, 2021).

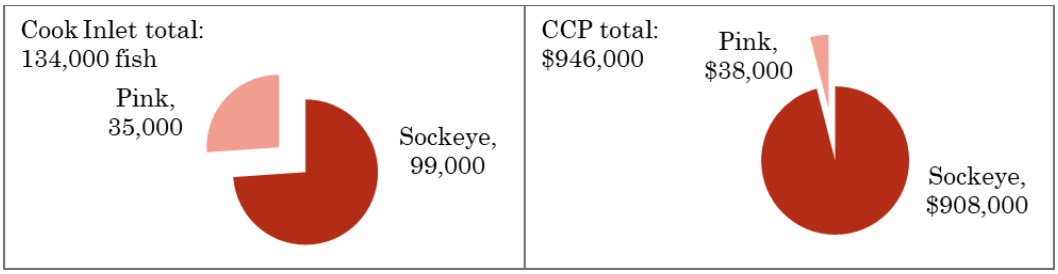

Figure 17.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Cook Inlet, Alaska, 2021.

An additional 408 thousand salmon were harvested for cost recovery. Hatchery harvest including cost recovery accounted for 14% of the commercial harvest and 12% of the total commercial harvest value in Cook Inlet. The total hatchery commercial harvest, including cost recovery, was the 29th largest for Cook Inlet since 1977 (Appendix K3).

For the sport, personal use, and subsistence fisheries, sockeye salmon contributed the most hatchery-produced fish (31,900), followed by coho (7,800), Chinook (3,800), and pink salmon (350; Table 2). Additionally, rainbow trout (16,900) and Arctic char (700) were caught in Southcentral area lakes.

Details of the salmon returns to the Cook Inlet region, by return type and project for Chinook, sockeye, coho, pink, and chum salmon as reported by operators are in Appendices J1–J5.

Egg takes and releases in Cook Inlet

In 2021, there were 85 million salmon eggs taken in Cook Inlet: 68 million pink, 12 million sockeye, 2.9 million Chinook, and 1.8 million coho salmon (Figure 18, Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

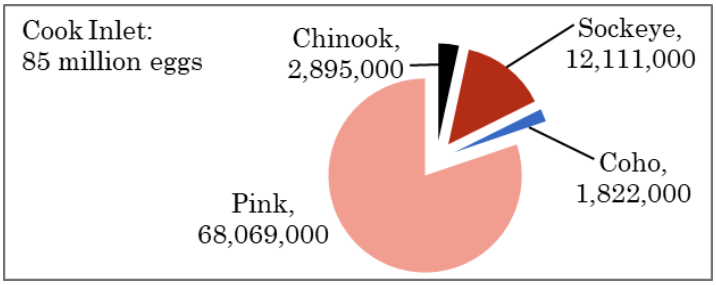

Figure 18.–Eggs collected, by species, for salmon hatchery programs in Cook Inlet, Alaska, 2021.

In 2021, there were 105 million salmon released from Cook Inlet hatcheries: 94 million pink, 6.6 million sockeye, 2.1 million Chinook, and 1.5 million coho salmon (Figure 19, Table 4). Additionally, there were 700 thousand rainbow trout and 55 thousand Arctic char stocked in southcentral lakes. The number of releases by area, operator, hatchery, release site, and species are in Appendix H1.

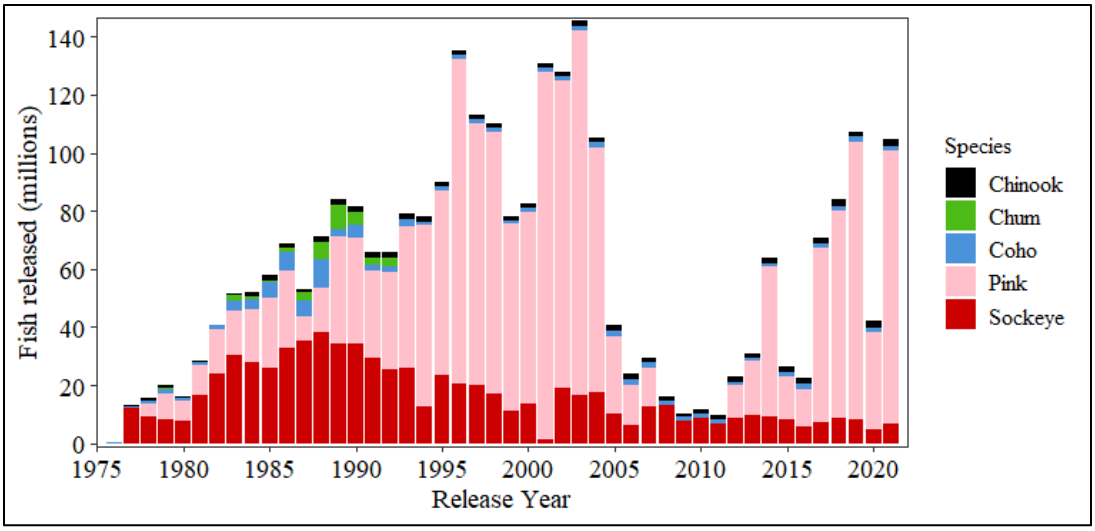

Figure 19.–Total salmon released for Cook Inlet Alaska hatchery programs, 1975–2021.

Permit alterations for Cook Inlet hatcheries

There were no PARs submitted for consideration in 2021 for Cook Inlet area hatcheries.

Kodiak

The hatcheries in Kodiak include Kitoi Bay and Pillar Creek, operated by Kodiak Regional Aquaculture Association.

For several years, pink salmon were not marked because they return to a release site on Afognak Island where there are no substantial wild pink salmon stocks. In recent years, Kodiak Regional Aquaculture Association has been using innovative techniques to increase the number of otolith-marked fish including using thermally stratified lake water, dry marking, and saltwater marking. These techniques are useful for when traditional otolith thermal marking methods are logistically challenging. Starting in 2012, a portion of sockeye were otolith marked using a dry mark technique. Starting in 2013, 100% of chum salmon were otolith marked using thermally stratified lake water and a portion of coho salmon were otolith marked with a dry mark. In 2017 and 2018, a portion of pink salmon were otolith marked using salt water. Starting in 2018, 100% of late-run sockeye salmon were otolith marked with a dry mark; and starting in 2019, 100% of pink salmon were otolith marked using salt water, and 100% of coho were otolith marked with a dry mark technique.

There are 2 stocks of concern: Karluk River and Ayakulik River Chinook salmon.[18]

Hatchery returns in Kodiak

In 2021, Kodiak had the 2nd-ranked hatchery return of the 4 planning areas with active hatcheries with a total return of 11.6 million salmon (Table 1).

About 8.1 million hatchery fish were caught in the commercial common property fisheries, worth an estimated exvessel value of $10.0 million, or 21% of the exvessel value for commercial common property salmon fisheries in the region (Figure 20, Appendices D1 and D2). Pink salmon contributed most to the value of the commercial common property harvest ($8.1 million), followed by sockeye ($1.5 million), coho ($287 thousand), and chum salmon ($157 thousand). The 8.1 million

[18] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed December 30, 2021).

hatchery-produced salmon harvested in the Kodiak commercial common property fishery accounted for 30% of the total commercial common property catch in the region (Appendix D1). By species, hatcheries contributed an estimated 33% of the pink, 30% of the coho, 12% of the chum, and 7% of the sockeye salmon harvest, in numbers of fish, to commercial common property fisheries.

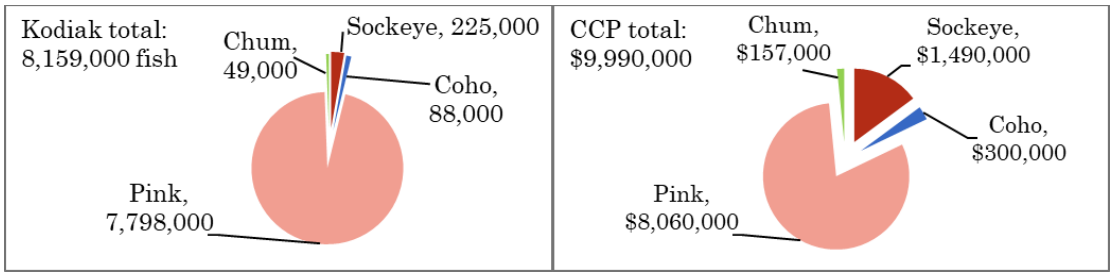

Figure 20.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Kodiak, Alaska, 2021.

An additional 2.9 million salmon were harvested for cost recovery. Hatchery harvest including cost recovery accounted for 37% of the commercial harvest and 26% of the total commercial harvest value in Kodiak. The total hatchery commercial harvest, including cost recovery, was the 5th largest for Kodiak since 1977 (Appendix K3).

Of the sport, personal use, and subsistence fisheries, coho salmon contributed the most hatchery-produced fish (8,500), followed by sockeye (350) and Chinook salmon (9; Table 2).

Details of the salmon returns to Kodiak, by return type and project for Chinook, sockeye, coho, pink, and chum salmon as reported by operators are in Appendices J1–J5.

Egg takes and releases in Kodiak

In 2021, there were 258 million salmon eggs taken in Kodiak: 216 million pink, 36 million chum, 4.9 million sockeye, 0.8 million coho, and 62 thousand Chinook salmon (Figure 21; Table 3). The number of eggs taken by area, operator, location, and species are in Appendix G1.

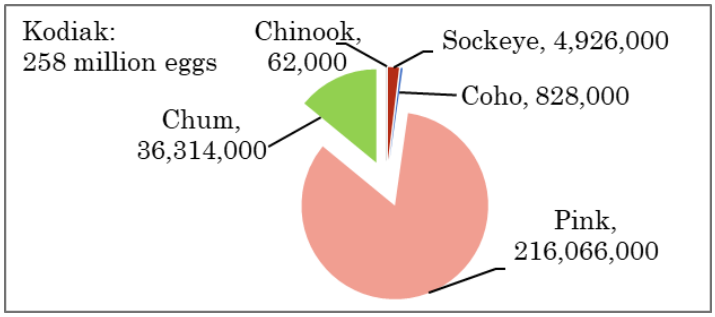

Figure 21.–Eggs collected, by species, for salmon hatchery programs in Kodiak, Alaska, 2021.

In 2021, there were 162 million salmon released in Kodiak: 128 million pink, 30 million chum, 2.5 million sockeye, 1.9 million coho, and 27 thousand Chinook salmon (Figure 22, Table 4). See Appendix H1 for releases by species and release site.

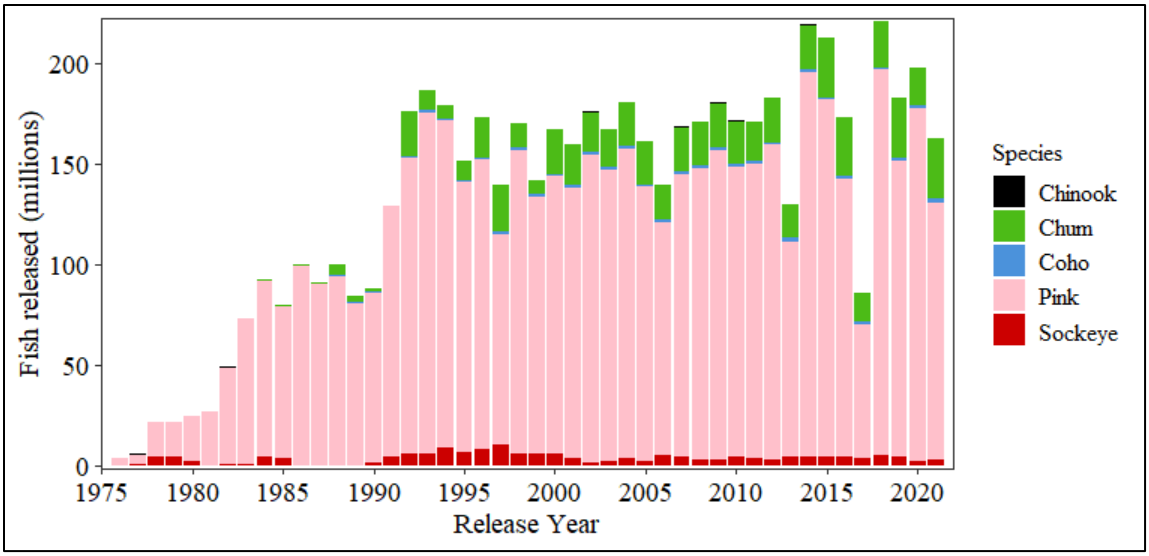

Figure 22.–Total salmon released for Kodiak Alaska hatchery programs, 1975–2021.

Permit alterations for Kodiak hatcheries

There were no permit alterations submitted for consideration in 2021 for Kodiak hatcheries.

Interior

There is one hatchery in Interior Alaska, Ruth Burnett Sport Fish Hatchery operated by ADF&G.

Hatchery returns in Interior

In 2021, a combined total of about 21,480 rainbow trout, Arctic char, grayling, Chinook salmon, and coho salmon were caught in interior Alaska lakes (Table 2).

Egg takes and releases in Interior

In 2021, there were 575,000 rainbow trout, 30,000 Arctic char, 90,000 coho, 53,000 lake trout, and 50,000 Chinook salmon eggs taken in interior Alaska. The number of eggs by area, operator, location, and species are in Appendix G1.

In 2021, there were 238,000 rainbow trout, 79,000 coho salmon, 47,000 Arctic char, and 44,000 Chinook salmon stocked in interior Alaska lakes (Table 3). The number of releases by area, operator, hatchery, release site, and species are in Appendix H1.

Permit alterations for Interior hatcheries

There are no PNP permits issued in the interior area, so there were no PARs submitted for consideration.

ACKNOWLEDGEMENTS

Thank you to the many hatchery operator staff members at the Alaska Department of Fish and Game, Armstrong-Keta Inc., Cook Inlet Aquaculture Association, Douglas Island Pink and Chum Inc., Kodiak Regional Aquaculture Association, Metlakatla Indian Community, National Marine Fisheries Service, Northern Southeast Regional Aquaculture Association, Prince William Sound Aquaculture Association, Southern Southeast Regional Aquaculture Association, Sitka Sound

Science Center, and Valdez Fisheries Development Association who complete annual reports that are the basis for this document.

REFERENCES CITED

ADF&G (Alaska Department of Fish and Game). 1989. Bristol Bay comprehensive salmon plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, CFSP.19, Juneau. http://www.adfg.alaska.gov/FedAidpdfs/CFSP.19.pdf

ADF&G (Alaska Department of Fish and Game). 1993a. Alaska Peninsula/Aleutian Islands/Area M Regional comprehensive salmon plan 1993–2004. Alaska Department of Fish and Game, Division of Commercial Fisheries, CFSP.18, Juneau. http://www.adfg.alaska.gov/FedAidpdfs/CFSP.18.pdf

ADF&G (Alaska Department of Fish and Game). 1993b. Chignik regional comprehensive salmon plan 1992–2001. Alaska Department of Fish and Game, Division of Commercial Fisheries, CFSP.20, Juneau. http://www.adfg.alaska.gov/FedAidpdfs/CFSP.20.pdf

ADF&G (Alaska Department of Fish and Game). 1994. Prince William Sound—Copper River phase 3 comprehensive salmon plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, CFSP.23, Juneau. http://www.adfg.alaska.gov/FedAidpdfs/CFSP.23.pdf

Baer, R. T., and S. G. Honnold. 2002. A straying assessment of an introduced sockeye salmon stock on northern Afognak Island as determined by two methods of stock identification. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K02-56, Kodiak. http://www.adfg.alaska.gov/FedAidpdfs/RIR.4K.2002.56

Bidlack, A., and E. M. Valentine. 2009. Assessment of Gulkana Hatchery sockeye straying into Upper Copper River tributaries. Ecotrust Copper River Program. Ecotrust Copper River Program. Cordova, Alaska.

Brenner, R. E., S. D. Moffitt, and W. S. Grant. 2012. Straying of hatchery salmon in Prince William Sound, Alaska. Environmental Biology of Fishes:1–17. http://dx.doi.org/10.1007/s10641-012-9975-7

CIRPT (Cook Inlet Regional Planning Team). 2007. Cook Inlet regional salmon enhancement planning: Phase II Plan 2006–2025, [Anchorage].

Davis, B., B. Allee, D. Amend, B. Bachen, B. Davidson, T. Gharrett, S. Marshall, and A. Wertheimer. 1985. Genetic Policy. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development, Juneau. http://www.adfg.alaska.gov/FedAidPDFs/FRED.GeneticsPolicy.1985.pdf

Dittman, A. H., and T. P. Quinn. 1996. Homing in Pacific salmon: mechanisms and ecological basis. Journal of Experimental Biology 199(1):83–91.

Duckett, K., D. Otte, J. Peckham, G. Pryor, A. McGregor, R. Holmes, S. Leask, D. Aho, G. Whistler, K. McDougal, A. Andersen, B. Pfundt, and E. Prestegard. 2010. Comprehensive salmon enhancement plan for Southeast Alaska: Phase III. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J10-03, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/RIR.5J.2010.03.pdf

Evenson, D. F., C. Habicht, M. Stopha, A. R. Munro, T. R. Meyers, and W. D. Templin. 2018. Salmon Hatcheries in Alaska–A Review of the Implementation of Plans, Permits, and Policies Designed to Provide Protection for Wild Stocks. Alaska Department of Fish and Game, Special Publication No. 18-12, Anchorage http://www.adfg.alaska.gov/FedAidPDFs/SP18-12.pdf

Habicht, C., T. M. Tobias, G. Fandrei, N. Webber, B. Lewis, and W. S. Grant. 2013. Homing of sockeye salmon within Hidden Lake, Alaska, can be used to achieve hatchery management goals. North American Journal of Fisheries Management 33(4):777–782. https://doi.org/10.1080/02755947.2013.808290

Hagen, P., K. Munk, B. W. Van Alen, and B. White. 1995. Thermal mark technology for inseason fisheries management: a case study. Alaska Fishery Research Bulletin 2(2):143–155.

Holder, R. R., and D. Senecal-Albrecht. 1998. Yukon River comprehensive salmon plan for Alaska. Alaska Department of Fish and Game, Division of Commercial Fisheries, CFSP.26, Juneau. http://www.adfg.alaska.gov/FedAidpdfs/CFSP.26.pdf

REFERENCES CITED (Continued)

Hollowell, G., E. O. Otis, and E. Ford. 2017. 2016 Lower Cook Inlet area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 17-26, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMR17-26.pdf

Jefferts, K. B. 1963. A coded wire tag identification system for macroorganisms. Nature 198:460–462.

KRPT (Kodiak Regional Planning Team). 2011. Kodiak comprehensive salmon plan: Phase III, 2010–2030. Kodiak.

Meyers, T. R. 2010. Regulation changes, policies and guidelines for Alaska fish and shellfish health and disease control. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J10-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2010.01.pdf

NSBSRPT (Norton Sound-Bering Strait Regional Planning Team). 2015. Norton Sound-Bering Strait Regional Comprehensitve Salmon Plan: Phase II, Nome.

Piston, A. W., and S. C. Heinl. 2012a. Hatchery chum salmon straying in Southeast Alaska, 2011. Alaska Department of Fish and Game, Fishery Data Series No. 12-45, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FDS12-45

Piston, A. W., and S. C. Heinl. 2012b. Hatchery chum salmon straying studies in Southeast Alaska, 2008–2010. Alaska Department of Fish and Game, Fishery Manuscript Series No. 12-01, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FMS12-01

Stopha, M. 2012. An evaluation of the Trail Lakes salmon hatchery for consistency with statewide policies and prescribed management practice. Alaska Department of Fish and Game, Regional Information Report No. 5J12-21, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2012.21.pdf

Volk, E. C., S. L. Schroder, and J. J. Grimm. 1999. Otolith thermal marking. Fisheries Research 43:205–219.

Wilson, L. 2021. Alaska salmon fisheries enhancement annual report 2020. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J21-01, Juneau. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2021.01.pdf

YRPT (Yakutat Regional Planning Team). 2014. Yakutat Regional Comprehensive Salmon Plan: Phase II (YCSP), Kodiak.

APPENDIX A: ALASKA SALMON FISHERIES ENHANCEMENT PROGRAM TIMELINE

Appendix A1.–Alaska salmon fisheries enhancement program timeline.

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
1934	Federal research station Little Port Walter constructed			1
1950	Federal hatchery at Auke Creek constructed			2
1953	1 territorial hatchery constructed at Kitoi Bay	1		
1954	1 territorial hatchery constructed at Deer Mountain	2		
1958	1 territorial hatchery constructed at Fort Richardson	3		
1959	Statehood. Alaska becomes the 49th US state.			
1965	1 state hatchery constructed at Fire Lake	4		
1969	1 state hatchery constructed at Crystal Lake	5		
1971	Fisheries Rehabilitation, Enhancement and Development Division created by Legislature			
1973	2 state hatcheries constructed: Crooked Creek and Gulkana	7		
	State enhancement projects at Starrigavan and Halibut Cove started			
	Limited Entry law enacted, creating fishery limitations for the purpose of conservation.			
1974	2 state hatcheries constructed: Beaver Falls and East Creek	9		
	Legislature authorizes permitting for PNP corporations to operate hatcheries.			
1975	4 PNP permits issued: Perry Island (#1), Port San Juan (renamed Armin F. Koernig Hatchery in 1985; #2), Sheldon Jackson (#3), and Sandy Bay (#4)		4	
	2 state hatcheries constructed: Big Lake and Tutka Bay Lagoon	11		
1976	AS 16.10.375 passed, designating regions for regional planning teams and enhancing salmon			
	1 state hatchery constructed at Elmendorf	12		
	2 PNP permits issued: Burnett Inlet (#5) and Kowee Creek (#6)		6	
1977	1 PNP permit issued to Gunnuk Creek (#7)		7	
	2 state hatcheries constructed: Klawock River and Russell Creek	14		
	State enhancement project at Karluk Lake started			
1978	1 PNP permit issued to Whitman Lake (#8)		8	
	2 state hatcheries constructed: Cannery Creek and Hidden Falls	16		
1979	3 PNP permits issued: Salmon Creek (#9), Meyers Chuck (#10), Sheep Creek (#11)		11	
	1 state hatchery constructed: Snettisham	17		
	1 state hatchery closed (Fire Lake) and Starrigavan project ended	16		
1980	1 PNP permit issued to Burro Creek (#12)		12	
	2 state hatcheries constructed: Clear and Main Bay; and	18		
	1 hatchery at Tamgas Creek constructed (Metlakatla Indian Community/Bureau of Indian Affairs)			3

-continued-

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
1981	1 state hatchery closed: East Creek	17	12	3
	2 state hatcheries constructed: Sikusuilaq and Trail Lakes	19		
	1 PNP hatchery permit rescinded and new permit issued to new operator at Salmon Creek (#9, new #14)		12	
	3 PNP permits issued: Port Armstrong (#13), Solomon Gulch (#15), Medvejie Creek (#16)		15	
1982	2 PNP permits issued: Eklutna (#17) and Favorite Bay (#18)		17	
1983	3 PNP permits issued: Neets Bay (#19), Esther Island (renamed Wally Noerenberg Hatchery in 1990; #20), Crittenden Creek (#22)		20	
	1 state hatchery completed: Broodstock Development Center	20		
1984	1 PNP permit issued to Santa Anna (#21)		21	
1985	1 PNP permit issued to Port Camden (#23)		22	
1986	1 PNP permit issued to Beaver Falls (#24) jointly operated ADF&G/SSRAA	19	23	
1987	1 PNP permit issued to Gastineau (renamed Macaulay Salmon Hatchery in 2000; #25)		24	
1988	4 state hatcheries contracted to private sector (Cannery Creek, Trail Lakes, Hidden Falls, Kitoi Bay)	15		
	4 PNP permits issued: Cannery Creek (#26), Trail Lakes (#27), Hidden Falls (#28), Kitoi Bay (#29)		28	
	1 state hatchery constructed (Pillar Creek)	16		
	1 PNP permit rescinded: Sandy Bay PNP (#4)		27	
	1 PNP permit rescinded: Salmon Creek (#14)		26	
1990	CSHB432 becomes law (AS 16.40.210) prohibiting finfish farming in Alaska			
	1 PNP permit issued to Bell Island (#30)		27	
1991	5 state hatcheries contracted to private sector: Beaver Falls (#24), already operated by PNP; Main Bay, Tutka, Pillar Creek, Gulkana	12	31	
	Portions of 6 state hatcheries paid for by private or federal funds			
1992	1 state hatchery closed: Russell Creek	11		
	2 PNP permits issued: Port Graham (#33), Haines projects (#34)		33	
	1 PNP permit revoked: Meyers Chuck (#10)		32	
1992	3 state hatcheries transferred from Commercial Fisheries Management and Development to Sport Fish Division (Broodstock Development Center, Elmendorf, and Ft. Richardson)	11	32	3

-continued-

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
1993	Fisheries Rehabilitation, Enhancement and Development Division merged with the Commercial Fisheries Division to form the Commercial Fisheries Management and Development Division			
	2 state hatcheries contracted to private sector: Crooked Creek and Klawock River	9	34	
	1 state hatchery closed: Big Lake	8		
1994	1 state hatchery conveyed: Deer Mountain	7		
	3 PNP permits issued: Tutka Bay Lagoon (#32), Crooked Creek (#35), Klawock River (#36), Deer Mountain (#37)		35	
	Ft. Richardson Hatchery merged with Broodstock Development Center	6		
1995	1 PNP hatchery permit rescinded and new permit issued to new operator at Klawock River (#36, new #38)		35	
	1 state hatchery transferred from Division of Commercial Fisheries Management & Development to Division of Sport Fish: Crystal Lake			
	1 state hatchery closed: Sikusuilaq	5		
1996	1 state hatchery contracted to private sector: Snettisham (#39)	4	36	
	1 state hatchery transferred from Commercial Fisheries Management and Development Division to Sport Fish Division: Clear			
	3 PNP permits revoked: Crittenden Creek (#22), Santa Anna (#21), and Favorite Bay (#18)		33	
1997	1 state hatchery closed: Clear	3		
	2 state contracted (PNP) hatcheries closed: Beaver Falls (#24), Crooked Creek (#35)		31	
	1 PNP hatchery rescinded and new permit issued to new operator at Burnett Inlet (#5, new #40)		31	
1998	1 PNP hatchery permit issued: Pillar Creek (#41), already operating under contract			
2000	1 state hatchery contracted to private sector: Crystal Lake Hatchery (PNP permit not issued)	2	32	
	1 PNP hatchery permit rescinded: Port Camden (# 23)		31	
	1 PNP hatchery permit issued: Gulkana (#42), already operating under contract			
2001	1 PNP hatchery permit rescinded: Kowee Creek (#6)		30	
	1 PNP permit issued: Main Bay (#31)			

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Appendix A1.–Page 4 of 4.

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
2004	1 PNP hatchery permit issued: Port Saint Nicholas (#43)		31	
2007	1 PNP hatchery permit issued: Sawmill Creek (#44)		32	
2008	1 PNP hatchery permit rescinded: Burro Creek (#12)		31	
2011	1 PNP hatchery permit rescinded and new permit issued to new operator at Sheldon Jackson (#3, new #45)		31	
	1 state hatchery closed (Elmendorf), 1 state hatchery opened (William Jack Hernandez)	2		
2012	1 state hatchery opened: Ruth Burnett	3		
	1 PNP hatchery permit rescinded (#33) and a new permit issued to new operator at Port Graham (#46)		31	
2014	1 state hatchery closed: Fort Richardson	2	31	
2015	1 PNP Hatchery, Sheep Creek in Juneau, permit was voluntarily rescinded		30	
2016	1 PNP hatchery permit rescinded (#38) and a new permit issued to new operator at Klawock River (#47)		30	
	1 PNP hatchery permit rescinded (#43) and a new permit issued to new operator at Port St. Nicholas (#48)			
2017	1 PNP hatchery permit rescinded (#37) and a new permit issued to new operator at Deer Mountain (#49)	2	30	3
2018	1 PNP hatchery permit rescinded (#7) and a new permit issued to new operator at Gunnuk Creek Hatchery (#50)	2	30	
	1 PNP hatchery permit issued: Little Port Walter Hatchery (#51)	2	31	3

Note: Two private nonprofit (PNP) hatchery facilities are permitted but currently inactive: Perry Island Hatchery (Prince William Sound) and Eklutna Hatchery (Eklutna).

Note: There are 11 state-owned hatcheries that are contracted to PNP operators.

Note: Of the 3 federal facilities, 2 are hatchery research: Little Port Walter and Auke Creek Hatchery (inactive), and one hatchery facility at Metlakatla is a tribal hatchery.

APPENDIX B: PERMITTED CAPACITY OF ALASKA PRIVATE NONPROFIT HATCHERIES, 2021

Appendix B1.–Permitted capacity of Alaska private nonprofit hatcheries, in millions of eggs, 2021.

Region/Area	Corp.	Hatchery	Chinook	Sockeye	Coho	Pink	Chum	Other	Total
Southeast									
Southern Southeast	SSRAA	Burnett Inlet	0	2.70	4.50	0	97.20	0	104.40
		Crystal Lake[a]	4.00	0	0.25	0		0	4.25
		Neets Bay	2.00	0	5.00	0	102.70	0	109.70
		Whitman Lake	2.30	0	7.50	0	45.10	0	54.70
		Deer Mountain	0.60	0	0	0	0	0.20	0.80
		Klawock River[b]	0	1.00	5.50	0	0	0	6.6
		Port Saint Nicholas	0.77	0	0	0	8.00	0	8.77
Southern Southeast total			9.67	3.70	22.75	0	253.00	0.20	289.32
Northern Southeast	NSRAA	Gunnuk Creek	0	0	0.50	20.00	65.00	0	85.50
		Haines projects	0	2.00	0	0	4.80	0	6.80
		Hidden Falls	3.80	0	7.70	0	101.00	0	112.50
		Medvejie Creek	5.20	0	3.30	0.30	77.00	0	85.80
		Sawmill Creek	2	0	4.33	0	30.00	0	36.33
	AKI	Port Armstrong[c]	2.00	0	5.00	105.00	60.00	0	172.00
		Little Port Walter[d]	0.60	0	0	0	0	0	0.60
	DIPAC	Macaulay	1.25	0	1.50	0	135.00	0.05	137.80
		Snettisham	0	33.50	0	0	0	0	33.50
	SSSC	Sheldon Jackson	0	0	0.25	3.00	12.00	0	15.25
Northern Southeast total			14.85	35.50	22.58	128.30	484.80	0.05	686.08
Southeast total			24.52	39.20	45.33	128.30	737.80	0.25	975.40
Southcentral									
Prince William Sound	PWSAC	Armin F. Koernig	0	0	0	190.00	34.00	0	224.00
		Cannery Creek	0	0	0	187.00	0	0	187.00
		Gulkana	0	36.75	0	0	0	0	36.75
		Main Bay	0	12.40	0	0	0	0	12.40
		Wally Noerenberg	4.00	0	4.00	148.00	131.00	0	287.00
	VFDA	Solomon Gulch	0.30	0	2.00	270.00	0	0	272.30
Prince William Sound total			4.30	49.15	6.00	795.00	165.00	0	1,019.45
Cook Inlet									
	CIAA	Eklutna[e]	0	18.00	0.16	0	0	0	18.16
		Trail Lakes	4.00	30.00	6.00	0	0	0	40.00
		Tutka Bay	0	0.66	0	125.00	0	0	125.66
		Port Graham	0	0	0	125.00	0	0	125.00
Cook Inlet total			4.00	48.66	6.16	250.00	0	0	308.82
Southcentral total			8.30	97.81	12.16	1,045.00	165.00	0	1,328.27
Kodiak/Westward									
Kodiak	KRAA	Kitoi Bay	0	0.85	2.30	215.00	36.00	0	254.15
		Pillar Creek	0.45	20.00	0.50	0	0	0.20	21.15
Kodiak/Westward total			0.45	20.85	2.80	215.00	36.00	0.20	275.30
Statewide total			33.27	157.86	60.29	1,388.30	938.80	0.45	2,578.97

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Note: Perry Island Hatchery (Prince William Sound) is permitted but currently has zero capacity.

Note: SSRAA = Southern Southeast Regional Aquaculture Association; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Crystal Lake Hatchery is a state-owned facility under contract to SSRAA; it does not have a PNP permit or permitted capacity and operates under the Statewide Sport Fish Stocking Plan.

[b] An additional 400,000 brood year 2019 smolt are permitted for release in 2021.

[c] Port Armstrong can take up to 5.0 million Chinook and coho salmon eggs in combination, not to exceed 2.0 million Chinook salmon eggs.

[d] Little Port Walter operated by AKI us under a use agreement with NMFS. Little Port Walter operated by NMFS is under Aquatic Resource Permits and not a PNP permit and does not have a permitted capacity.

[e] Inactive.

APPENDIX C: ACTIVE ALASKA HATCHERIES AND CONTACT INFORMATION

Appendix C1.–Active Alaska hatcheries, 2021.

Type[a]	Region	Agency	Corporate name	Hatchery	PNP Permit #	PNP permit issued	Species permitted	Website
	Southern Southeast							
R		SSRAA	Southern Southeast Regional Aquaculture Assoc.	Burnett Inlet	40	09/30/1997	sockeye, coho, chum	http://ssraa.org
				Crystal Lake[b]	NA		Chinook, coho	
				Neets Bay	19	06/17/1983	chum, coho, Chinook	
				Whitman Lake	8	03/09/1978	chum, coho, Chinook	
				Klawock River[b]	47	07/01/2016	coho, sockeye	
				Port Saint Nicholas	43	06/25/2004	Chinook, chum	
				Deer Mountain	49	08/17/2017	Chinook	
F		MIC	Tamgas Creek Hatchery	Tamgas Creek[c]	NA		chum, coho, Chinook, sockeye	
	Northern Southeast							
R		NSRAA	Northern Southeast Regional Aquaculture Assoc.	Hidden Falls[b]	28	06/22/1988	chum, Chinook, coho	https://www.nsraa.org/
				Medvejie Creek	16	08/17/1981	chum, coho, Chinook, pink	
				Sawmill Creek	44	03/11/2007	coho, chum	
				Gunnuk Creek	50	04/11/2018	coho, pink, chum	
N		AKI	Armstrong-Keta, Inc.	Port Armstrong	13	02/23/1981	pink, chum, Chinook, coho	https://www.armstrong-keta.org/
N		DIPAC	Douglas Island Pink and Chum, Inc.	Macaulay	25	06/03/1987	chum, coho, Chinook	http://www.dipac.net/
				Snettisham[b]	39	07/15/1996	sockeye	
N		SSSC	Sitka Sound Science Center	Sheldon Jackson	45	04/13/2011	pink, chum, coho	https://sitkascience.org/
F		NMFS	National Marine Fisheries Service	Little Port Walter[d]	NA		Chinook	https://www.fisheries.noaa.gov/about/auke-bay-laboratories
	Prince William Sound							
R		PWSAC	Prince William Sound Aquaculture Assoc.	AF Koernig	2	09/29/1975	pink, chum	https://pwsac.com
				Cannery Creek[b]	26	06/22/1988	pink	
				Gulkana[b]	42	07/05/2000	sockeye	
				Main Bay[b]	31	04/17/2001	sockeye	
				W Noerenberg	20	06/17/1983	pink, chum, Chinook, coho	
N		VFDA	Valdez Fisheries Development Association, Inc.	Solomon Gulch	15	06/26/1981	pink, coho, Chinook	https://www.valdezfisheries.org

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Type[a]	Region	Agency	Corporate name	Hatchery	PNP Permit #	PNP permit issued	Species permitted	Website
	Cook Inlet							
R		CIAA	Cook Inlet Aquaculture Association	Trail Lakes[b]	27	06/22/1988	sockeye, coho, Chinook	https://www.ciaanet.org/
				Tutka Bay Lagoon[b]	32	01/03/1994	pink, sockeye	
				Port Graham	46	01/14/2014	pink	
S		ADF&G	Alaska Department of Fish and Game	WJ Hernandez[e]	NA		char, grayling, rainbow trout, Chinook, coho	http://www.adfg.alaska.gov/
	Kodiak							
R		KRAA	Kodiak Regional Aquaculture Association	Kitoi Bay[b]	29	07/05/1988	pink, chum, coho, sockeye	
				Pillar Creek[b]	41	05/01/1998	sockeye, coho, Chinook, rainbow trout	https://kraa.org/
	Arctic-Yukon-Kuskokwim							
S		ADF&G	Alaska Department of Fish and Game	Ruth Burnett[e]	NA		char, grayling, rainbow trout, Chinook, coho	https://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.main

Note: MIC = Metlakatla Indian Community.

[a] R = Regional Aquaculture Association PNP hatchery, N = Nonregional Association PNP hatchery, F = Federal/Bureau of Indian Affairs hatchery, S = State hatchery.

[b] State-owned facility contracted to the private sector to operate.

[c] Federally recognized tribal reservation hatchery.

[d] Hatchery research facility.

[e] ADF&G Sport Fish Division hatchery.

Appendix C2.–Actively operated Alaska hatcheries contact information, 2021.

Type[a]	Region	Agency	Address	Office phone	Hatchery	Hatchery Manager	Director	Email
	Southern Southeast							
R		SSRAA	14 Borch St, Ketchikan, AK 99901	(907) 225-9605			Susan Doherty	sdoherty@ssraa.org
				(907) 254-1242	Burnett Inlet	Charlie Curritt		burnettinlet@ssraa.org
				(907) 650-7181	Crystal Lake[b]	Loren Thompson		crystallake@ssraa.org
				(907) 225-8790	Neets Bay	Justin Rose		neetsbay@ssraa.org
				(907) 225-2635	Whitman Lake	Cody Pederson		whitman@ssraa.org
				(907) 225-9606	Deer Mountain	Matt Allen		deermountain@ssraa.org
				(907) 846-5211	Neck Lake Project	Ron Parsley, Jr.		necklake@ssraa.org
				(907) 755-2231	Klawock River[b]	Jeff Lundberg		jlundberg@ssraa.org
				(907) 755-2231	Port Saint Nicholas	Jeff Lundberg		jlundberg@ssraa.org
F		MIC	PO Box 8, Metlakatla, AK 99929	(907) 886-3150	Tamgas Creek[c]	Steve Leask		tchsteve@hughes.net
	Northern Southeast							
R		NSRAA	1308 Sawmill Cr. Rd., Sitka, AK 99835	(907) 747-6850			Scott Wagner	scott_wagner@nsraa.org
				(907) 747-6850	Gunnuk Creek	Ryan Schuman		ryan_schuman@nsraa.net
				(907) 725-0995	Hidden Falls[b]	Jon Pearce		jon_pearce@nsraa.org
				(907) 738-1438	Medvejie Creek	Cain Depriest		cain_depriest@nsraa.org
				(907) 747-5863	Sawmill Creek	Rebecca Olson		rebecca_olson@nsraa.org
N		AKI	PO Box 1075, Sitka, AK 99835	(907) 586-3443			Bryanna Graham	aki@ak.net
				(907) 568-2228	Port Armstrong	Ben Contag		portarmstronghatchery@gmail.com
N		DIPAC	2697 Channel Dr., Juneau, AK 99801	(907) 463-5114			Katie Harms	katie_harms@dipac.net
				(907) 463-5114	Macaulay Salmon	Chris Kelley		chris_kelley@dipac.net
				(907) 586-3830	Snettisham[b]	Kevin Steck		kevin_steck@dipac.net
N		SSSC	834 Lincoln St., Sitka, AK 99835	(907) 747-8878			Lisa Busch	lbusch@sitkascience.org
					Sheldon Jackson	Bill Coltharp		wcoltharp@sitkascience.org
F		NMFS	17109 Lena Pt Loop Rd., Juneau, AK 99801	(907) 789-6033	Little Port Walter[d]	Charlie Waters		Charlie.waters@noaa.gov

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Type[a]	Region	Agency	Address	Office phone	Hatchery	Hatchery Manager	Director	Email
	Prince William Sound							
R		PWSAC	Cordova, AK 99574	(907) 424-7511			Goeff Clark	geoff.clark@pwsac.net
					A F Koernig	Craig Parry		afk.pwsac@ak.net
					Cannery Creek[b]	Dan Orlando		cch.pwsac@ak.net
					Gulkana[b]	Steve Hilton		gkh.cvinternet@ak.net
					Main Bay[b]	Jason Myhrer		mbh.pwsac@ak.net
					W Noerenberg	Mike Anderson		wnh.pwsac@ak.net
N		VFDA	PO Box 125, Valdez, AK 99686	(907) 835-4874			Mike Wells	mike.wells@valdezfisheries.com
				(907) 835-1329	Solomon Gulch	Rob Unger		rob.unger@valdezfisheries.com
	Cook Inlet							
R		CIAA	40610 Kalifornsky Beach Rd., Kenai, AK 99611	(907) 283-5761			Dean Day	dday@ciaanet.org
				(907) 288-3688	Trail Lakes[b]	Brett Jenkins		bjenkins@ciaanet.org
				(866) 309-6301	Tutka Bay Lagoon[b]	Josh Sawlsville		jsawlsville@ciaanet.org
				(907) 284-2233	Port Graham	Alex Lane		alane@ciaanet.org
	Kodiak							
R		KRAA	104 Center St., Suite 205, Kodiak, AK 99615	(907) 486-6555			Tina Fairbanks	kraa.fairbanks@gci.net
								kraa@gci.net
				(877) 628-4449	Kitoi Bay[b]	Mike Wachter		kitoi@gci.net
				(907) 486-4730	Pillar Creek[b]	Alan Seale		pch@gci.net
S		ADF&G, Division of Sport Fish					Jeff Milton	jeffery.milton@alaska.gov
			941 N. Reeve Blvd., Anchorage, AK 99501	(907) 269-0296	WJ Hernandez	Gary George		gary.george@alaska.gov
			1150 Wilbur St., Fairbanks, AK 99701	(907) 451-2661	Ruth Burnett	Travis Hyer		travis.hyer@alaska.gov

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] R=Regional Aquaculture Association PNP hatchery, N=Nonregional Association PNP hatchery, F=Federal/Bureau of Indian Affairs hatchery, S=State hatchery.

[b] State owned facility contracted to the private sector to operate.

[c] Federally recognized tribal reservation hatchery.

[d] Hatchery research facility.

APPENDIX D: COMMERCIAL SALMON HARVEST AND VALUE, 2021, INCLUDING HATCHERY CONTRIBUTION AND COST RECOVERY

Appendix D1.–Alaska (preliminary) commercial harvest and Alaska hatchery-produced harvest by region, 2021.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Total commercial harvest[a]	209,467	1,101,963	1,530,902	45,558,201	6,715,809	55,116,342
	Hatchery commercial cost-recovery harvest	13,976	13,902	117,869	275,329	1,894,399	2,698,607
	Common property commercial harvest	195,000	1,088,000	1,413,000	45,283,000	4,821,000	52,801,000
	Hatchery-produced fish in comm. common prop. harvest	30,000	25,000	374,000	201,000	4,248,000	4,877,000
	% of hatchery-produced fish in comm. common prop. harv.	15%	2%	26%	0.4%	88%	9%
	Hatchery-produced fish in total commercial harvest	44,000	39,000	492,000	619,000	6,143,000	7,193,000
	% of hatchery-produced fish in total commercial harvest	21%	3%	32%	1%	92%	13%
Prince William Sound	Total commercial harvest	9,000	1,342,000	257,000	64,066,000	2,434,000	68,107,000
	Hatchery commercial cost-recovery harvest	0	256,000	0	4,501,000	367,000	5,124,000
	Common property commercial harvest	9,000	1,086,000	257,000	59,565,000	2,067,000	62,984,000
	Hatchery-produced fish in comm. common prop. harvest	0	494,000	40,000	37,422,000	1,892,000	39,848,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	46%	16%	63%	92%	63%
	Hatchery-produced fish in total commercial harvest	0	750,000	40,000	41,922,000	2,259,000	44,972,000
	% of hatchery-produced fish in total commercial harvest	0%	56%	16%	65%	93%	66%
Cook Inlet	Total commercial harvest	4,000	1,670,000	148,000	2,052,000	97,000	3,972,000
	Hatchery commercial cost-recovery harvest	1	104,000	17	304,000	22	408,000
	Common property commercial harvest	4,000	1,566,000	148,000	1,748,000	97,000	3,563,000
	Hatchery-produced fish in comm. common prop. harvest	0	99,000	0	35,000	0	134,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	6%	0%	2%	0%	4%
	Hatchery-produced fish in total commercial harvest	1	203,000	17	339,000	22	542,000
	% of hatchery-produced fish in total commercial harvest	0%	12%	0%	17%	0%	14%
Kodiak	Total commercial harvest	9,000	3,291,000	306,000	26,177,000	409,000	30,192,000
	Hatchery commercial cost-recovery harvest	1	54,000	9,000	2,856,000	1,000	2,921,000
	Common property commercial harvest	9,000	3,237,000	297,000	23,321,000	408,000	27,272,000
	Hatchery-produced fish in comm. common prop. harvest	0	225,000	88,000	7,798,000	49,000	8,159,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	7%	30%	33%	12%	30%
	Hatchery-produced fish in total commercial harvest	1	279,000	97,000	10,654,000	50,000	11,080,000
	% of hatchery-produced fish in total commercial harvest	0%	8%	32%	41%	12%	37%
Chignik, AK Peninsula	Common property commercial harvest	17,000	7,595,000	442,000	17,877,000	2,311,000	28,242,000
	Hatchery-produced fish in total comm. harvest	0	0	0	0	0	0
	% of hatchery-produced fish in comm. common prop. harv.	0%	0%	0%	0%	0%	0%
Bristol Bay	Common property commercial harvest	7,000	41,975,000	48,000	4,000	212,000	42,237,998
	Hatchery-produced fish in total comm. harvest	0	0	0	0	0	0
	% of hatchery-produced fish in comm. common prop. harv.	0%	0%	0%	0%	0%	0%

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Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Arctic-Yukon-Kuskokwim	Common property commercial harvest	3,000	115,000	21,000	290,000	109,000	538,000
	Hatchery-produced fish in total comm. harvest	0	0	0	0	0	0
	% of hatchery-produced fish in comm. common prop. harv.	0%	0%	0%	0%	0%	0%
Statewide[c]	Total commercial harvest	258,000	57,090,000	2,753,000	156,023,000	12,280,000	228,405,329
	Hatchery commercial cost-recovery harvest	14,000	427,000	127,000	7,937,000	2,300,000	10,805,268
	Common property commercial harvest	244,000	56,663,000	2,626,000	148,087,000	9,980,000	217,600,061
	Hatchery-produced fish in comm. common prop. harvest	30,000	843,000	502,000	45,455,000	6,189,000	53,017,000
	% of hatchery-produced fish in comm. common prop. harv.	12%	1%	19%	31%	62%	24%
	Hatchery-produced fish in total commercial harvest	44,000	1,270,000	629,000	53,392,000	8,489,000	64,166,000
	% of hatchery-produced fish in total commercial harvest	17%	2%	23%	34%	69%	28%

[a] Total commercial harvest by all commercial gear types, including fish harvested by hatcheries for cost recovery from ADF&G Oceans AK statewide salmon fish ticket database [URL not publicly available; accessed January 26, 2021].

[b] Hatchery-produced fish in commercial common property harvest data is as reported by operators.

[c] Some figures may not total exactly due to rounding.

Appendix D2.–Estimated exvessel value of the total Alaska commercial common property harvest (preliminary), by region, 2021.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Value of the commercial harvest[a,b]	$15,241,513	$11,405,713	$17,932,999	$48,085,244	$39,621,033	$132,286,502
	Value of hatchery-produced fish in cost recovery harvest	$1,016,940	$143,891	$1,380,718	$290,601	$11,176,322	$14,008,472
	Value of the CCP harvest	$14,224,573	$11,261,822	$16,552,281	$47,794,643	$28,444,711	$118,278,030
	Value of hatchery-produced fish in CCP	$2,169,147	$255,116	$4,377,080	$211,700	$25,064,473	$32,077,516
	% value of hatchery-produced fish in CCP	15%	2%	26%	0.4%	88%	27%
	Value of hatchery-produced fish in total comm. harvest	$3,186,087	$399,007	$5,757,798	$651,185	$36,240,795	$46,000,000
	% of hatchery-produced fish in total comm. harvest value	21%	3%	32%	1%	91%	35%
Prince William Sound	Value of the commercial harvest	$1,428,026	$16,753,959	$3,015,080	$84,042,173	$16,250,584	$121,489,822
	Value of hatchery-produced fish in cost recovery harvest	$0	$3,194,963	$0	$5,904,176	$2,450,084	$11,549,223
	Value of the CCP harvest	$1,428,026	$13,558,996	$3,015,080	$78,137,997	$13,800,500	$109,940,599
	Value of hatchery-produced fish in CCP	$0	$6,170,557	$473,475	$49,089,780	$12,634,078	$68,367,890
	% value of hatchery-produced fish in CCP	0%	46%	16%	63%	92%	62%
	Value of hatchery-produced fish in total comm. harvest	$0	$9,365,520	$473,475	$54,993,956	$15,084,162	$80,000,000
	% of hatchery-produced fish in total comm. harvest value	0%	56%	16%	65%	93%	66%
Cook Inlet	Value of the commercial harvest	$133,924	$15,316,435	$695,246	$2,253,049	$451,766	$18,850,420
	Value of hatchery-produced fish in cost recovery harvest	$34	$953,103	$80	$334,106	$102	$1,287,425
	Value of the CCP harvest	$133,890	$14,363,332	$695,166	$1,918,943	$451,664	$17,562,995
	Value of hatchery-produced fish in CCP	$0	$908,000	$0	$38,000	$0	$946,000
	% value of hatchery-produced fish in CCP	0.0%	6.3%	0.0%	2.0%	0.0%	5.4%
	Value of hatchery-produced fish in total comm. harvest	$34	$1,860,000	$80	$372,000	$102	$2,232,000
	% of hatchery-produced fish in total comm. harvest value	0%	12%	0%	17%	0%	12%
Kodiak	Value of the commercial harvest	$32,623	$21,738,691	$1,003,534	$27,049,550	$1,321,028	$51,145,426
	Value of hatchery-produced fish in cost recovery harvest	$0	$355,000	$31,000	$2,950,000	$4,000	$3,300,000
	Value of the CCP harvest	$32,623	$21,383,691	$972,534	$24,099,550	$1,317,028	$47,805,426
	Value of hatchery-produced fish in CCP	$0	$1,487,179	$287,143	$8,058,512	$156,703	$9,989,537
	% value of hatchery-produced fish in CCP	0%	7%	30%	33%	12%	21%
	Value of hatchery-produced fish in total comm. harvest	$0	$1,842,179	$318,143	$11,008,512	$160,703	$13,329,537
	% of hatchery-produced fish in total comm. harvest value	0%	8%	32%	41%	12%	26%
Chignik, AK Peninsula	Value of the CCP harvest	$2,830	$868,635	$143,487	$1,327,802	$120,071	$2,462,825
	Value of hatchery-produced fish in total comm. harvest	$0	$0	$0	$0	$0	$0
	% Value of hatchery-produced fish in CCP	0%	0%	0%	0%	0%	0%
Bristol Bay	Value of the CCP harvest	$66,473	$248,313,135	$133,793	$2,003	$446,286	$248,961,690
	Value of hatchery-produced fish in total comm. harvest	$0	$0	$0	$0	$0	$0
	% Value of hatchery-produced fish in CCP	0%	0%	0%	0%	0%	0%

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Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Arctic-Yukon-Kuskokwim	Value of the CCP harvest	$30,155	$429,645	$291,130	$3,361	$648,616	$1,402,907
	Value of hatchery-produced fish in total comm. harvest	$0	$0	$0	$0	$0	$0
	% Value of hatchery-produced fish in CCP	0%	0%	0%	0%	0%	0%
Statewide[c]	Value of the commercial harvest	$16,935,544	$314,826,213	$23,215,269	$162,763,182	$58,859,384	$576,599,592
	Value of hatchery-produced fish in cost recovery harvest	$1,016,974	$4,649,148	$1,412,302	$9,482,008	$13,634,746	$30,619,057
	Value of the CCP harvest	$15,918,570	$310,177,065	$21,802,967	$153,281,174	$45,224,368	$545,980,535
	Value of hatchery-produced fish in CCP	$2,166,334	$8,820,852	$5,137,698	$57,397,992	$37,855,254	$111,380,943
	% value of hatchery-produced fish in CCP	13%	3%	22%	35%	64%	19%
	Value of hatchery-produced fish in total comm. harvest	$3,201,755	$13,470,000	$6,550,000	$66,880,000	$51,490,000	$142,000,000
	% of hatchery-produced fish in total comm. harvest value	19%	4%	28%	41%	87%	25%

Note: CCP = commercial common property harvest.

[a] Total commercial harvest by all commercial gear types, including fish harvested by hatcheries for cost recovery.

[b] Value source: https://www.adfg.alaska.gov/static/fishing/pdfs/commercial/2020_preliminary_salmon_summary_table.pdf

[c] Some figures may not total exactly due to rounding.

APPENDIX E: PROJECTED HATCHERY RETURN BY SPECIES, 2022

Appendix E1.–Projected adult return, by species, to Alaska fisheries enhancement projects in 2022.

Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow trout	Landlocked salmon	Total
Southern Southeast										
SSRAA	Burnett Inlet	Burnett Inlet	0	0	0	0	297,000	0	0	297,000
		Neck Lake	0	0	8,900	0	0	0	0	8,900
		Anita Bay	0	0	0	0	209,000	0	0	209,000
		Port Asumcion	0	0	0	0	362,000	0	0	362,000
	Crystal Lake	City Creek	550	0	0	0	0	0	0	550
		Anita Bay	9,800	0	0	0	0	0	0	9,800
		Crystal Creek	3,300	0	3,800	0	0	0	0	7,100
		Neets Bay	6,600	0	0	0	0	0	0	6,600
	Neets Bay	Neets Bay	0	0	127,300	0	498,000	0	0	625,300
		Nakat Inlet	0	0	0	0	54,000	0	0	54,000
	Whitman Lake	Kendrick Bay	0	0	0	0	524,000	0	0	524,000
		Carroll Inlet	5,900	0	0	0	0	0	0	5,900
		Herring Cove	6,700	0	15,900	0	0	0	0	22,600
		Nakat Inlet	0	0	21,300	0	187,000	0	0	208,300
		Anita Bay	0	0	11,800	0	0	0	0	11,800
	Deer Mountain	Ketchikan Creek	650	0	0	0	0	0	0	650
	Klawock River	Klawock Lake	0	0	179,700	0	0	0	0	179,700
	Port Saint Nicholas	Port Saint Nicholas	4,700	0	0	0	0	0	0	4,700
MIC	Tamgas Creek	Tamgas Creek[a]	0	0	0	0	0	0	0	0
Southern Southeast total			38,200	0	368,700	0	2,131,000	0	0	2,537,900
Northern Southeast										
NSRAA	Haines Projects	Haines Projects	0	0	0	0	0	0	0	0
	Hidden Falls	Hidden Falls Hatchery (HFH)	507	0	41,000	0	302,000	0	0	343,507
		Deer Lake	0	0	56,000	0	0	0	0	56,000
		Southeast Cove	0	0	0	0	112,000	0	0	112,000
		Thomas Bay	0	0	0	0	85,000	0	0	85,000
		Gunnuk Creek + HFH	10	0	0	0	0	0	0	10
		Gunnuk Creek	408	0	0	0	0	0	0	408
	Medvejie	Bear Cove	20,111	0	0	2,750	550,000	0	0	572,861
		Crawfish Inlet	736	0	0	0	0	0	0	736
		Crescent Bay	2,689	0	0	0	0	0	0	2,689
		Deep Inlet	0	0	0	0	1,010,000	0	0	1,010,000

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Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow trout	Landlocked salmon	Total
	Sawmill Creek	Bear Cove	0	0	15,000	0	0	0	0	15,000
		Deep Inlet	0	0	82,000	0	0	0	0	82,000
		Crawfish Inlet	0	0	0	0	1,482,000	0	0	1,482,000
	Gunnuk Creek	Gunnuk Creek	0	0	0	0	11,000	0	0	11,000
AKI	Port Armstrong	Port Armstrong	0	0	58,392	327,813	198,212	0	0	584,417
DIPAC	Macaulay	Amalga Harbor	0	0	0	0	1,053,000	0	0	1,053,000
		Boat Harbor	0	0	0	0	422,300	0	0	422,300
		Limestone Inlet	0	0	0	0	73,000	0	0	73,000
		Fish Creek	941	0	0	0	0	0	0	941
		Lena Cove	771	0	0	0	0	0	0	771
		Gastineau Channel	1,491	0	11,800	0	451,100	0	0	464,391
		Auke Bay	481	0	0	0	0	0	0	481
		Thane	456	0	0	0	0	0	0	456
	Snettisham	Speel Arm	0	60,900	0	0	0	0	0	60,900
		Stikine River	0	0[a]	0	0	0	0	0	0
		Sweetheart Lake	0	4,200	0	0	0	0	0	4,200
		Taku River	0	0[a]	0	0	0	0	0	0
SSSC	Sheldon Jackson	Crescent Bay	0	0	6,990	248,000	87,000	0	0	341,990
		Deep Inlet	0	0	0	0	163,798	0	0	163,798
NMFS	Little Port Walter	Little Port Walter	3,142	0	0	0	0	0	0	3,142
Northern Southeast total			31,733	65,100	271,182	578,563	6,000,410	0	0	6,946,988
Southeast total			69,933	65,100	639,882	578,563	8,131,410	0	0	9,484,888
Prince William Sound										
PWSAC	A F Koernig	Sawmill Bay	0	0	0	2,600,000	360,000	0	0	2,960,000
	Cannery Creek	Unakwik Inlet	0	0	0	3,000,000	0	0	0	3,000,000
	Gulkana	Crosswind Lake	0	82,000	0	0	0	0	0	82,000
		Paxson Lake	0	47,400	0	0	0	0	0	47,400
	Main Bay	Main Bay	0	841,000	0	0	0	0	0	841,000
	Wally Noerenberg	Lake Bay	0	0	138,000	2,700,000	2,480,000	0	0	5,318,000
		Chenega	540	0	2,300	0	0	0	0	2,840
		Port Chalmers	0	0	0	0	280,000	0	0	280,000
		Whittier	0	0	3,600	0	0	0	0	3,600
VFDA	Solomon Gulch	Solomon Gulch	0	0	74,642	13,503,625	0	0	0	13,578,267
		Boulder Bay	0	0	884	0	0	0	0	884

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Appendix E1.–Page 3 of 4.

Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow trout	Landlocked salmon	Total
ADF&G	William Jack Hernandez	Whittier	1,185	0	0	0	0	0	0	1,185
		Fleming Spit	1,109	0	0	0	0	0	0	1,109
		Prince William Sound lakes[b]	0	0	0	0	0	106	0	106
	Ruth Burnett	Glennallen lakes[b]	0	0	0	0	0	1,563	14	1,597
Prince William Sound total			2,834	970,400	219,426	21,803,625	3,120,000	1,669	14	26,117,988
Cook Inlet										
CIAA	Trail Lakes	Hazel Lake	0	33,030	0	0	0	0	0	33,030
		Leisure Lake	0	42,906	0	0	0	0	0	42,906
		Hidden Lake	0	24,652	0	0	0	0	0	24,652
		Kirschner Lake	0	30,288	0	0	0	0	0	30,288
		Tutka Bay	0	38,864	0	0	0	0	0	38,864
		Shell Lake	0	762	0	0	0	0	0	762
		Bear Lake	0	55,140	6,795	0	0	0	0	61,935
		Bear Creek	0	0	9,689	0	0	0	0	9,689
		Resurrection Bay	0	22,952	0	0	0	0	0	22,952
	Tutka Bay	Tutka Bay	0	0	0	2,013,401	0	0	0	2,013,401
	Port Graham	Port Graham	0	0	0	716,245	0	0	0	716,245
ADF&G	William Jack Hernandez	Bird Creek	0	0	8,563	0	0	0	0	8,563
		Campbell Creek	0	0	3,821	0	0	0	0	3,821
		Eklutna Tailrace	2,297	0	8,337	0	0	0	0	10,634
		Ship Creek	3,614	0	16,289	0	0	0	0	19,903
		Crooked Creek	1,266	0	0	0	0	0	0	1,266
		Ninilchik River	1,647	0	0	0	0	0	0	1,647
		Homer Spit	3,048	0	8,321	0	0	0	0	11,369
		Seldovia	1,137	0	0	0	0	0	0	1,137
		Seward Lagoon	3,174	0	16,402	0	0	0	0	19,576
		Anchorage lakes	1,287	0	0	0	0	6,528	0	7,964
		Kenai lakes	0	0	0	0	0	4,211	0	4,211
		Matanuska lakes[b]	929	0	276	0	0	5,911	0	7,496
Cook Inlet total			18,399	248,594	78,493	2,729,646	0	16,650	0	3,092,311
Southcentral total			21,233	1,218,994	297,919	24,533,271	3,120,000	18,319	14	29,210,299

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Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow trout	Landlocked salmon	Total
Arctic-Yukon-Kuskokwim										
ADF&G	Ruth Burnett	Delta Junction lakes[b]	0	0	0	0	0	3,945	1,171	5,427
		Fairbanks lakes[b]	0	0	0	0	0	9,095	2,407	12,315
Arctic-Yukon-Kuskokwim total			0	0	0	0	0	13,040	3,578	17,742
Westward/Kodiak										
KRAA	Kitoi Bay	Kitoi Bay	0	0	154,187	4,907,589	136,358	0	0	5,198,134
		Little Kitoi Bay	0	15,218	0	0	0	0	0	15,218
		Ouzinkie Village	0	2,226	0	0	0	0	0	2,226
	Pillar Creek	Pillar Creek	0	0	3,600	0	0	0	0	3,600
		Island Lake	0	0	1,500	0	0	0	0	1,500
		Monashka Creek	0	0	3,500	0	0	0	0	3,500
		Mission Lake	0	0	1,000	0	0	0	0	1,000
		Crescent Lake	0	2,300	0	0	0	0	0	2,300
		Hidden Lake	0	1,800	0	0	0	0	0	1,800
		Spiridon Lake	0	192,000	0	0	0	0	0	192,000
		Telrod Cove	0	63,600	0	0	0	0	0	63,600
		Waterfall lakes	0	2,400	0	0	0	0	0	2,400
Westward/Kodiak total			0	279,544	163,787	4,907,589	136,358	0	0	5,487,278
Statewide total			91,166	1,563,638	1,101,588	31,019,423	11,387,768	31,359	3,592	44,200,207

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Data not available at the time of publication.

[b] The forecasted harvest of Arctic grayling, statewide total = 593, is not shown.

APPENDIX F: EGG PRODUCTION FROM AQUATIC RESOURCE PERMITS, 2021

Appendix F1.–Summary of salmon production of eggs collected in 2021 from Aquatic Resource Permits issued by the Alaska Department of Fish and Game.

The egg number represented is the maximal number allowed to be collected, not necessarily the number allowed to be released, by the issued permit for the project.

Bioenhancement Research Permits

Eggs collected under this type of propagation permit are for bioenhancement research by accredited institutions of higher learning and cooperative governmental projects.

Area	Permittee	Stock/Species	Max. no. allowed to be collected
Southeast			
	NOAA Little Port Walter	Keta River king at LPW	100 spawning pair
	NOAA Little Port Walter	Unuk River king at LPW	100 spawning pair
Southcentral			
	Seldovia Village Tribe	Jakolof Creek coho	10 adults
	Seldovia Village Tribe	Fish Creek/Seldovia Slough pink	20 adults
Arctic-Yukon-Kuskokwim			
	Norton Sound Economic Development Corporation	Snake River coho	50 spawning pair
	Norton Sound Economic Development Corporation	Solomon River chum	60 spawning pair
	Norton Sound Economic Development Corporation	Unalakleet River king	20 spawning pair

Educational and Vocational Permits

Eggs collected under this type of propagation permit are for educational and vocational purposes.

Area	Permittee	Stock/Species	Max. no. allowed to be collected
Southeast			
	Petersburg High School	Five Mile pink	30 spawning pair
	Petersburg High School	Blind Slough coho	50,000 eggs
Westward			
	Unalaska City School	Iliuliuk River coho	3 spawning pair

Scientific and Educational Permits

Eggs collected under this type of propagation permit are for Classroom Incubation Projects and in most cases are provided by hatcheries. Resultant fry can be released at approved locations or are destroyed.

Area	Permittee	Species	Max. no. to be collected
Southeast			
	Fawn Mountain Elementary	coho	150
	Haines School	chum/coho	350/500
	Ketchikan Charter School	coho	150
	Skagway Traditional Council	pink/coho	500
	Stedmen School	coho	250
	Tongass School for Arts and Sciences	coho	150
	UAS Sitka	chum	500
	USFS/Point Higgins Elementary	coho	50
Southcentral	ADF&G Anchorage Lobby	coho	500

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Area	Permittee	Species	Max. no. to be collected
Southcentral (cont.)	ADF&G Soldotna Lobby	coho	500
	Airport Heights Elementary	coho	500
	Anchorage Christian School	coho	500
	Anchorage Montessori School	coho	500
	Aquarian Charter School	coho	500
	Aurora Borealis School	coho	500
	Big Lake Elementary	coho	500
	Birchwood ABC School	coho	500
	Bowman Elementary	coho	500
	Burchell Elementary	coho	500
	Butte Elementary	coho	500
	Chapman Elementary	coho	500
	Chugiak Elementary	coho	500
	College Gate Elementary	coho	500
	Colony High School	coho	500
	Cook Inlet Academy	coho	500
	Cooper Landing Elementary	coho	500
	Copper River Watershed Project	coho	200
	Denali Montessori Elementary	coho	500
	Dimond High School	coho	500
	Eagle Academy School	coho	500
	Eagle River High School	coho	500
	East Anchorage High School	coho	500
	Finger Lake Elementary	coho	500
	Fireweed Academy	coho	500
	Gladys Wood Elementary	coho	500
	Glennallen Elementary	coho	200
	Government Hill Elementary	coho	500
	Grace Christian Elementary	coho	500
	Hermon Hutchens Elementary	coho	500
	Homer Flex High School	coho	500
	Homer High School	coho	500
	Homestead Elementary	coho	500
	Kaleidoscope Elementary	coho	500
	Kalifornsky Beach Elementary	coho	500
	Kasuun Elementary	coho	500
	Kenai Middle School	coho	500
	Kenny Lake School	coho	200
	Kincaid Elementary	coho	500
	Lake Otis Elementary	coho	500
	McLaughlin School	coho	500
	McNeil Canyon Elementary	coho	500
	Mentasta Lake School	coho	200
	Midnight Sun Elementary	coho	500
	Mountain View Elementary	coho	500
	Nikiski North Star Elementary	coho	500

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Area	Permittee	Species	Max. no. to be collected
Southcentral (cont.)	Nikolaevsk Elementary	coho	500
	Nunaka Valley Elementary	coho	500
	O'Mallley Elementary	coho	500
	Ocean View Elementary	coho	500
	PAIDEIA Cooperative School	coho	500
	Pioneer Peak Elementary	coho	500
	Ptarmigan Elementary	coho	500
	Redoubt Elementary	coho	500
	Rilke Schule	coho	500
	Rogers Park Elementary	coho	500
	Service High School	coho	500
	Seward Elementary	coho	500
	Shaw Elementary	coho	500
	Sherrod Elementary	coho	500
	Slana School	coho	200
	Snowshoe Elementary	coho	500
	Soldotna Elementary	coho	500
	Steller Secondary School	coho	500
	Sterling Elementary	coho	500
	Susitna Elementary (2 tanks)	coho	500
	Tebughna School	coho	500
	The Study (Soldotna)	coho	500
	Tustumena Elementary	coho	500
	Upstream Learning School	coho	200
	Ursa Major Elementary	coho	500
	Voznesenka School	coho	500
	West Homer Elementary	coho	500
	William Tyson Elementary	coho	500
	Winterberry School	coho	500
Arctic-Yukon-Kuskokwim	Barnette Magnet School	coho	500
	Nome-Beltz High School	coho	500
	Pearl Creek Elementary	coho	300
	Salcha Elementary	coho	300
	Two Rivers Elementary	coho	300
	Watershed School	coho	300
	Weller Elementary	coho	300

APPENDIX G: HATCHERY EGG COLLECTION, 2021

Appendix G1.–Eggs collected at Alaska hatcheries as reported by operators, 2021 (transferred eggs are listed with the receiving hatchery).

Region	Area	Operator	Egg-take location	Receiving hatchery	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
Southeast											
	Southern Southeast										
		SSRAA	Burnett Inlet	Burnett Inlet	0	0	0	0	86,162,000	0	86,162,000
				Port Saint Nicholas	0	0	0	0	7,348,000	0	7,348,000
			Crystal Lake	Crystal Lake	612,000	0	200,000	0	0	0	812,000
			Neets Bay	Neets Bay	0	0	1,760,000	0	72,999,000	0	74,759,000
				Burnett Inlet	0	0	0	0	6,831,000	0	6,831,000
				Whitman Lake	0	0	0	0	42,000,000	0	42,000,000
			Whitman Lake	Whitman Lake	1,894,000	0	5,000,000	0	0	0	6,894,000
				Deer Mountain	56,000	0	0	0	0	0	56,000
				Crystal Lake	750,000	0	0	0	0	0	750,000
			Klawock River	Klawock River	0	0	5,092,000	0	0	0	5,092,000
		MIC	Annette Island	Tamgas Creek	310,000	0	8,570,000	5,365,000	33,249,000	0	47,494,000
	Southern Southeast total				3,322,000	0	20,622,000	5,365,000	248,589,000	0	278,198,000
	Northern Southeast										
		NSRAA	Hidden Falls	Hidden Falls	59,611	0	5,939,262	0	89,083,175	0	95,082,048
				Medvejie	0	0	0	0	42,498,097	0	42,498,097
				Port Armstrong	0	0	1,756,335	0	0	0	1,756,335
				Gunnuk Creek	0	0	0	0	2,616,834	0	2,616,834
			Medvejie	Medvejie	4,807,828	0	0	299,000	36,445,683	0	41,552,511
				Hidden Falls	794,384	0	0	0	35,292,624	0	36,087,008
				Sawmill Creek	834,272	0	0	0	46,767,007	0	47,601,279
				Macaulay	949,600	0	0	0	0	0	949,600
				Crystal Lake	454,000	0	0	0	0	0	454,000
			Sawmill Creek	Sawmill Creek	0	0	2,412,000	0	0	0	2,412,000
			Gunnuk Creek	Gunnuk Creek	0	0	0	0	17,548,208	0	17,548,208
		AKI	Port Armstrong	Port Armstrong	0	0	3,304,000	65,248,359	17,285,000	0	85,837,359
		DIPAC	Macaulay	Macaulay	0	0	1,581,000	0	132,530,000	0	134,111,000
			Snettisham	Snettisham	0	14,023,900	0	0	0	0	14,023,900
			Tahltan Lake (BC)	Snettisham	0	446,000	0	0	0	0	446,000
			Tatsamenie Lake (BC)	Snettisham	0	1,715,300	0	0	0	0	1,715,300
			Trapper Lake (BC)	Snettisham	0	467,300	0	0	0	0	467,300
		NMFS	Little Port Walter	Little Port Walter	0	0	0	0	0	0	0
		SSSC	Sheldon Jackson	Sheldon Jackson	0	0	234,600	3,544,104	3,617,535	0	7,396,239
			Medvejie[a]	Medvejie	0	0	0	0	9,000,000	0	9,000,000
	Northern Southeast total				7,899,695	16,652,500	15,227,197	69,091,463	432,684,163	0	541,555,018
Southeast total					11,521,695	16,652,500	35,849,197	74,456,463	681,273,163	0	819,753,018

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Region	Area	Operator	Egg-take location	Receiving hatchery	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
Southcentral											
	Prince William Sound										
		PWSAC	A F Koernig	A F Koernig	0	0	0	193,100,000	0	0	193,100,000
			Cannery Creek	Cannery Creek	0	0	0	187,000,000	0	0	187,000,000
			Gulkana	Gulkana	0	12,400,900	0	0	0	0	12,400,900
			Main Bay	Main Bay	0	12,400,000	0	0	0	0	12,400,000
			Wally Noerenberg	Wally Noerenberg	0	0	323,900	149,100,000	133,320,000	0	282,743,900
				A F Koernig	0	0	0	0	20,000,000	0	20,000,000
		VFDA	Solomon Gulch	Solomon Gulch	0	0	2,003,960	270,000,080	0	0	272,004,040
				Wally Noerenberg	0	0	3,700,620	0	0	0	3,700,620
	Prince William Sound total				0	24,800,900	6,028,480	799,200,080	153,320,000	0	983,349,460
	Cook Inlet										
		CIAA	Port Graham	Port Graham	0	0	0	6,081,714	0	0	6,081,714
			Trail Lakes	Trail Lakes	0	12,111,199	609,926	0	0	0	12,721,125
			Tutka Bay	Tutka Bay	0	0	0	61,987,400	0	0	61,987,400
		ADFG	William Jack Hernandez[b]	William Jack Hernandez	2,846,082	0	1,211,829	0	0	4,187,096	8,341,012
				Wally Noerenberg	49,364	0	0	0	0	0	49,364
				Deer Mountain	0	0	0	0	0	200,000	200,000
	Cook Inlet total				2,895,446	12,111,199	1,821,755	68,069,114	0	4,387,096	89,380,615
Southcentral Total					2,895,446	36,912,099	7,850,235	867,269,194	153,320,000	4,387,096	1,072,730,075
Arctic-Yukon-Kuskokwim											
		ADFG	Ruth Burnett[c]	Ruth Burnett	0	0	90,000	0	0	0	143,000
			William Jack Hernandez	Ruth Burnett	50,008	0	0	0	0	575,000	655,008
Arctic-Yukon-Kuskokwim total					50,008	0	90,000	0	0	575,000	798,008
Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	0	0	600,000	216,065,572	36,313,632	0	252,979,204
			Saltery Lake	Kitoi Bay	0	745,395	0	0	0	0	745,395
			Saltery Lake	Pillar Creek	0	3,427,800	0	0	0	0	3,427,800
			Afognak Lake	Pillar Creek	0	753,000	0	0	0	0	753,000
			Karluk River	Pillar Creek	62,237	0	0	0	0	0	62,237
			Pillar Creek	Pillar Creek	0	0	227,500	0	0	0	227,500
Kodiak total					62,237	4,926,195	827,500	216,065,572	36,313,632	0	258,195,136
Statewide total					14,529,386	58,490,794	44,616,932	1,157,791,229	870,906,795	4,962,096	2,151,476,237

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] These eggs were taken and reared at Medvejie Hatchery on behalf of Sheldon Jackson Hatchery operated by Sitka Sound Science Center.

[b] Total eggs at William Jack Hernandez Sport Fish Hatchery includes 126,005 Arctic char eggs. Rainbow trout ("R. trout") eggs were transferred to Pillar Creek Hatchery in early 2022.

[c] Total eggs at Ruth Burnett Sport Fish Hatchery includes 53,000 lake trout eggs.

APPENDIX H: HATCHERY RELEASES, 2021

Appendix H1.–Alaska hatchery releases as reported by operators, 2021.

Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
Southeast											
	Southern Southeast										
		SSRAA	Burnett Inlet	Burnett Inlet	0	0	0	0	32,363,000	0	32,363,000
				Anita Bay	0	0	0	0	22,819,000	0	22,819,000
				Nakat Inlet	0	0	0	0	14,711,000	0	14,711,000
				Neck Lake	0	0	595,461	0	0	0	595,461
				Port Asumcion	0	0	0	0	18,232,441	0	18,232,441
			Crystal Lake	Crystal Creek	560,800	0	128,250	0	0	0	689,050
				Anita Bay	360,000	0	0	0	0	0	360,000
			Neets Bay	Neets Bay	0	0	3,343,115	0	67,200,000	0	70,543,115
				Nakat Inlet	0	0	0	0	1,158,062	0	1,158,062
			Whitman Lake	Nakat Inlet	0	0	574,294	0	0	0	574,294
				Anita Bay	0	0	591,111	0	0	0	591,111
				Carroll Inlet	559,100	0	0	0	0	0	559,100
				Ketchikan Creek	78,850	0	0	0	0	0	78,850
				Neets Bay	0	0	1,088,682	0	0	0	1,088,682
				Herring Cove	562,619	0	479,518	0	0	0	1,042,137
				Kendrick Bay	0	0	0	0	22,247,000	0	22,247,000
				McLean Arm	0	0	0	0	10,966,000	0	10,966,000
			Klawock River	Klawock Lake	0	0	4,776,608	0	0	0	4,776,608
				Klawock River	0	0	356,169	0	0	0	356,169
			Port St Nicholas	Port St Nicholas	543,671	0	0	0	0	0	543,671
			Deer Mountain	Harriet Hunt Lake	0	0	0	0	0	37,859	37,859
				Ketchikan Creek	21,793	0	0	0	0	0	21,793
				Carlanna Lake	0	0	0	0	0	8,500	8,500
		MIC	Tamgas Creek	Tamgas	288,846	0	3,151,095	1,065,000	20,000,000	0	24,504,941
				Port Chester	284,442	0	1,622,344	0	10,000,000	0	11,906,786
	Southern Southeast total				3,260,121	0	16,706,647	1,065,000	219,696,503	46,359	240,774,630
	Northern Southeast										
		NSRAA	Hidden Falls	Thomas Bay	0	0	0	0	11,691,221	0	11,691,221
				Kasnyku Bay	442,196	0	3,413,179	0	48,895,105	0	52,750,480
				Southeast Cove	0	0	0	0	35,357,207	0	35,357,207
				Gunnuk Creek	194,231	0	0	0	17,566,539	0	17,760,770
				Deer Lake	0	0	2,001,846	0	0	0	2,001,846

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Appendix H1.–Page 2 of 4.

Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
			Medvejie	Bear Cove	1,792,777	0	0	275,307	37,367,206	0	39,435,290
				Deep Inlet	0	0	0	0	34,091,380	0	34,091,380
				Crescent Bay	399,607	0	0	0	0	0	399,607
				Crawfish Inlet	795,152	0	0	0	0	0	795,152
			Sawmill Creek	Bear Cove	0	0	207,475	0	0	0	207,475
				Deep Inlet	0	0	1,766,291	0	15,997,728	0	17,764,019
				Crawfish Inlet	550,007	0	0	0	25,886,003	0	26,436,010
		AKI	Port Armstrong	Port Armstrong	0	0	3,892,791	60,706,053	13,208,266	0	77,807,110
		DIPAC	Macaulay	Gastineau Channel	0	0	298,358	0	11,674,000	0	11,972,358
				Amalga Harbor	0	0	0	0	46,294,000	0	46,294,000
				Boat Harbor	0	0	0	0	23,479,000	0	23,479,000
				Limestone Inlet	0	0	0	0	11,818,000	0	11,818,000
				Sheep Creek	0	0	0	0	21,261,000	0	21,261,000
			Snettisham	Speel Arm	0	8,976,000	0	0	0	0	8,976,000
				Sweetheart Lake	0	424,000	0	0	0	0	424,000
				Tahltan Lake (BC)	0	329,700	0	0	0	0	329,700
				Trapper Lake (BC)	0	319,400	0	0	0	0	319,400
				Tatsamenie Lake	0	1,280,900	0	0	0	0	1,280,900
		NMFS	Little Port Walter	Little Port Walter	201,925	0	0	0	0	0	201,925
		SSSC	Sheldon Jackson	Crescent Bay	0	0	233,507	3,147,210	2,981,915	0	6,362,632
				Deep Inlet	0	0	0	0	6,073,000	0	6,073,000
	Northern Southeast total				4,375,895	11,330,000	11,813,447	64,128,570	363,641,570	0	455,289,482
Southeast total					7,636,016	11,330,000	28,520,094	65,193,570	583,338,073	46,359	696,064,112
Southcentral											
	Prince William Sound										
		PWSAC	A F Koernig	Sawmill Bay	0	0	0	131,100,000	18,800,000	0	149,900,000
			Cannery Creek	Unakwik Inlet	0	0	0	114,600,000	0	0	114,600,000
			Gulkana	Crosswind Lake	0	6,306,358	0	0	0	0	6,306,358
				Paxson Lake	0	5,920,706	0	0	0	0	5,920,706
			Main Bay	Main Bay	0	10,725,328	0	0	0	0	10,725,328
			Wally Noerenberg	Lake Bay	0	0	3,037,000	88,343,000	77,306,000	0	168,686,000
				Port Chalmers	0	0	0	0	41,100,000	0	41,100,000
				Chenega Cove	46,900	0	50,000	0	0	0	96,900
				Whittier	0	0	80,000	0	0	0	80,000

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Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
		VFDA	Solomon Gulch	Solomon Gulch	0	0	1,677,346	249,144,381	0	0	250,821,727
				Boulder Bay	0	0	19,867	0	0	0	19,867
		ADFG	William Jack Hernandez	Ruth Lake	0	0	0	0	0	1,226	1,226
	Prince William Sound total				46,900	22,952,392	4,864,213	583,187,381	137,206,000	1,226	748,258,112
	Cook Inlet										
		CIAA	Trail Lakes	Bear Lake	0	2,543,927	445,081	0	0	0	2,989,008
				Bear Creek	0	0	58,202	0	0	0	58,202
				Resurrection Bay	0	1,466,109	0	0	0	0	1,466,109
				Kirschner Lake	0	239,742	0	0	0	0	239,742
				Hazel Lake	0	240,960	0	0	0	0	240,960
				Leisure Lake	0	1,070,851	0	0	0	0	1,070,851
				Tutka Lagoon	0	375,626	0	0	0	0	375,626
				Hidden Lake	0	689,000	0	0	0	0	689,000
			Tutka Bay	Tutka Lagoon	0	0	0	71,907,183	0	0	71,907,183
			Port Graham	Port Graham	0	0	0	22,382,661	0	0	22,382,661
		ADFG	William Jack Hernandez[a]	Bird Creek	0	0	126,858	0	0	0	126,858
				Campbell Creek	0	0	56,609	0	0	1,490	58,099
				Ship Creek	581,387	0	241,317	0	0	0	822,704
				Southcentral lakes	76,633	0	116,023	0	0	697,784	944,939
				Eklutna Tailrace	237,463	0	123,508	0	0	0	360,971
				Crooked Creek	140,256	0	0	0	0	0	140,256
				Ninilchik River	159,936	0	0	0	0	0	159,936
				Homer Spit	328,484	0	123,277	0	0	0	451,761
				Seldovia Harbor	103,679	0	0	0	0	0	103,679
				Seward Lagoon	297,783	0	242,999	0	0	0	540,782
				Whittier	128,644	0	0	0	0	0	128,644
				Fleming Spit	96,234	0	0	0	0	0	96,234
			Ruth Burnett[a]	Southcentral lakes	13,953	0	0	0	0	745	14,698
	Cook Inlet total				2,164,452	6,626,215	1,533,874	94,289,844	0	700,019	105,368,903
Southcentral total					2,211,352	29,578,607	6,398,087	677,477,225	137,206,000	701,245	853,627,015

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Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R. trout	Total
Arctic-Yukon-Kuskokwim											
		ADFG	Ruth Burnett[a]	Interior lakes	29,328	0	79,316	0	0	237,644	393,532
			William Jack Hernandez[a]	Interior lakes	14,378	0	0	0	0	0	14,378
Arctic-Yukon-Kuskokwim Total					43,706	0	79,316	0	0	237,644	407,910
Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	0	0	1,332,880	127,883,209	30,063,418	0	159,279,507
				Crescent Lake	0	0	185,386	0	0	0	185,386
				Jennifer Lake	0	0	110,062	0	0	0	110,062
				Katmai Lake	0	0	39,951	0	0	0	39,951
				Kodiak lakes	0	0	40,038	0	0	0	40,038
			Pillar Creek	Pillar Creek	0	0	72,864	0	0	0	72,864
				Hidden Lake	0	278,773	0	0	0	0	278,773
				Monashka River	0	0	70,198	0	0	0	70,198
				Spiridon Lake	0	2,020,117	0	0	0	0	2,020,117
				Jennifer Lake	0	74,810	0	0	0	0	74,810
				Salonie Creek	26,782	0	0	0	0	0	26,782
				Crescent Lake	0	105,168	0	0	0	0	105,168
				Kodiak lakes	0	21,003	50,777	0	0	0	71,780
Kodiak/Westward total					26,782	2,499,871	1,902,156	127,883,209	30,063,418	0	162,375,436
Statewide total					9,917,856	43,408,478	36,899,653	870,554,004	750,607,491	985,248	1,712,474,473

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] William Jack Hernandez and Ruth Burnett Sport Fish hatcheries released 101,743 Arctic char in southcentral and interior lakes.

APPENDIX I: COMMERCIAL HARVEST SUMMARY, 2021

Appendix I1.–Summary of commercial harvest of salmon from Alaska fisheries enhancement projects, 1977–2021.

Year	Total commercial harvest (includes cost recovery)	Total cost-recovery harvest	Commercial common property harvest	Hatchery-produced fish in commercial common property harvest	% Hatchery-produced fish in total commercial harvest	% Hatchery-produced fish in commercial common property harvest
1977	50,811,833	108,718	50,703,115	17,183	0	0
1978	82,288,581	114,188	82,174,393	15,976	0	0
1979	88,761,967	253,303	88,508,664	581,717	1	1
1980	110,012,352	346,834	109,665,518	1,710,649	2	2
1981	113,332,999	856,408	112,476,591	3,501,065	4	3
1982	111,579,999	1,363,885	110,216,114	4,893,392	6	4
1983	127,706,450	856,231	126,850,219	4,873,509	4	4
1984	133,643,554	1,043,376	132,600,178	5,728,203	5	4
1985	144,727,522	640,062	144,087,460	12,861,393	9	9
1986	126,855,984	1,310,047	125,545,937	9,140,199	8	7
1987	95,985,203	4,796,866	91,188,337	17,918,802	24	20
1988	99,440,396	3,178,175	96,262,221	12,784,051	16	13
1989	151,139,205	8,555,258	142,583,947	16,063,656	17	11
1990	153,223,864	10,201,029	143,022,835	32,834,148	28	23
1991	183,957,665	7,913,961	176,043,704	28,105,818	20	16
1992	135,386,575	6,747,075	128,639,500	9,934,815	13	8
1993	191,209,924	4,958,010	186,251,914	21,992,600	14	12
1994	194,505,686	17,344,697	177,160,989	33,679,696	26	19
1995	215,199,444	9,039,811	206,159,633	24,156,917	15	12
1996	173,033,261	13,560,684	159,472,577	27,815,855	24	17
1997	122,047,351	18,980,612	103,066,739	16,144,523	32	16
1998	150,090,563	15,698,677	134,391,886	34,553,704	33	26
1999	215,180,312	21,980,570	193,199,742	42,656,151	30	22
2000	135,897,068	18,742,415	117,154,653	39,780,299	43	34
2001	172,628,831	18,234,573	154,394,258	38,500,563	33	25
2002	128,681,347	18,875,218	109,806,129	25,743,907	35	23
2003	159,891,040	22,316,043	137,574,997	49,881,589	45	36
2004	164,996,473	22,000,394	142,996,079	20,106,465	25	14
2005	219,700,831	21,574,730	198,126,101	53,566,262	34	27
2006	139,935,878	18,823,333	121,112,545	23,723,769	30	20
2007	211,522,916	19,649,615	191,873,301	57,682,118	37	30
2008	144,910,315	13,630,339	131,279,976	44,920,941	40	34
2009	160,855,846	15,030,525	145,825,321	28,139,179	27	19
2010	169,685,008	11,589,578	158,095,430	77,324,429	52	49
2011	175,821,745	13,765,986	162,055,759	32,209,872	26	20
2012	125,755,329	8,124,458	117,630,871	36,903,254	36	31
2013	280,189,539	9,878,645	270,310,894	97,104,919	38	36
2014	154,120,223	7,118,906	147,001,317	50,782,796	38	35
2015	263,703,546	13,852,398	249,851,148	78,028,937	35	31

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Year	Total commercial harvest (includes cost recovery)	Total cost-recovery harvest	Commercial common property harvest	Hatchery-produced fish in commercial common property harvest	% Hatchery-produced fish in total commercial harvest	% Hatchery-produced fish in commercial common property harvest
2016	109,207,332	8,380,917	100,826,415	16,147,000	22	16
2017	221,629,159	9,328,168	212,300,991	37,580,000	21	18
2018	113,492,143	7,759,899	105,732,244	31,344,206	33	30
2019	204,266,688	9,124,586	195,142,102	40,952,063	24	21
2020	116,258,888	7,208,680	109,050,208	23,199,882	27	21
2021	228,405,329	10,767,897	217,637,432	53,018,901	28	24

Source: Total commercial and cost recovery harvest 1977–1984 from ADF&G Headquarters fish ticket staff, 1985–2021 from OceanAK statewide salmon fish ticket database [URL not publicly available]. Common property hatchery harvest from PNP annual reports in the PNP hatchery database [URL not publicly available].

APPENDIX J: HATCHERY RETURNS, 2021

Appendix J1.–Details of the estimated Chinook salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2021.

Region	Area	Agency	Hatchery	Project	Common property harvest				Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Southeast												
	Southern Southeast											
		SSRAA	Crystal Lake	Crystal Lake	1	72	802	196	500	0	0	1,571
				Anita Bay	2,317	4,548	622	188	0	662	0	8,337
				City Creek	0	0	202	96	0	0	0	298
			Whitman Lake	Whitman Lake	21	210	1,101	106	1,824	2,808	0	6,070
				Carroll Inlet	1,714	1,968	822	44	0	2,323	0	6,871
			Deer Mountain	Ketchikan Creek	0	51	207	66	0	0	93	417
			Port Saint Nicholas	Port Saint Nicholas	7	26	877	144	0	4,842	0	5,896
		MIC	Tamgas Creek	Tamgas	27	186	302	34	0	0	33	582
	Southern Southeast total				4,087	7,061	4,935	874	2,324	10,635	126	30,042
	Northern Southeast											
		NSRAA	Hidden Falls	Kasnyku Bay	0	0	101	0	87	90	123	401
				Gunnuk Creek	0	0	191	7	0	110	229	537
			Medvejie	Medvejie Creek	2,100	3,367	3,701	1,312	4,154	1,533	756	16,923
				Halibut Point	394	193	798	78	372	101	28	1,964
				Crawfish Inlet	55	73	276	48	13	2	1	468
				Crescent Bay	50	67	17	7	171	30	37	379
		DIPAC	Macaulay	Macaulay Hatchery	0	950	441	3,698	764	518	227	6,598
		NMFS	Little Port Walter	L Port Walter - Keta	0	16	392	4	340	0	0	752
				L Port Walter - Unuk	12	17	517	70	1,306	0	0	1,922
	Northern Southeast total				2,611	4,683	6,434	5,224	7,207	2,384	1,401	29,944
Southeast total					6,698	11,744	11,369	6,098	9,531	13,019	1,527	59,986
Southcentral												
	Prince William Sound											
		PWSAC	Wally Noerenberg	Chenega	0	0	0	0	0	0	0	0
	Prince William Sound total				0	0	0	0	0	0	0	0
	Cook Inlet											
		ADF&G	WJ Hernandez	Crooked Creek	0	0	0	0	275	0	1,070	1,345
				Eklutna Tailrace	0	0	0	688	0	0	0	688
				Ninilchik River	0	0	0	0	417	0	1,698	2,115
				Ship Creek	0	0	0	911	1,055	0	291	2,257
				Region II lakes	0	0	0	2,216	0	0	0	2,216
	Cook Inlet total				0	0	0	3,815	1,747	0	3,059	8,621
Southcentral total					0	0	0	3,815	1,747	0	3,059	8,621

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Region	Area	Agency	Hatchery	Project	Common property harvest				Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Kodiak/Westward												
	Kodiak											
		KRAA	Pillar Creek	Kodiak Road System	0	0	0	9	32	0	19	60
	Kodiak total				0	0	0	9	32	0	19	60
Kodiak/Westward total					0	0	0	9	32	0	19	60
Statewide total					6,698	11,744	11,369	9,922	11,310	13,019	4,605	68,667

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Sp/PU/S is the sum of the sport, personal use, and subsistence harvest.

[b] Tamgas Creek Hatchery data from ADF&G Mark, Tag, and Age Lab Coded Wire Tag database and does not include fish taken for broodstock or cost recovery.

Appendix J2.–Details of the estimated sockeye salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2021.

Region	Area	Agency	Hatchery	Project	Common property harvest					Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Set Net	Other	Sp/PU/S				
Southeast													
		DIPAC	Snettisham	Snettisham	3,957	15,093	0	0	21	6,800	12,256	210	38,337
				Sweetheart Lake	1,205	1,374	0	0	4,000	0	0	0	6,579
				Tahltan-Stikine R.	0	1,244	0	0	395	1,004	0	29,320	31,963
				Taku River	0	1,775	0	0	65	442	0	8,476	10,758
Southeast total					5,162	19,486	0	0	4,481	8,246	12,256	38,006	87,637
Southcentral													
	Prince William Sound												
		PWSAC	Gulkana	Gulkana	0	10,277	0	0	5,297	4,695	0	1,000	21,269
				Crosswind Lake	0	33,961	0	0	17,504	295	0	2,559	54,319
				Gulkana II	0	2,927	0	0	1,509	1,005	0	8	5,449
			Main Bay	Main Bay	30,998	341,225	74,720	0	7,760	9,523	258,148	5,975	728,349
	Prince William Sound total				30,998	388,390	74,720	0	32,070	15,518	258,148	9,542	809,386
	Cook Inlet												
		CIAA	Trail Lakes	Bear Lake/ Resurrection Bay	2,872	0	0	0	30,000	3,500	54,437	14,819	105,628
				Hidden Lake	0	0	0	10,100	0	1,204	0	50,514	61,818
				Kirschner Lake	7,170	0	0	0	0	0	16,439	0	23,609
				Leisure/Hazel Lake	0	0	0	59,128	1,600	0	0	0	60,728
				Tutka Bay	15,505	4,279	0	0	300	4,862	34,728	0	59,674
	Cook Inlet total				25,547	4,279	0	69,228	31,900	9,566	105,604	65,333	311,457
Southcentral total					56,545	392,669	74,720	69,228	63,970	25,084	363,752	74,875	1,120,843
Kodiak/Westward													
	Kodiak												
		KRAA	Kitoi Bay	Kitoi Bay	20,672	0	0	0	0	0	685	1,225	22,582
			Pillar Creek	Spiridon L	0	0	0	197,488	353	0	52,997	1,600	252,438
				Crescent L-PC	0	0	0	0	0	0	0	0	0
				Foul Bay	6,982	0	0	0	0	0	0	0	6,982
	Kodiak total				27,654	0	0	197,488	353	0	53,682	2,825	282,002
Kodiak/Westward total					27,654	0	0	197,488	353	0	53,682	2,825	282,002
Statewide total					89,361	412,155	74,720	266,716	68,804	33,330	429,690	115,706	1,490,482

Appendix J3.–Details of the estimated coho salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2021.

Region	Area	Agency	Hatchery	Project	Common property harvest				Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Southeast												
	Southern Southeast											
		SSRAA	Burnett Inlet	Neck Lake	748	2,595	288	5,383	0	14,215	811	24,040
				Anita Bay	17	1,508	299	41	0	0	0	1,865
				Neets Bay	1,820	1,969	6,502	655	0	0	0	10,946
			Crystal Lake	Crystal Lake	0	124	1,049	0	700	0	0	1,873
			Neets Bay	Neets Bay	12,332	14,403	36,688	4,209	792	42,495	0	110,919
			Whitman Lake	Anita Bay	174	4,609	3,505	0	0	0	0	8,288
				Nakat Inlet	5,987	16,476	8,691	1,767	0	0	0	32,921
				Neets Bay	1,012	1,182	3,011	353	0	0	0	5,558
				Whitman Lake	2,705	2,382	5,200	242	3,312	2,808	0	16,649
				Whitman L-Summer	4,440	465	804	113	0	7,732	0	13,554
			Klawock River	Klawock	32,607	51	82,701	8,958	3,727	12,822	12,895	153,761
				Port Asumcion	2,450	0	7,742	1,028	0	0	0	11,220
		MIC	Tamgas Creek	Tamgas	3,551	3,756	10,657	668	0	0	0	18,632
	Southern Southeast total				67,843	49,520	167,137	23,417	8,531	80,072	13,706	410,226
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls	2,838	348	6,970	469	12,213	5,684	11,058	39,580
				Deer Lake	678	0	14,193	2,580	0	16,109	9,471	43,031
				Banner Lake	0	0	177	0	0	0	150	327
			Sawmill Creek	Deep Inlet	2,385	1,270	9,359	1,617	249	0	0	14,880
				Bear Cove	668	331	6,592	1,661	2,116	257	1,940	13,565
		AKI	Port Armstrong	Port Armstrong	1,241	0	20,705	1,379	7,335	2,285	694	33,639
		DIPAC	Macaulay	Macaulay Hatchery	162	11,667	5,474	9,301	699	15,131	410	42,844
		SSSC	Sheldon Jackson	Sheldon Jackson	608	456	3,040	566	231	136	202	5,239
	Northern Southeast total				8,580	14,072	66,510	17,573	22,843	39,602	23,925	193,105
Southeast total					76,423	63,592	233,647	40,990	31,374	119,674	37,631	603,331

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Region	Area	Agency	Hatchery	Project	Common property harvest				Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Southcentral												
	Prince William Sound											
		PWSAC	Wally Noerenberg	Lake Bay	0	113	0	0	1,285	0	5,000	6,398
				Chenega	0	0	0	360	0	0	0	360
				Cordova	0	0	0	360	0	0	0	360
				Whittier	0	0	0	179	0	0	0	179
		VFDA	Solomon Gulch	Solomon Gulch	40,175	0	0	19,309	4,010	2,526	520	66,540
	Prince William Sound total				40,175	113	0	20,208	5,295	2,526	5,520	73,837
	Cook Inlet											
		CIAA	Trail Lakes	Bear Lake	0	0	0	500	525	0	1,796	2,821
		ADF&G	WJ Hernandez	Bird Creek	0	0	0	2,048	0	0	0	2,048
				Eklutna Tailrace	0	0	0	1,477	0	0	0	1,477
				Resurrection Bay	0	0	0	0	168	0	0	168
				Ship Creek	0	0	0	3,796	909	0	627	5,332
				RII Lakes	0	0	0	1,252	0	0	0	1,252
	Cook Inlet total				0	0	0	7,821	1,602	0	2,423	13,098
Southcentral total					40,175	113	0	28,029	6,897	2,526	7,943	86,935
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	87,679	0	0	50	2,112	9,360	474	99,675
			Pillar Creek	Kodiak Road System	0	0	0	8,500	115	0	1,074	9,689
	Kodiak total				87,679	0	0	8,550	2,227	9,360	1,548	109,364
Kodiak/Westward total					87,679	0	0	8,550	2,227	9,360	1,548	109,364
Statewide total					204,280	63,710	233,650	77,570	40,500	131,560	47,122	799,630

Note: SSRAA = Southern Southeast Regional Aquaculture Association; MIC = Metlakatla Indian Community; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; NMFS = National Marine Fisheries Service; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Sp/PU/S is the sum of the sport, personal use, and subsistence harvest.

[b] Tamgas Creek Hatchery data from ADF&G Mark, Age and Tag Lab Coded Wire Tag database.

Appendix J4.–Details of the estimated pink salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2021.

Region	Area	Agency	Hatchery	Project	Common property harvest				Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Southeast												
	Northern Southeast											
		NSRAA	Medvejie	Medvejie Creek	0	0	0	0	848	0	400	1,248
		AKI	Port Armstrong	Port Armstrong	72,971	0	0	0	149,518	20,708	0	243,197
		SSSC	Sheldon Jackson	Sheldon Jackson	70,182	51,041	6,380	1,516	9,667	273,899	0	412,685
	Northern Southeast total				143,153	51,041	6,380	1,516	160,033	294,607	400	657,130
Southeast total					143,153	51,041	6,380	1,516	160,033	294,607	400	657,130
Southcentral												
	Prince William Sound											
		PWSAC	A F Koernig	Armin F Koernig	2,310,626	338	0	0	340,693	1,875,147	62,000	4,588,804
			Cannery Creek	Cannery Creek	8,731,846	72,958	0	0	573,264	648,197	240,000	10,266,265
			Wally Noerenberg	Lake Bay	7,744,228	206,861	0	0	533,823	915,323	35,000	9,435,235
		VFDA	Solomon Gulch	Solomon Gulch	18,354,722	0	0	10,067	579,472	1,429,640	110,907	20,484,808
	Prince William Sound total				37,141,422	280,157	0	10,067	2,027,252	4,868,307	447,907	44,775,112
	Cook Inlet											
		CIAA	Tutka Bay	Tutka Bay	33,975	987	0	100	117,511	303,510	10,550	466,633
			Port Graham	Port Graham	0	0	0	250	14,884	0	12,824	27,958
	Cook Inlet total				33,975	987	0	350	132,395	303,510	23,374	494,591
Southcentral total					37,175,397	281,144	0	10,417	2,159,647	5,171,817	471,281	45,269,703
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	7,798,057	0	0	0	432,107	2,861,944	60,000	11,152,108
	Kodiak total				7,798,057	0	0	0	432,107	2,861,944	60,000	11,152,108
Kodiak/Westward total					7,798,057	0	0	0	432,107	2,861,944	60,000	11,152,108
Statewide total					45,116,610	332,190	6,380	11,930	2,751,790	8,328,370	531,680	57,078,941

Note: NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; SSSC = Sitka Sound Science Center; PWSAC = Prince William Sound Aquaculture Association; VFDA = Valdez Fisheries Development Association, Inc.; CIAA = Cook Inlet Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Sp/PU/S is the sum of the sport, personal use, and subsistence harvest.

Appendix J5.–Details of the estimated chum salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2021.

Region	Area	Agency	Hatchery	Project	Common property harvest					Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Other	Sp/PU/S[a]				
Southeast													
	Southern Southeast												
		SSRAA	Burnett Inlet	Burnett Inlet	1,018	8,993	0	0	0	10,583	0	0	20,594
				Burnett Inlet-Summer	35,803	36,649	0	0	0	101,865	72,687	0	247,004
				Anita Bay	62,666	120,338	0	0	0	0	64,462	0	247,466
				Port Asumcion	117,141	597	0	0	0	0	169,348	0	287,086
			Neets Bay	Neets Bay	44,150	12,132	0	0	0	150,795	26,843	0	233,920
				Neets Bay-Fall	1,571	2,740	0	0	0	4,650	4,165	0	13,126
				Nakat Inlet	122	3,889	0	0	0	0	0	0	4,011
			Whitman Lake	Kendrick Bay	359,508	17,103	0	0	0	0	26,246	0	402,857
				Nakat Inlet-Summer	15,797	157,539	0	0	0	0	6,997	0	180,333
	Southern Southeast total				637,776	359,980	0	0	0	267,893	370,748	0	1,636,397
	Northern Southeast												
		NSRAA	Hidden Falls	Hidden Falls	3,777	376	491	0	0	180,140	28,122	18,896	231,802
				Southeast Cove	52,275	16	0	0	0	1,004	365	1,019	54,679
				Thomas Bay	79,329	52	0	0	0	0	17	1,374	80,772
			Medvejie	Medvejie Creek	804,240	295,418	387,464	0	0	115,726	35,813	11,352	1,650,013
				Medvejie Creek-Kadashan	60,824	30,321	3,928	0	0	15,593	5,701	3,012	119,379
			Sawmill Creek	Crawfish Inlet	406,559	9,328	178,800	0	0	0	661,494	1,197	1,257,378
			Gunnuk Creek	Gunnuk Creek	2,793	51	0	0	1,500	22,727	6,917	2,310	36,298
		AKI	Port Armstrong	Port Armstrong	1,251	440	3,152	0	0	28,115	256	585	33,799
		DIPAC	Macaulay	Gastineau	3,641	162,363	1,387	0	1,000	179,933	40,292	15,625	404,241
				Amalga Harbor	5,925	191,342	2,257	0	0	0	458,077	203	657,804
				Boat Harbor	2,534	277,780	965	0	0	0	0	87	281,366
				Limestone Inlet	528	57,892	201	0	0	0	0	18	58,639
		SSSC	Sheldon Jackson	Sheldon Jackson	101,399	37,246	48,852	0	0	14,660	4,515	1,432	208,104
			Medvejie	Deep Inlet	19,547	7,180	8,776	0	226	4,241	35,651	0	75,621
	Northern Southeast total				1,544,622	1,069,805	636,273	0	2,726	562,139	1,277,220	57,110	5,149,895
Southeast total					2,182,398	1,429,785	636,273	0	2,726	830,032	1,647,968	57,110	6,786,292

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Region	Area	Agency	Hatchery	Project	Common property harvest					Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Other	Sp/PU/S[a]				
Southcentral													
	Prince William Sound												
		PWSAC	Wally Noerenberg	Lake Bay	77,987	1,167,053	0	4,933	0	232,305	405,483	10,000	1,897,761
				Port Chalmers	224,279	31,772	0	337	0	0	0	0	256,388
			A F Koernig	Armin F Koernig	268,519	110,969	0	6,475	0	0	0	0	385,963
	Prince William Sound total				570,785	1,309,794	0	11,745	0	232,305	405,483	10,000	2,540,112
Southcentral total					570,785	1,309,794	0	11,745	0	232,305	405,483	10,000	2,540,112
Kodiak/Westward													
	Kodiak												
		KRAA	Kitoi Bay	Kitoi Bay	48,557	0	0	0	0	61,346	177	828	110,908
	Kodiak total				48,557	0	0	0	0	61,346	177	828	110,908
Kodiak/Westward total					48,557	0	0	0	0	61,346	177	828	110,908
Statewide total					2,801,740	2,739,580	636,270	11,750	2,726	1,123,680	2,053,630	67,940	9,437,312

Note: SSRAA = Southern Southeast Regional Aquaculture Association; NSRAA = Northern Southeast Regional Aquaculture Association; AKI = Armstrong Keta Inc.; DIPAC = Douglas Island Pink and Chum, Incorporated; SSSC = Sitka Sound Science Center; PWSAC = Prince William Sound Aquaculture Association; KRAA = Kodiak Regional Aquaculture Association.

[a] Other harvest includes commercial set net and test fisheries.

[b] Sp/PU/S is the sum of the sport, personal use, and subsistence harvest.

APPENDIX K: STATEWIDE COMMERCIAL HARVEST SUMMARIES, 1977–2021

Appendix K1.–Summary of statewide commercial harvest (including cost recovery) of hatchery-produced salmon from Alaska's fisheries enhancement projects as reported by operators, 1977–2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	0	183	0	125,718	0	125,901
1978	42	720	0	127,188	2,214	130,164
1979	445	300,758	0	532,303	1,514	835,020
1980	4,388	638,408	102	1,406,028	8,557	2,057,483
1981	1,609	362,326	49,258	3,904,308	39,972	4,357,473
1982	3,652	27,590	84,703	6,067,429	73,869	6,257,243
1983	2,075	158,000	82,320	5,274,149	212,871	5,729,415
1984	5,454	236,762	139,124	4,838,680	1,550,559	6,770,579
1985	10,339	447,448	243,382	12,891,224	1,000,279	14,592,672
1986	14,644	872,507	442,285	7,630,445	1,317,833	10,277,714
1987	24,594	613,433	203,990	19,819,167	1,432,853	22,094,037
1988	30,336	1,001,421	143,768	12,099,427	1,824,455	15,099,407
1989	36,770	1,342,578	324,436	28,403,238	946,973	31,053,995
1990	69,942	1,366,792	764,794	39,580,126	1,482,413	43,264,067
1991	79,391	2,289,246	1,058,694	36,240,498	1,828,535	41,496,364
1992	61,985	1,518,875	1,231,079	12,213,636	2,358,376	17,383,951
1993	59,688	2,061,517	772,961	17,821,439	5,892,177	26,607,782
1994	46,271	1,610,445	1,120,161	38,814,084	7,984,962	49,575,923
1995	81,554	1,076,829	1,085,229	22,714,552	8,634,008	33,592,172
1996	92,490	2,333,381	1,097,666	26,178,537	14,154,597	43,856,671
1997	70,688	2,505,559	808,105	30,982,804	11,823,168	46,190,324
1998	40,362	1,882,080	1,087,110	34,564,050	12,629,120	50,202,722
1999	52,467	2,587,967	1,278,359	47,193,297	14,151,687	65,263,777
2000	97,295	1,531,510	1,257,104	38,191,003	17,684,623	58,761,535
2001	114,098	2,518,183	1,336,430	44,616,086	8,359,543	56,944,340
2002	95,041	2,749,745	1,707,789	28,443,301	11,815,552	44,811,428
2003	90,028	3,772,798	1,102,657	55,071,886	12,780,879	72,818,248
2004	126,723	2,679,459	925,231	28,309,396	10,081,119	42,121,928
2005	81,091	2,003,742	1,118,220	64,949,983	6,675,803	74,828,839
2006	58,321	2,138,461	1,074,512	24,773,517	14,621,065	42,665,876
2007	86,964	2,044,914	890,020	62,677,909	11,583,661	77,283,468
2008	100,165	1,515,874	1,200,067	42,075,688	12,927,247	57,819,041
2009	88,167	1,537,602	931,506	27,483,685	11,887,347	41,928,307
2010	74,148	2,061,331	1,115,518	72,484,852	12,052,096	87,787,945
2011	102,897	2,683,149	1,146,754	29,876,986	10,553,999	44,363,785
2012	72,677	2,312,464	770,101	26,699,246	14,375,480	44,229,968
2013	95,916	1,801,171	1,517,608	88,942,840	14,227,394	106,584,929
2014	66,173	2,294,284	1,772,277	47,234,781	6,881,646	58,249,161
2015	79,313	2,338,510	950,071	77,896,371	11,327,248	92,591,513
2016	43,900	1,665,477	757,140	11,526,801	10,451,756	24,445,074
2017	42,045	1,448,104	625,796	30,211,670	14,316,104	46,643,719
2018	41,404	1,749,345	706,256	23,280,676	13,091,328	38,869,009
2019	42,607	1,316,081	899,909	35,358,631	12,002,226	49,619,454
2020	33,812	1,150,972	519,660	22,574,876	5,737,689	30,017,009
2021	42,830	1,272,642	633,189	53,783,540	8,242,965	63,975,166
Grand total	2,464,801	69,825,205	34,975,341	1,345,886,051	341,027,762	1,794,179,160

Source: ADF&G PNP hatchery database. [URL not publicly available].

Appendix K2.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Southeast Alaska fisheries enhancement projects as reported by operators, 1977–2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	0	0	0	108,173	0	108,173
1978	0	0	0	0	2,214	2,214
1979	445	0	0	33,555	1,514	35,514
1980	4,388	0	0	500	5,627	10,515
1981	1,504	0	48,224	139,000	3,286	192,014
1982	3,352	0	83,128	16,568	64,874	167,922
1983	1,175	0	80,418	181,494	199,623	462,710
1984	5,234	0	138,082	235,694	1,466,670	1,845,680
1985	10,039	0	227,701	911,977	933,167	2,082,884
1986	14,219	18,600	427,244	116,114	1,095,304	1,671,481
1987	23,719	36,000	155,405	1,370,029	1,296,283	2,881,436
1988	28,585	20,400	51,674	124,571	1,290,171	1,515,401
1989	34,810	36,672	93,208	859,426	601,039	1,625,155
1990	68,207	114,167	526,611	1,319,810	785,933	2,814,728
1991	78,387	112,332	901,169	1,774,348	1,190,607	4,056,843
1992	58,359	208,034	1,027,697	3,515,448	2,114,365	6,923,903
1993	55,124	363,605	690,645	688,861	4,672,092	6,470,327
1994	43,876	171,702	930,116	5,787,031	6,965,625	13,898,350
1995	78,449	211,343	876,909	1,530,366	7,645,023	10,342,090
1996	89,123	494,246	848,507	2,009,727	12,041,241	15,482,844
1997	68,934	358,572	619,917	2,447,974	9,931,592	13,426,989
1998	38,565	237,127	873,054	2,235,834	11,559,308	14,943,888
1999	51,355	157,351	1,075,022	4,087,903	11,393,715	16,765,346
2000	96,569	270,520	629,963	438,750	12,689,973	14,125,775
2001	113,512	409,979	1,002,482	2,346,847	5,643,197	9,516,017
2002	94,286	120,186	1,449,192	1,924,064	5,615,259	9,202,987
2003	89,256	196,852	884,916	929,740	8,963,620	11,064,384
2004	124,715	565,425	732,886	1,464,011	8,096,243	10,983,280
2005	80,465	271,566	737,311	1,582,244	4,664,919	7,336,505
2006	57,682	380,323	565,156	528,023	12,409,239	13,940,423
2007	86,497	200,087	598,084	1,218,852	7,803,377	9,906,897
2008	100,165	119,859	781,451	173,914	8,090,814	9,266,203
2009	88,137	140,276	737,684	1,318,308	8,808,558	11,092,963
2010	74,148	91,763	963,854	1,198,717	7,791,660	10,120,142
2011	102,897	180,213	869,686	1,339,987	8,583,049	11,075,832
2012	72,677	227,300	710,674	340,783	10,760,144	12,111,578
2013	95,916	179,181	1,206,772	2,500,909	10,489,177	14,471,955
2014	66,173	216,118	1,360,945	511,684	5,733,451	7,888,371
2015	79,313	164,351	836,003	527,887	9,145,108	10,752,662
2016	43,900	289,541	736,677	358,762	7,457,181	8,886,061
2017	42,041	211,774	570,985	1,287,528	9,743,777	11,856,105
2018	41,402	238,224	563,376	401,665	9,928,199	11,172,866
2019	42,607	141,045	585,800	346,767	7,411,306	8,527,525
2020	33,812	101,051	368,733	950,091	4,001,006	5,454,693
2021	42,830	36,904	493,336	495,181	5,896,424	6,964,675
Grand total	2,426,849	7,292,689	27,060,697	51,679,117	254,984,954	343,444,306

Source: ADF&G PNP hatchery database. [URL not publicly available].

Appendix K3.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Prince William Sound fisheries enhancement projects as reported by operators, 1977–2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	0	183	0	17,545	0	17,728
1978	0	720	0	114,188	0	114,908
1979	0	900	0	498,748	0	499,648
1980	0	350	0	1,405,528	2,930	1,408,808
1981	0	3,600	0	2,138,544	36,686	2,178,830
1982	0	3,600	0	5,679,161	1,569	5,684,330
1983	0	6,600	0	4,385,455	13,108	4,405,163
1984	0	5,318	0	4,037,386	82,991	4,125,695
1985	0	31,955	0	8,067,647	64,137	8,163,739
1986	0	30,404	3,263	6,792,641	199,077	7,025,385
1987	100	47,347	23,640	17,304,638	127,397	17,503,122
1988	231	92,552	66,452	10,533,495	524,894	11,217,624
1989	340	175,643	202,497	20,173,723	341,374	20,893,577
1990	235	73,917	218,455	37,553,433	643,123	38,489,163
1991	184	582,200	129,270	32,870,650	250,408	33,832,712
1992	1,311	644,020	192,062	7,479,216	237,546	8,554,155
1993	2,045	502,536	43,635	4,418,071	1,177,483	6,143,770
1994	1,195	300,248	116,745	29,409,289	939,605	30,767,082
1995	891	369,198	139,430	14,246,639	662,712	15,418,870
1996	588	903,047	166,824	22,751,594	2,076,445	25,898,498
1997	924	1,463,155	62,944	24,686,332	1,878,810	28,092,165
1998	978	768,074	45,585	24,760,828	1,031,706	26,607,171
1999	0	440,326	80,249	37,968,264	2,617,072	41,105,911
2000	0	490,077	478,633	33,040,270	4,690,867	38,699,847
2001	0	972,582	175,083	28,466,847	2,499,721	32,114,233
2002	0	1,163,539	36,232	18,771,143	6,111,569	26,082,483
2003	0	1,571,592	76,843	46,935,174	3,351,054	51,934,663
2004	0	694,501	46,578	20,422,252	1,745,266	22,908,597
2005	0	517,890	227,644	47,620,680	1,919,070	50,285,284
2006	0	1,183,213	340,551	19,835,604	2,034,278	23,393,646
2007	0	1,234,571	166,107	53,461,389	3,559,558	58,421,625
2008	0	856,523	297,900	39,783,382	4,743,408	45,681,213
2009	0	949,481	39,260	17,225,812	2,977,790	21,192,343
2010	0	1,510,501	37,989	68,047,457	4,069,152	73,665,099
2011	0	1,757,043	206,733	26,362,128	1,650,418	29,976,322
2012	0	1,622,566	11,074	23,390,393	3,396,596	28,420,629
2013	0	1,041,824	258,104	74,616,332	3,640,837	79,557,097
2014	0	1,494,284	180,742	40,921,607	1,102,613	43,699,246
2015	0	1,660,967	74,728	70,375,473	2,138,730	74,249,898
2016	0	926,203	8,653	9,930,534	2,924,763	13,790,153
2017	0	723,773	25,888	26,714,899	4,420,141	31,884,701
2018	0	1,040,335	5,751	18,190,368	2,996,641	22,233,095
2019	0	883,032	279,732	29,907,940	4,574,274	35,644,978
2020	0	741,757	22,864	16,079,204	1,712,336	18,556,161
2021	0	752,256	42,814	42,289,886	2,297,807	45,382,763
Grand total	9,022	30,234,403	4,530,954	1,089,681,789	81,465,962	1,205,922,130

S*ource*: ADF&G PNP hatchery database. [URL not publicly available].

Appendix K4.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Cook Inlet fisheries enhancement projects as reported by operators, 1978–2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1978	42	0	0	0	0	42
1979	0	299,858	0	0	0	299,858
1980	0	638,058	102	0	0	638,160
1981	105	358,726	1,034	963,350	0	1,323,215
1982	300	23,990	1,575	181,400	7,426	214,691
1983	900	151,400	1,902	577,200	140	731,542
1984	220	231,444	1,042	230,000	898	463,604
1985	300	415,493	3,681	463,600	1,875	884,949
1986	350	808,503	11,178	380,190	23,152	1,223,373
1987	670	521,349	24,945	84,500	5,313	636,777
1988	1,450	676,669	22,042	836,000	8,423	1,544,584
1989	1,620	330,263	28,731	877,600	4,560	1,242,774
1990	1,500	378,708	14,728	167,400	49,257	611,593
1991	820	483,514	18,546	204,800	25,801	733,481
1992	2,315	388,021	10,580	373,577	2,933	777,426
1993	2,519	497,376	22,681	637,807	38,002	1,198,385
1994	1,200	256,977	26,516	1,563,101	74,725	1,922,519
1995	2,214	324,248	18,655	2,423,894	110,962	2,879,973
1996	2,779	425,709	25,485	442,816	22,711	919,500
1997	830	274,873	16,304	2,637,370	1,745	2,931,122
1998	819	192,548	18,638	1,295,388	106	1,507,499
1999	1,112	1,150,784	7,188	1,080,130	0	2,239,214
2000	726	310,815	15,270	1,052,285	0	1,379,096
2001	586	724,095	7,133	530,265	0	1,262,079
2002	755	840,439	13,106	1,051,320	0	1,905,620
2003	772	1,204,972	5,849	619,079	0	1,830,672
2004	2,008	1,142,202	7,631	2,460,712	0	3,612,553
2005	626	999,050	1,536	2,143,317	0	3,144,529
2006	639	460,023	600	251,781	0	713,043
2007	467	402,332	48	112,801	0	515,648
2008	0	223,062	350	0	0	223,412
2009	30	201,778	0	0	0	201,808
2010	0	148,478	0	0	0	148,478
2011	0	254,223	0	0	0	254,223
2012	0	138,961	0	0	0	138,961
2013	0	118,069	0	66,581	0	184,650
2014	0	209,311	0	25,430	0	234,741
2015	0	209,789	0	2,166,733	0	2,376,522
2016	0	218,624	0	84,002	0	302,626
2017	4	135,709	201	211,822	246	347,982
2018	2	288,499	79	1,487,933	82	1,776,595
2019	0	193,468	3	190,408	163	384,042
2020	0	153,012	143	929,977	192	1,083,324
2021	0	204,658	0	338,472	0	543,130
Grand total	28,680	17,610,080	327,502	29,143,041	378,712	47,488,015

Source: ADF&G PNP hatchery database. [URL not publicly available].

Appendix K5.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Kodiak fisheries enhancement projects as reported by operators, 1981–2020.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	0	0	0	0	0	0
1978	0	0	0	13,000	0	13,000
1979	0	0	0	0	0	0
1980	0	0	0	0	0	0
1981	0	0	0	663,414	0	663,414
1982	0	0	0	190,300	0	190,300
1983	0	0	0	130,000	0	130,000
1984	0	0	0	335,600	0	335,600
1985	0	0	12,000	3,448,000	1,100	3,461,100
1986	75	15,000	600	341,500	300	357,475
1987	105	8,737	0	1,060,000	3,860	1,072,702
1988	70	211,800	3,600	605,361	967	821,798
1989	0	800,000	0	6,492,489	0	7,292,489
1990	0	800,000	5,000	539,483	4,100	1,348,583
1991	0	1,111,200	9,709	1,390,700	361,719	2,873,328
1992	0	278,800	740	845,395	3,532	1,128,467
1993	0	698,000	16,000	12,076,700	4,600	12,795,300
1994	0	881,518	46,784	2,054,663	5,007	2,987,972
1995	0	172,040	50,235	4,513,653	215,311	4,951,239
1996	0	510,379	56,850	974,400	14,200	1,555,829
1997	0	408,959	108,940	1,211,128	11,021	1,740,048
1998	0	684,331	149,833	6,272,000	38,000	7,144,164
1999	0	839,506	115,900	4,057,000	140,900	5,153,306
2000	0	460,098	133,238	3,659,698	303,783	4,556,817
2001	0	411,527	151,732	13,272,127	216,625	14,052,011
2002	0	625,581	209,259	6,696,774	88,724	7,620,338
2003	0	799,382	135,049	6,587,893	466,205	7,988,529
2004	0	277,331	138,136	3,962,421	239,610	4,617,498
2005	0	215,236	151,729	13,603,742	91,814	14,062,521
2006	0	114,902	168,205	4,158,109	177,548	4,618,764
2007	0	207,924	125,781	7,884,867	220,726	8,439,298
2008	0	316,430	120,366	2,118,392	93,025	2,648,213
2009	0	246,067	154,562	8,939,565	100,999	9,441,193
2010	0	310,589	113,675	3,238,678	191,284	3,854,226
2011	0	491,670	70,335	2,174,871	320,532	3,057,408
2012	0	323,637	48,353	2,968,070	218,740	3,558,800
2013	0	462,097	52,732	11,759,018	97,380	12,371,227
2014	0	374,571	230,590	5,776,060	45,582	6,426,803
2015	0	303,403	39,340	4,826,278	43,410	5,212,431
2016	0	231,109	11,810	1,153,503	69,812	1,466,234
2017	0	376,848	28,722	1,997,421	151,940	2,554,931
2018	0	182,287	137,050	3,200,710	166,406	3,686,453
2019	0	103,098	34,374	4,913,516	16,483	5,067,471
2020	0	155,152	127,920	4,615,604	24,155	4,922,831
2021	0	278,824	97,039	10,660,001	48,734	11,084,598
Grand total	310	14,691,211	3,068,513	175,874,211	4,260,308	197,894,553

Source: ADF&G PNP hatchery database. [URL not publicly available].