Regional Information Report No. 5J21-01

Alaska Salmon Fisheries Enhancement Annual Report 2020

by

Lorna Wilson

On March 26, 2021, the following changes were made to this report:

- Exvessel value (%) of the commercial coho salmon harvest (p. 13)
- Statewide hatchery release numbers for all species (p. 15)
- Figures 11 and 12 numbers (p. 18)
- Prince William Sound commercial common property harvest number and percentage of total catch (p. 20)
- Figure 14 numbers (p. 21)
- Cook Inlet hatchery release numbers for all species (p. 23)
- Kodiak commercial common property harvest number and percent of total catch (p. 25)
- Figure 20 numbers (p. 25)
- Kodiak salmon release numbers for all species (p. 26)
- Interior hatchery return numbers (p. 27)

March 2021

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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March 2021

The Regional Information Report Series was established in 1987 and was redefined in 2006 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at http://www.adfg.alaska.gov/sf/publications/

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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 fisheries managers can estimate the strength of wild stocks in the harvest inseason and manage wild stocks conservatively. Hatcheries supplement—not replace–wild stock production. Harvests in 2013, 2015, and 2017 were 3 of the 4 highest wild stock salmon returns 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 2020, the commercial fleet caught about 31 million hatchery-produced salmon worth an estimated $69 million dollars in exvessel value. Hatchery fish contributed 27% of the statewide commercial salmon harvest and 23% of the statewide commercial harvest exvessel value. An additional 190,000 Alaska hatchery fish were caught in the sport, personal use, and subsistence fisheries. In preparation for future production, Alaska hatcheries released 1.7 billion juvenile salmon and took 2.0 billion salmon eggs.

Key words: 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] At Hidden Falls Hatchery, fish harvested in the special harvest area 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. *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.

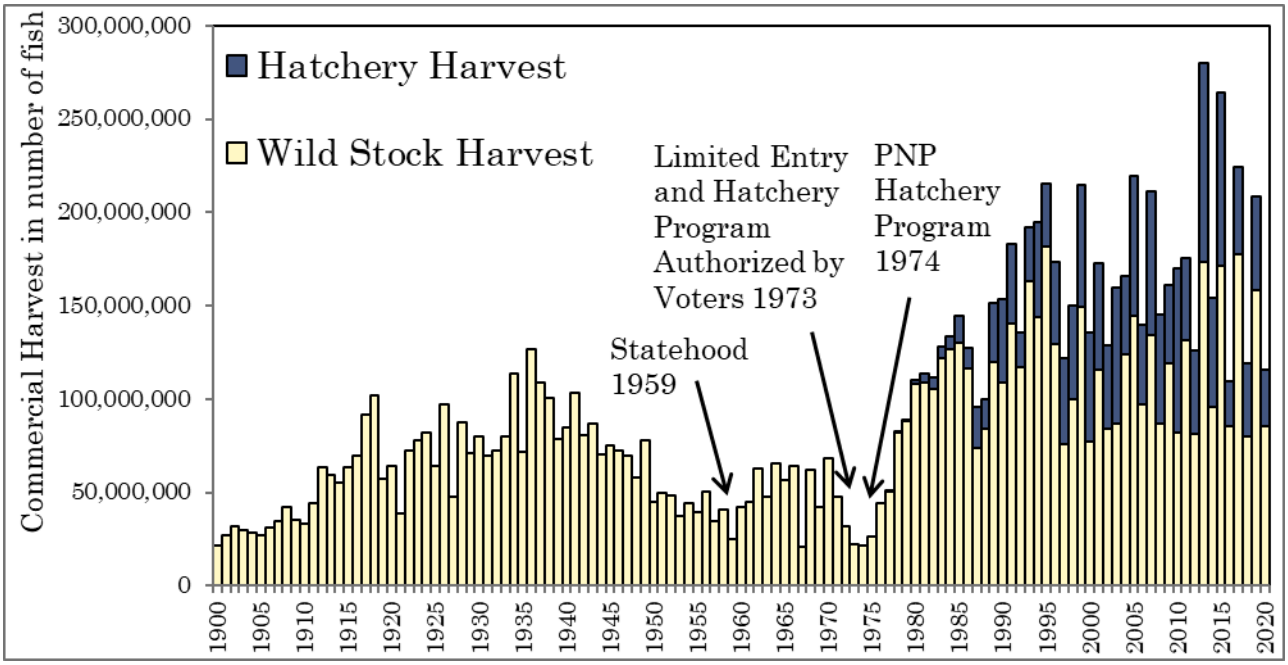

Figure 1.–Commercial salmon harvest in Alaska, 1900–2020.

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, the 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 US 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 (2010–2020) annually averaged 176 million fish—an increase of 450% 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 1993.

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

[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.

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 US/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.

ALASKA PRIVATE NONPROFIT HATCHERY PLANNING

Regional Aquaculture Associations

Regional Aquaculture Associations (RAAs) exist for many of Alaska's salmon planning regions. Where RAAs operate hatcheries, they also form PNP corporations, and have a board of directors whose membership is composed of commercial salmon 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 (RPT). 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.

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 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.

[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.

Permits and Plans for Hatchery Activities

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 or Statewide Stocking Plan. 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 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 and 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.

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. When those 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 marked 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, though some were finclipped. In the 1980s, hatcheries started tagging juvenile salmon by inserting

a coded wire tag (CWT) into the nose of a portion of salmon from release groups (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.

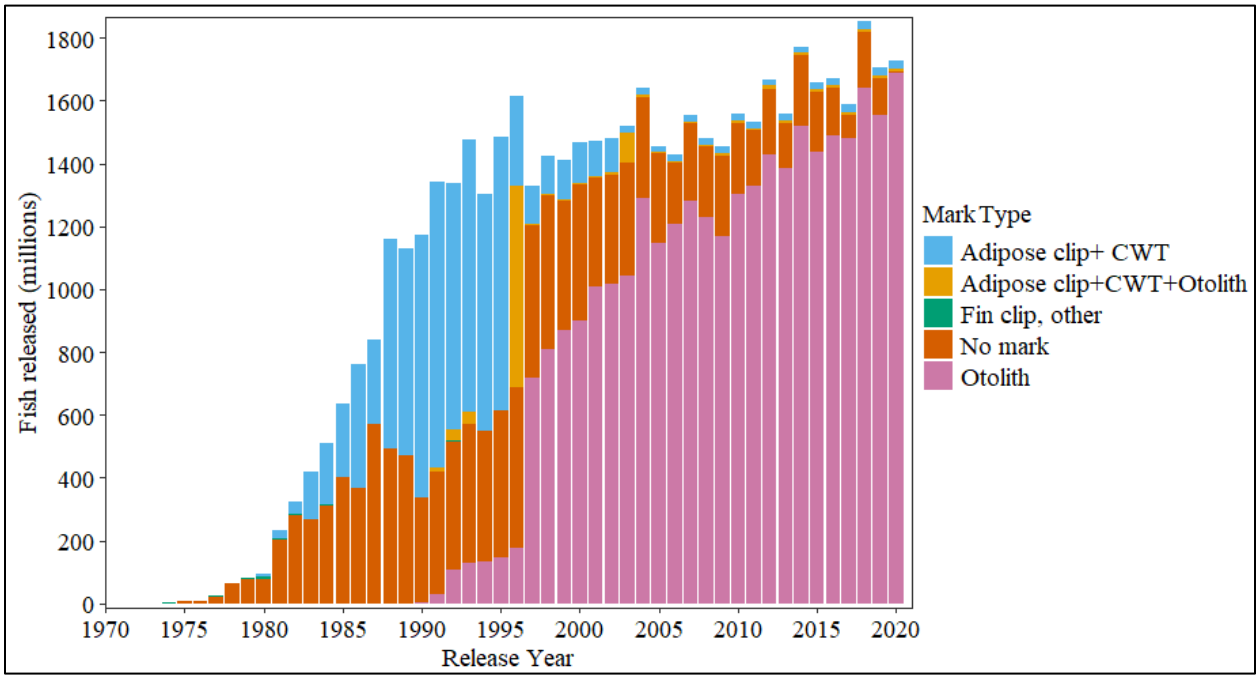

Figure 2.–Juvenile salmon released by Alaska hatcheries by mark type, 1970–2020.

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 means fish can be marked with distinct marks, allowing for separation of stocks among hatcheries, release sites, and brood years. As manipulation of rearing water is used to thermal mark 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.

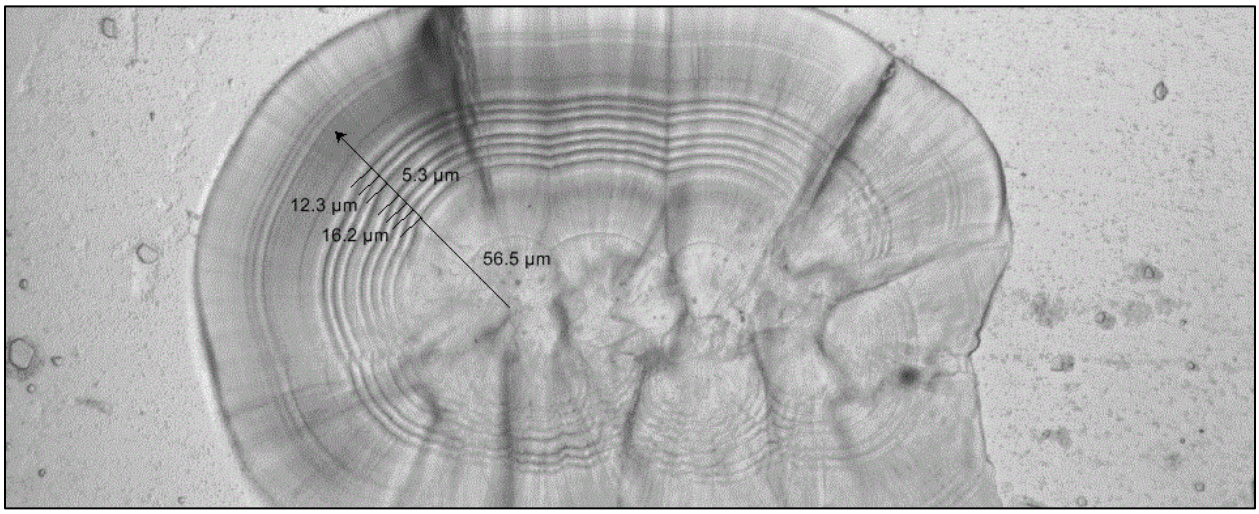

Figure 3.–Salmon otolith (ear stone) with a thermal mark. This otolith was taken from a juvenile sockeye salmon at Snettisham Hatchery in Juneau, AK.
Source: Mark Characteristic Report. https://mtalab.adfg.alaska.gov/OTO/reports/VoucherSummary.aspx?mi=TAHLTAN16 (accessed 3/3/2021).

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

[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).

(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).

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.

NONPRIVATE 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.

2020 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 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 operates Tamgas Creek Hatchery. Activities at non-PNP hatcheries are included in this report, as available. There are 3 PNP hatchery facilities

[10] Study findings can be found at http://www.adfg.alaska.gov/index.cfm?adfg=fishingHatcheriesResearch.findings_updates (accessed 3/3/2021).

[11] https://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.stockingPlan (accessed 3/3/2021).

that are permitted but did not take eggs or contribute to salmon returns in 2020: Perry Island Hatchery (Prince William Sound), Eklutna Hatchery (Cook Inlet), and Little Port Walter operation by AKI.

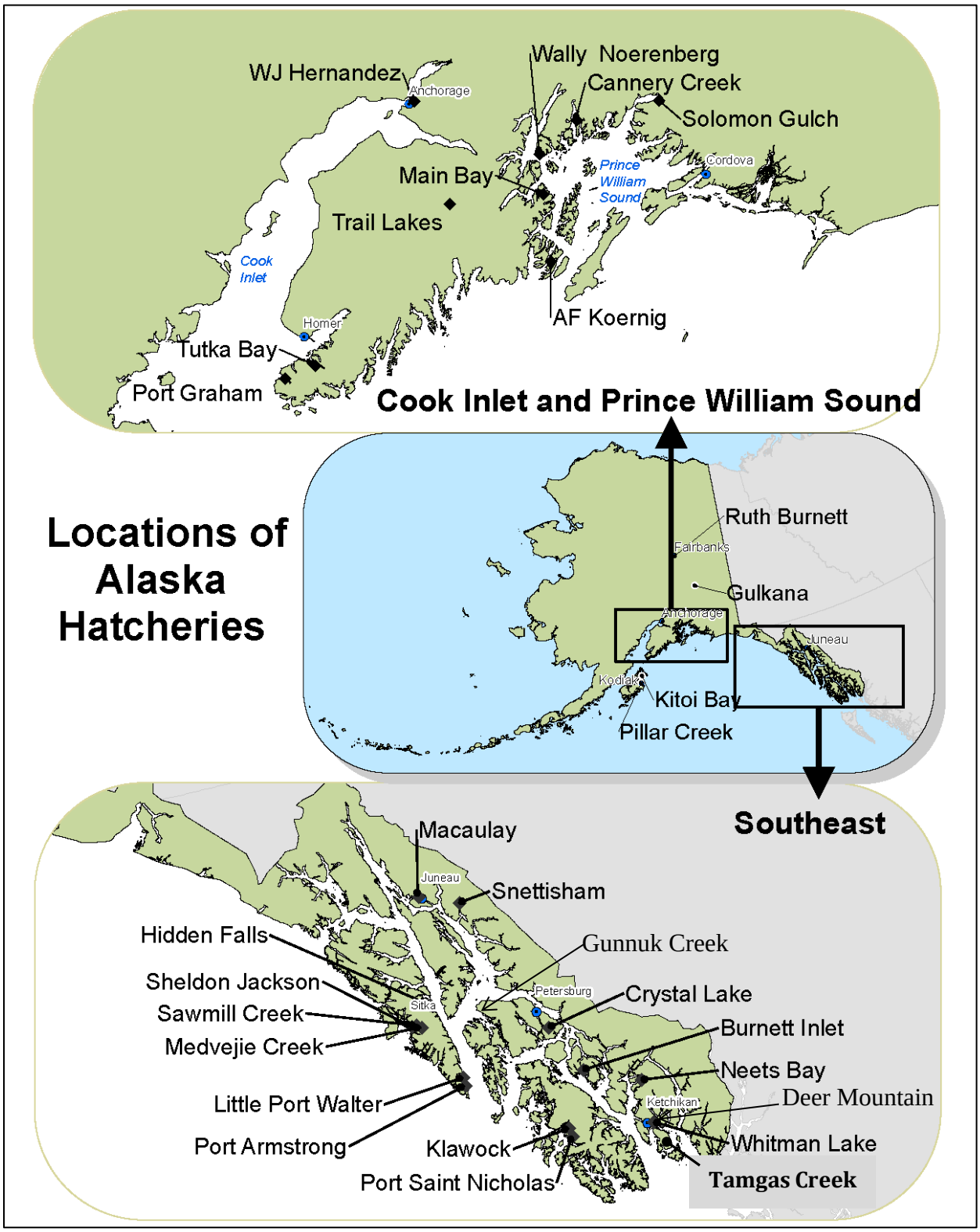

Figure 4.–Salmon hatcheries currently operating in Alaska.

STATEWIDE HATCHERY PRODUCTION

Hatchery Return

About 34 million adult hatchery salmon returned to Alaska waters in 2020 (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 returns attributed to Alaska hatcheries (including common property harvest, cost-recovery harvest, broodstock, and other) as reported by operators, by area and species, in 2020.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	51,316	127,493	960,086	1,080,471	4,752,642	6,971,946
Prince William Sound	200	773,279	59,996	17,557,290	1,929,683	20,320,448
Cook Inlet	9,658	202,185	14,656	1,181,019	0	1,407,518
Kodiak	50	159,348	156,528	4,966,668	92,244	5,374,838
Total	61,224	1,262,305	1,191,266	24,785,448	6,774,569	34,074,750

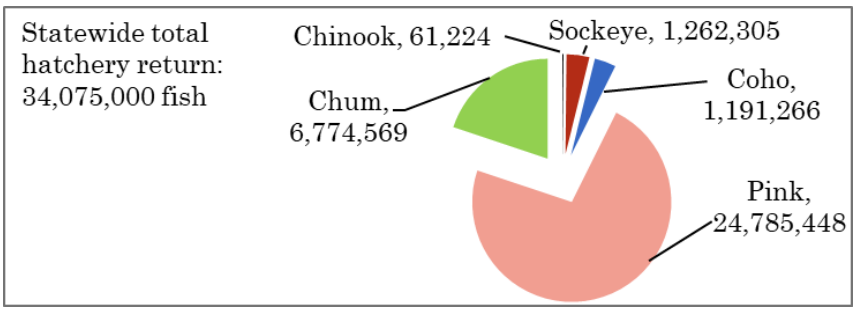

Figure 5.–Alaska hatchery total salmon return as reported by operators, 2020, by species. The total return includes commercial common property, commercial cost recovery, sport, personal use, and subsistence harvests; broodstock taken at the hatchery; and other (e.g., escapement, sealion mortality, lagoon die-off) returns. Rainbow trout, grayling, and Arctic char catches are not shown.

Alaska hatcheries contributed approximately 23.5 million fish to the commercial common property fishery and approximately 7.2 million fish were harvested in cost-recovery fisheries for a total of 30.7 million hatchery salmon in the commercial fishery.[12] The total commercial harvest of hatchery-produced salmon, including cost recovery, was the 29th largest, and 15th smallest, since 1977 (Appendix K1).

Hatchery fish contributed approximately 27% of the statewide commercial salmon harvest (Appendix D1). Cost-recovery harvest, which pays for hatchery operations, was 6% of the total commercial harvest and 23% of the hatchery harvest in commercial fisheries (Figure 6; Appendix I1).

In 2020, the approximately 30.7 million hatchery-produced salmon harvested in commercial fisheries had an estimated exvessel value of $69 million and made up 23% of the statewide commercial harvest exvessel value (Figure 6; Appendix D1). The exvessel value of the commercial

[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.

hatchery harvest was 42% pink salmon, followed by chum (32%), sockeye (12%), coho (12%), and Chinook salmon (3%; Figure 7).[13]

The approximately 23.5 million hatchery-produced salmon harvested in the commercial common property fisheries had an estimated exvessel value of $51 million and made up 17% of the statewide commercial harvest exvessel value (Appendix D2).

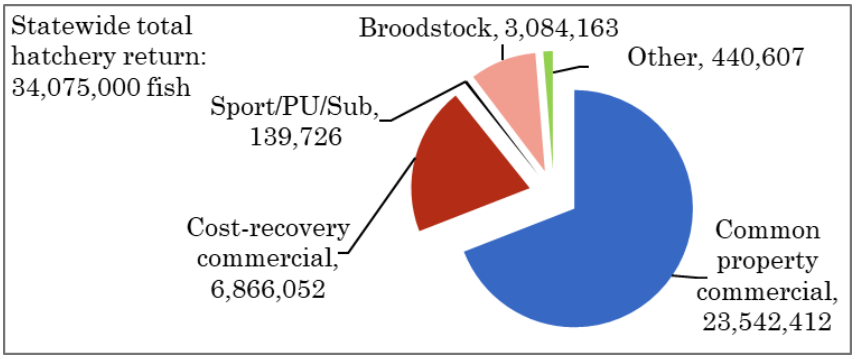

Figure 6.–Alaska salmon hatchery returns as reported by operators by return category, 2020. *Other* includes escapement, sea lion mortality, lagoon die-off, etc. Some broodstock sold as commercial cost-recovery harvest and is shown here as broodstock.

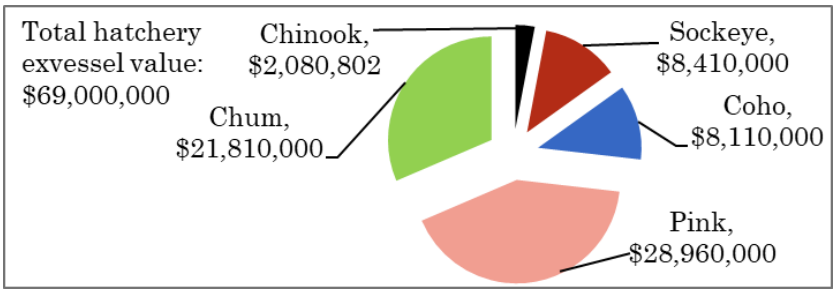

Figure 7.–Species composition of the 2020 Alaska hatchery contribution to the commercial harvest, with the exvessel value by species. Commercial exvessel value is the estimated value paid to fishers for the common property harvest and to aquaculture associations for cost-recovery harvest.

Note: Exvessel value for hatchery harvest is the total harvest value paid by fish buyers to fishermen for all salmon from https://www.adfg.alaska.gov/static/fishing/pdfs/commercial/2020_preliminary_salmon_summary_table.pdf (accessed 3/3/2021), multiplied by the hatchery percent of the commercial harvest.

An estimated 189,000 hatchery-produced salmon, rainbow trout, Arctic char, and grayling were harvested by sport, personal use, and subsistence users in 2020 (Table 2). Hatchery-produced coho salmon were the greatest part of this harvest (81,100), followed by rainbow trout (35,300), sockeye salmon (34,600), Chinook salmon (18,200), pink salmon (11,800), landlocked salmon (3,300), chum salmon (2,900), Arctic char (1,900), and grayling (800).

[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.

Table 2.–Estimated sport, personal use, and subsistence harvest of hatchery-produced fish, 2020.

Region	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Grayling	Landlocked Salmon	Total
Southeast	5,712	4,858	41,340	584	2,948					55,442
Prince William Sound	9,196	10,931	20,188	10,883	0					51,198
Cook Inlet	3,245	18,100	8,875	350	0					30,570
Kodiak	39	763	10,709	0	0					11,511
Southcentral Lakes						765	18,904	319	0	19,988
Interior Lakes						1,090	16,400	466	3,301	21,257
Total	18,192	34,652	81,112	11,817	2,948	1,855	35,304	785	3,301	189,966

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, or other reasons. Egg collections grew steadily from the late 1970s until about 1995, when production leveled off (Figure 8).

In 2020, 2.0 billion eggs were collected (Figures 8 and 9; Table 3). Most of these eggs were from pink salmon (982 million), followed by chum (927 million), sockeye (55 million), coho (58 million), and Chinook salmon (19 million). The number of eggs by area, operator, species, and location are in Appendix G1.

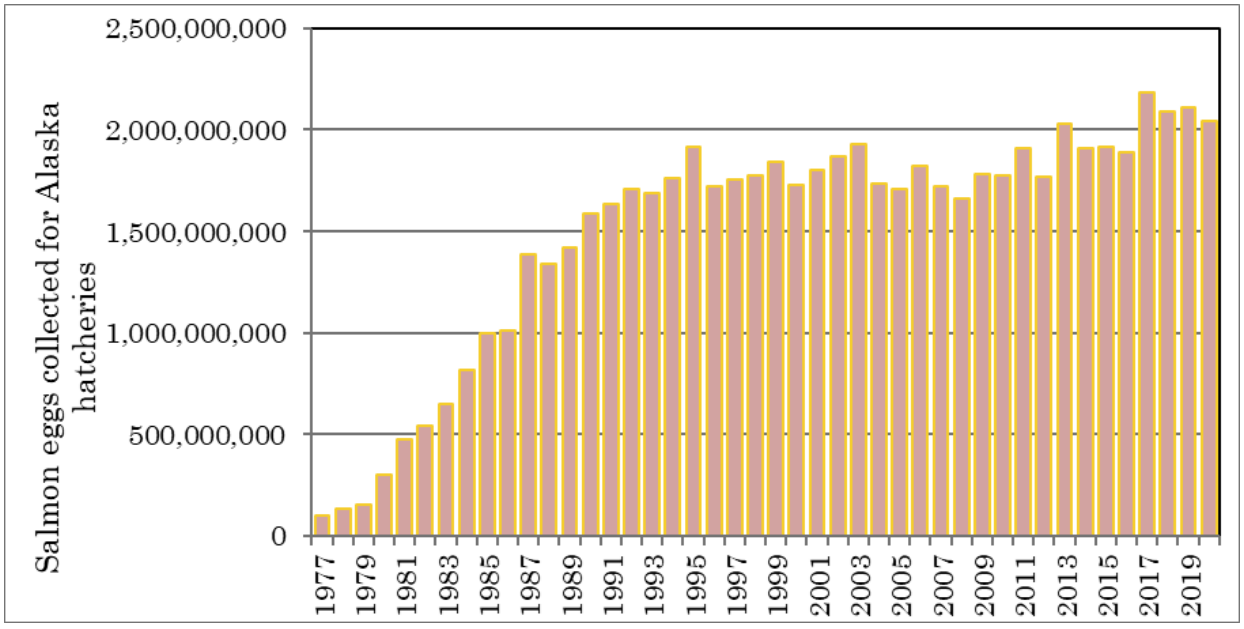

Figure 8.–Salmon eggs collected for Alaska salmon hatchery programs, 1977–2020.

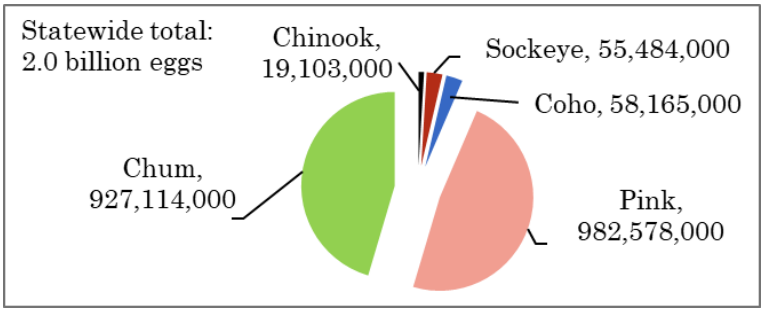

Figure 9.–Salmon eggs collected for Alaska hatchery programs by species, 2020. Eggs taken from Rainbow Trout and Arctic Char are not shown.

Table 3.–Estimated salmon egg takes for Alaska hatcheries as reported by operators, by region, 2020.

Area	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
Southeast	16,081,371	13,497,100	43,546,615	69,711,692	717,999,098	0	100,000	860,935,876
Prince William Sound	54,000	28,142,800	9,799,041	627,800,268	173,000,000	0	0	838,796,109
Cook Inlet	2,893,779	9,538,423	2,161,798	126,426,579	0	113,189	3,414,022	144,547,790
Interior	62,006	0	117,600	0	0	101,500	570,000	851,106
Kodiak	11,751	4,305,362	2,540,340	158,639,068	36,114,489	0	0	201,611,010
Total	19,102,907	55,483,685	58,165,394	982,577,607	927,113,587	214,689	4,084,022	2,046,741,891

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 2020 (Figure 10; Table 4). Most of the 2020 releases were from eggs collected in 2019 and were from pink (873 million) and chum (767 million) salmon. The remainder of the releases were from eggs taken mainly in 2018 and were from sockeye (45 million), coho (33 million), and Chinook (11 million) salmon.

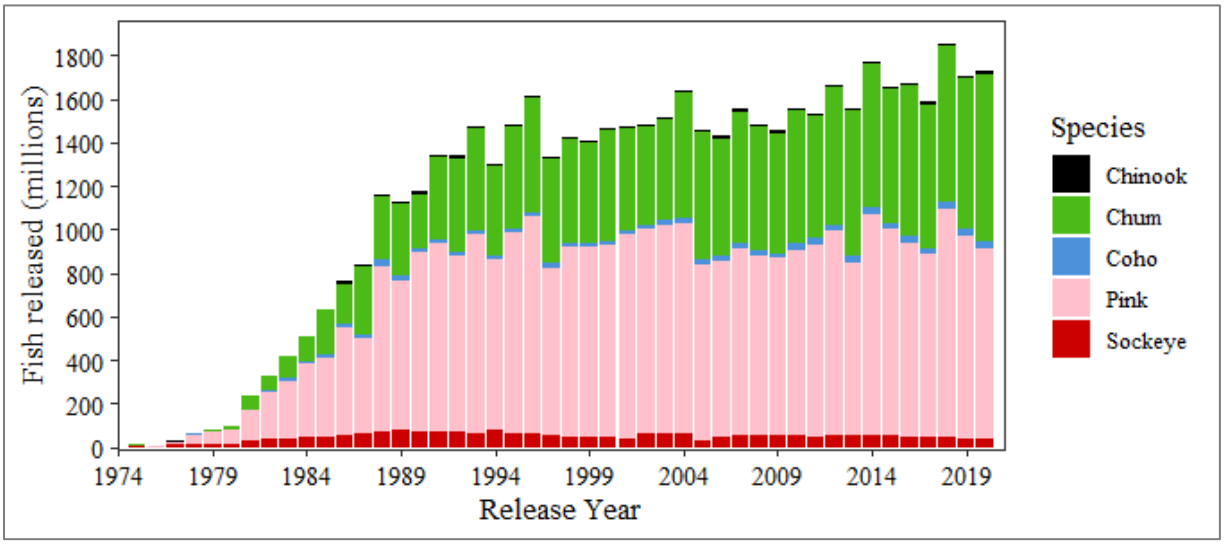

Figure 10.–Total salmon released for Alaska hatchery programs, 1975–2020.

Table 4.–Estimated juvenile fish releases from Alaska hatcheries, by region, 2020.

Area	Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Total[a]
Southeast	8,495,131	13,950,000	26,185,151	41,981,070	627,851,913	33,648	718,496,913
Prince William Sound	0	24,377,982	3,906,756	622,942,977	121,290,000	0	772,517,715
Cook Inlet	2,365,257	4,642,556	1,591,384	33,633,092	0	695,118	43,008,464
Interior	41,495	0	77,835	0	0	313,497	489,022
Kodiak	76,062	1,937,394	1,801,454	175,359,011	18,173,783	55,657	197,403,361
Total	10,977,945	44,907,932	33,562,580	873,916,150	767,315,696	1,097,920	1,731,915,475

[a] Includes Arctic char (65,233), Arctic grayling (50,010), and lake trout (22,009) releases in Cook Inlet and Interior areas.

Projected Hatchery Return in 2021

Hatchery operators forecast a total return of about 65.8 million fish in 2021. This includes returns of 51.7 million pink, 10.8 million chum, 1.9 million sockeye, 1 million coho, and 95,000 Chinook salmon to hatchery projects. Details of forecasted returns by area and project for 2021 are in Appendix E1.

The 2020 hatchery return was 34 million fish, lower than the 2020 forecast of 52 million fish (Wilson 2020). Returns of all species were less than forecasted; 52% of forecasted chum, 57% of sockeye, 60% of Chinook, 71% of pink, and 98% of forecasted coho returned in 2020.

For comparison, the National Oceanic and Atmospheric Administration-ADF&G 2021 Southeast Alaska pink salmon commercial harvest forecast, which includes hatchery and naturally spawned fish, is 28 million pink salmon.[14] The 2020 Southeast area pink salmon harvest, which was 14% hatchery production, was 7.5 million pink salmon and was 63% under the 2020 forecast of 12 million pink salmon.

Possible causes for lower return than forecasted are unknown but are likely varied and include lasting impacts of a 2014–2016 marine heatwave in the Gulf of Alaska (Bond et al. 2015; Di Lorenzo and Mantua 2016), such as reduction in nutritional value of forage fish (von Biela et al. 2019).

PROPAGATIVE RESEARCH

In 2020, 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, and hatchery production from both planning regions are 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,

[14] *Source*: http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1232831147.pdf (accessed 2/24/2021).

Klawock River, and Port Saint Nicholas Hatcheries (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); it 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 Hatchery operated by Armstrong Keta Incorporated, Macaulay and Snettisham Hatcheries operated by Douglas Island Pink and Chum, Incorporated (DIPAC), and Sheldon Jackson Hatchery 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 operations under NMFS are authorized for research and not PNP operations. Little Port Walter Hatchery operated by AKI is a PNP hatchery.

Southeast Alaska has the second highest hatchery production, and chum salmon are the primary hatchery-produced species (Table 1). 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 2020, 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.

The 2020 salmon season was impacted in many ways by the COVID-19 pandemic. In response to COVID-19, Southeast Alaska hatcheries adjusted activities for human safety, including social-distancing measures. DIPAC did not operate Speel Lake weir; instead, stream walks were conducted 2–3 days per week. DIPAC also adjusted release locations to minimize on-site personnel, consolidating Chinook salmon smolt that were destined for release at Auke Bay with the Macaulay release, and releasing sockeye salmon smolts in 2 of 4 planned release locations. NMFS did not apply coded wire tags to fish released from Little Port Walter federal research hatchery this year. In a normal year, 100% of fish released by Little Port Walter are tagged. Additionally, the spring and fall 2020 Joint Northern and Southern Southeast RPT meetings occurred via videoconference and telephone, rather than in person.

Hatchery returns in Southeast

In 2020, the total commercial harvest of hatchery-produced salmon, including cost recovery, was the 29th largest (or 16th smallest) for Southeast Alaska since 1977 (Appendix K2).

About 3.7 million hatchery fish were caught in the Southeast Alaska commercial common property fisheries in 2020, worth an estimated exvessel value of $18 million, or 44% of the total 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 ($11 million), followed by coho ($6.2 million) and Chinook salmon ($1.8 million). The 3.7 million hatchery-produced salmon harvested in the Southeast commercial common property fishery accounted for 33% of the total commercial common property catch in the region (Appendix D1).

[15] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed 2/11/2021).

By species, hatcheries contributed an estimated 96% of the chum, 14% of the Chinook, 58% of the coho, 8% of the sockeye, and 1% of the pink salmon harvest, in numbers of fish, of commercial common property fisheries.

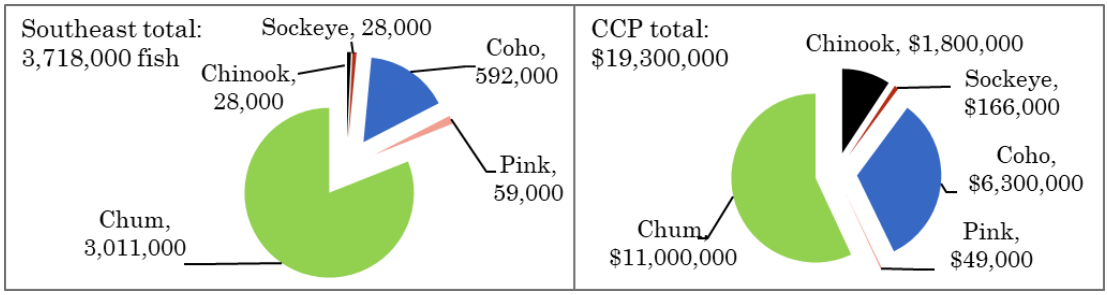

Figure 11.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Southeast Alaska, 2020.

An additional 2.5 million salmon were harvested for cost recovery. Hatchery harvest including cost recovery accounted for 45% of the commercial harvest and 52% of the total commercial harvest value in Southeast Alaska.

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.

For the sport, personal use, and subsistence fisheries, coho salmon contributed the most hatchery-produced fish (41,000), followed by Chinook (5,700), sockeye (4,800), chum (2,900), and pink salmon (600; Table 2).

Egg takes and releases in Southeast

In 2020, there were 861 million eggs taken in Southeast Alaska: 718 million chum, 70 million pink, 43 million coho, 13 million sockeye, and 16 million Chinook salmon eggs (Figure 12; Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

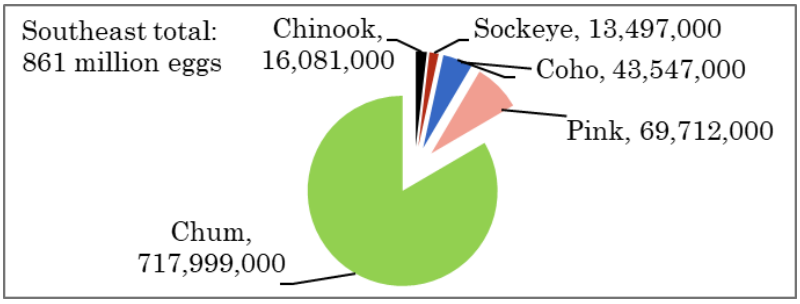

Figure 12.–Eggs collected, by species, for salmon hatchery programs in Southeast Alaska, 2020.

There were 718 million salmon released in Southeast Alaska in 2020: 628 million chum, 42 million pink, 26 million coho, 14 million sockeye, and 8 million Chinook salmon (Figure 13; Table 4). This

was the first year of chum salmon releases by Gunnuk Creek Hatchery under operation by NSRAA. The number of releases by area, operator, hatchery, release site, and species are in Appendix H1.

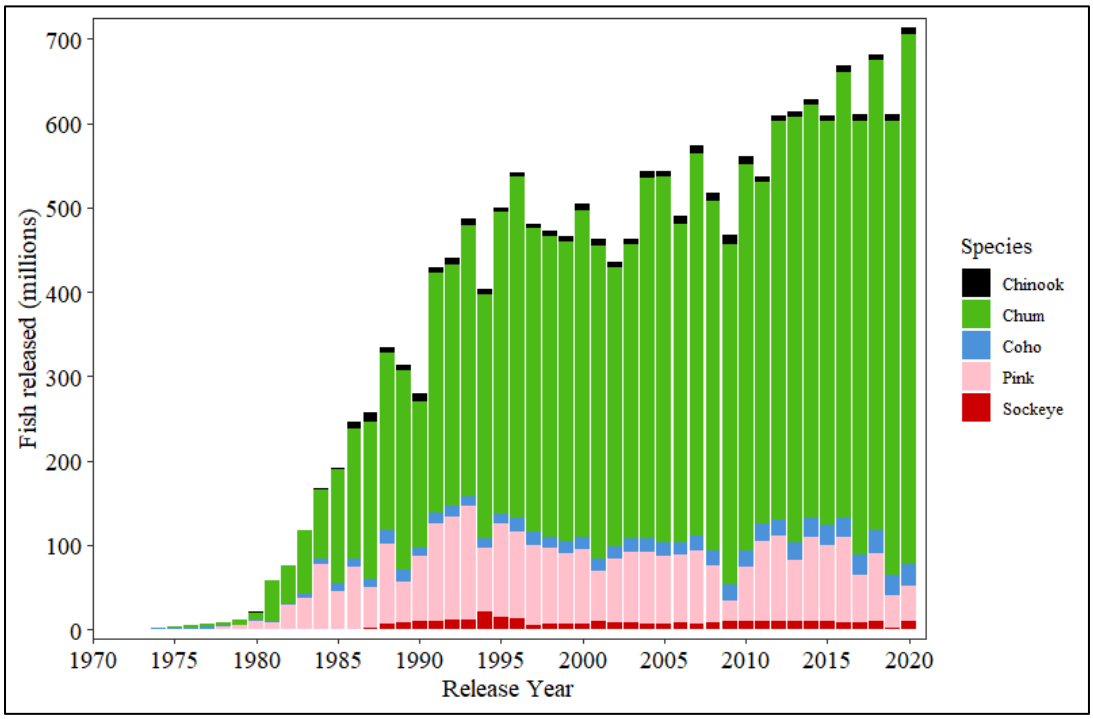

Figure 13.–Total salmon released for Southeast Alaska hatchery programs, 1970–2020.

Permit alterations for Southeast hatcheries

Southern Southeast

In Southern Southeast, 2 PARs were submitted for review and were approved.

SSRAA PARs were approved that simplify production, evaluation, and reporting by permitting each program to an individual hatchery. There was no overall change in production. Burnett Inlet Hatchery permitted capacity for summer chum salmon increased by 800,000 green eggs from 88 million to 87.2 million. Whitman Lake Hatchery chum salmon permitted capacity was reduced by 800,000 green eggs from 44.3 million to 45.1 million. These changes allow (1) Whitman Lake Hatchery to incubate all the eggs for Kendrick Bay, where currently Burnett Inlet Hatchery incubates a portion and (2) Burnett Inlet Hatchery to incubate all of the eggs for Nakat Inlet, where currently Whitman Lake Hatchery incubates a portion.

Northern Southeast

In Northern Southeast, 1 PAR was submitted for review and approved.

A PAR was approved for Hidden Falls Hatchery operated by NSRAA to add Southeast Cove as a release site for up to 700,000 Chinook salmon smolt. There was no change in total permitted capacity.

Prince William Sound

Most of Alaska's hatchery production is in Prince William Sound, where pink, chum, and sockeye salmon are the primary hatchery species. Hatcheries operated by Prince William Sound Aquaculture Association are Armin F. Koernig, Cannery Creek, Gulkana, Main Bay, and Wally Noerenberg Hatcheries. Solomon Gulch Hatchery is operated by Valdez Fisheries Development Association (VFDA; 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 2020, the Coghill River weir passed 53,901 sockeye salmon, which is within the sustainable escapement goal range of 20,000–60,000 fish.[16] There are no longer any stocks of concern in Prince William Sound.

The 2020 salmon season was impacted in many ways by the COVID-19 pandemic. In response to COVID-19, Prince William Sound hatcheries adjusted activities for human safety, including social-distancing measures. The 2020 Prince William Sound RPT meeting was cancelled due to human health and safety precautions.

Hatchery returns in Prince William Sound

The total hatchery commercial harvest, including cost recovery, was the 28th largest (or 17th smallest) for Prince William Sound since 1977 (Appendix K3). About 15 million hatchery-produced salmon were harvested in the Prince William Sound commercial common property fisheries in 2020, worth an estimated exvessel value $27 million, or 67% of the total exvessel value for commercial common property salmon fisheries in the region (Figure 13; Appendices D1 and D2). Pink salmon contributed most to the value of the commercial common property harvest ($19 million), followed by sockeye ($4.1 million) and chum ($4 million) salmon.

The 15 million hatchery-produced salmon harvested in the Prince William Sound commercial common property fishery accounted for 70% of the total commercial common property catch in the region in 2020 (Figure 14; Appendix D1). By species, hatcheries contributed an estimated 90% of the chum, 70% of the pink, 72% of the sockeye, and 4% of the coho salmon in the commercial common property fisheries. An additional 3.8 million salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery including cost recovery was $36 million, or 73% of the total exvessel value for commercial salmon fisheries in the region.

[16] *Source*: 2020 Prince William Sound salmon season summary news release. http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1228467076.pdf (accessed 2/11/2021).

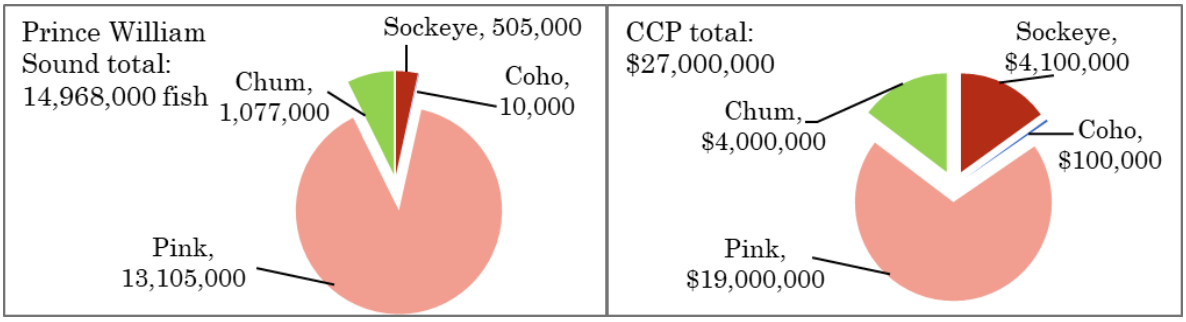

Figure 14.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Prince William Sound, Alaska, 2020.

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.

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

Egg takes and releases in Prince William Sound

In 2020, there were 839 million eggs taken in Prince William Sound: 628 million pink, 173 million chum, 28 million sockeye, 10 million coho, and 54,000 Chinook salmon (Figure 15; Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

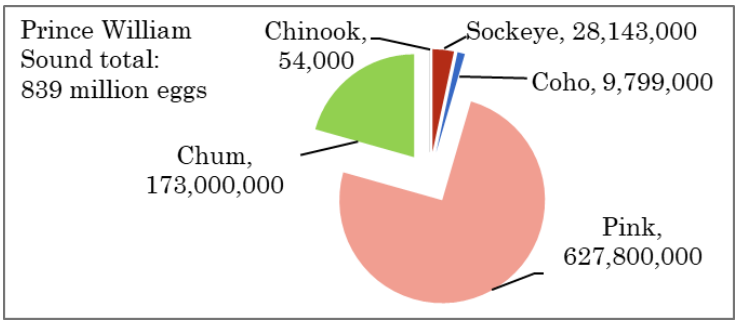

Figure 15.–Eggs collected, by species, for salmon hatchery programs in Prince William Sound, Alaska, 2020.

Prince William Sound Aquaculture Association fell 32% short of the aggregate pink salmon egg-take goal across 3 hatcheries. Lower than forecasted returns contributed to not meeting the egg-take goal. Additionally, sea lions were observed preying on broodstock during egg take, resulting in estimated losses of pink salmon brood at Armin F. Koernig (9,600 pink salmon brood), Cannery Creek (30,000 pink salmon brood), and Wally Noerenberg Hatcheries (68,100 pink salmon brood), and in the loss of chum (28,500 chum salmon brood) and coho brood at Wally Noerenberg Hatchery.

In 2020, there were 773 million juvenile salmon released in the Prince William Sound area: 121 million chum, 623 million pink, 4 million coho, and 24 million sockeye salmon (Figure 16; Table 4). The number of releases by area, operator, hatchery, release site and species are in Appendix H1.

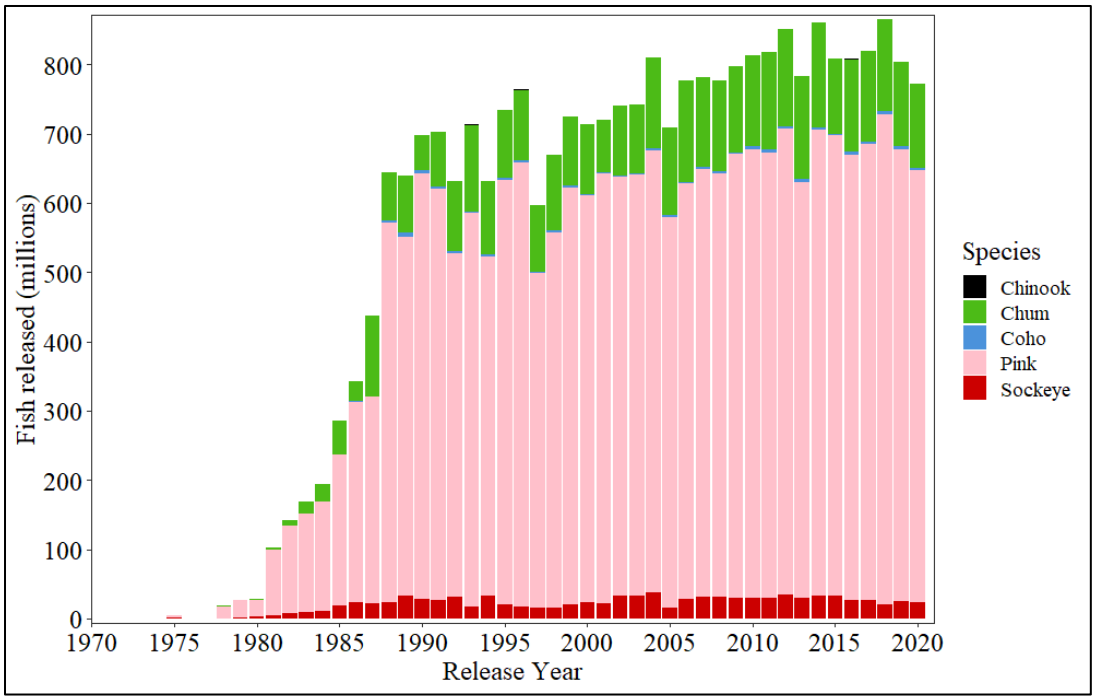

Figure 16.–Total salmon released for Prince William Sound Alaska hatchery programs, 1970–2020.

Permit alterations for Prince William Sound hatcheries

There were no PARs submitted for consideration in 2020 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 Hatcheries (Figure 4). Cook Inlet had the fourth highest hatchery production, after Prince William Sound, Southeast, and Kodiak. Cook Inlet hatcheries produce primarily sockeye and pink salmon. Additionally, ADF&G operates the William Jack Hernandez Sport Fish Hatchery in Anchorage.

In 2020, Cook Inlet had the fourth and lowest ranked hatchery production of the 4 planning regions with active PNP hatcheries in terms of returns (Table 1). 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 and the chum salmon stock of concern is the McNeil River stock.

[17] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed 2/11/2021).

The 2020 salmon season was impacted in many ways by the COVID-19 pandemic. In response to COVID-19, Cook Inlet hatcheries adjusted activities for human safety, including social-distancing measures. Additionally, the Cook Inlet RPT meetings did not occur in 2020 due to human health and safety precautions during the COVID-19 pandemic.

Hatchery returns in Cook Inlet

The total hatchery commercial harvest, including cost recovery, was the 19th largest (or 25th smallest) in Cook Inlet since 1978 (Appendix K4). About 198,000 hatchery-produced salmon were harvested in the Cook Inlet commercial common property fisheries in 2020, worth an estimated exvessel value of $585,000 or 6.9% of the total 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 hatchery returns ($421,000), followed by pink salmon ($164,000).

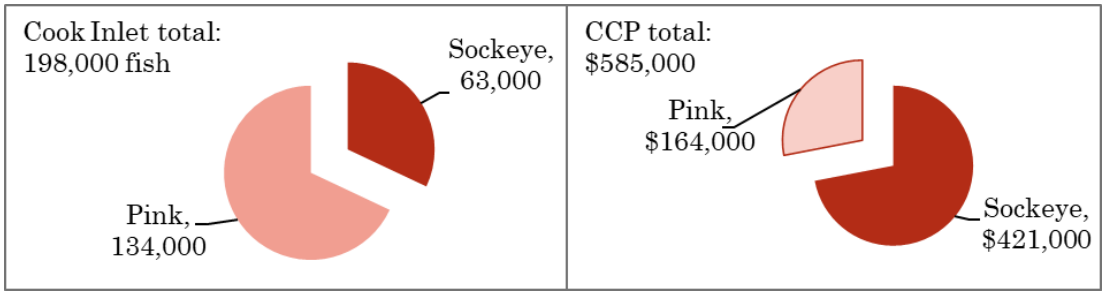

Figure 17.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Cook Inlet, Alaska, 2020.

The 198,000 hatchery-produced salmon harvested in the Cook Inlet commercial common property fishery accounted for 7% of the commercial common property catch in the region in 2020 (Appendix D1). By species, hatchery contribution was an estimated 7% of the pink and 8% of the sockeye salmon in the commercial common property fisheries. An additional 886,000 salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery including cost recovery was about $2 million, or 21% of the total exvessel value for commercial salmon fisheries in the region (Appendix D2).

For the sport, personal use, and subsistence fisheries, sockeye salmon contributed the most hatchery-produced fish (18,000), followed by coho (9,000), Chinook (3,000), and pink salmon (300; Table 2). An additional 19,988 Arctic char, grayling, and rainbow trout were caught in Southcentral area lakes.

Egg takes and releases in Cook Inlet

In 2020, there were 141 million salmon eggs taken in Cook Inlet: 126 million pink, 9 million sockeye, 2 million coho, and 3 million Chinook salmon (Figure 18; Table 3). The number of eggs by area, operator, location, and species are in Appendix G1.

In 2020, there were 43 million salmon released from Cook Inlet hatcheries: 33 million pink, 4.6 million sockeye, 1.6 million coho, and 2.3 million Chinook salmon (Figure 19; Table 4). The number of releases by area, operator, hatchery, release site and species are in Appendix H1.

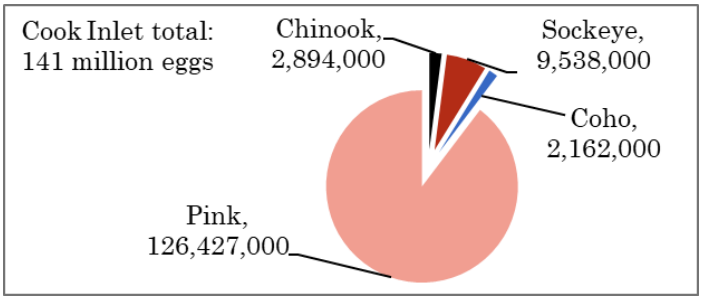

Figure 18.–Eggs collected, by species, for salmon hatchery programs in Cook Inlet, Alaska, 2020.

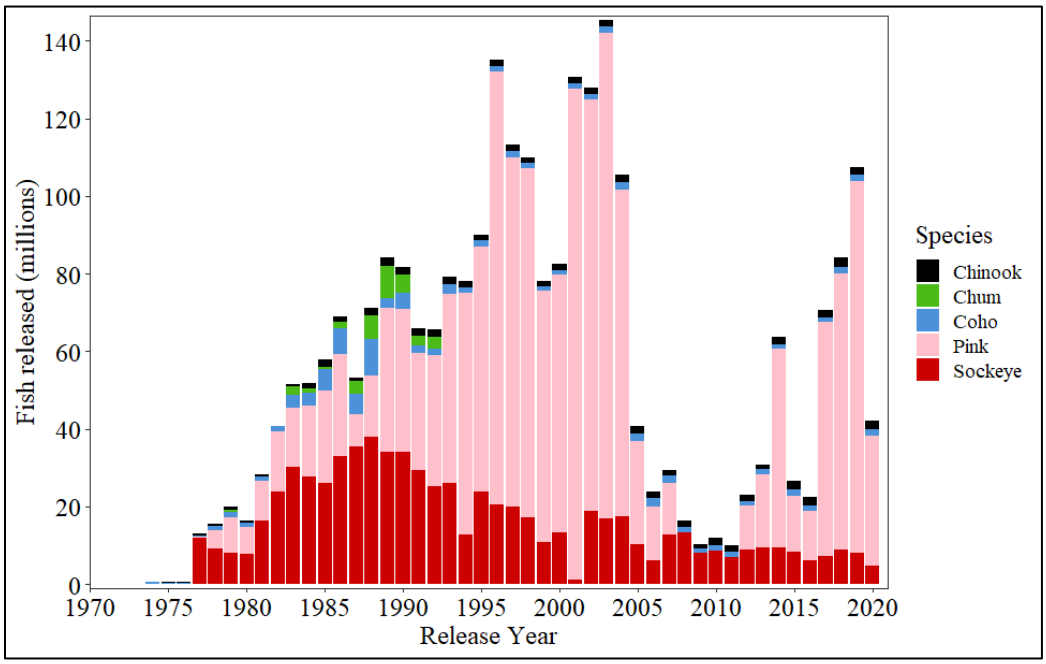

Figure 19.–Total salmon released for Cook Inlet Alaska hatchery programs, 1970–2020.

Permit alterations for Cook Inlet hatcheries

There were no PARs submitted for consideration in 2020 for Cook Inlet area hatcheries.

Kodiak

The hatcheries in Kodiak include Kitoi Bay and Pillar Creek Hatcheries, operated by Kodiak Regional Aquaculture Association. Kodiak hatcheries produced primarily pink, chum, and sockeye salmon (Appendix K5).

All pink salmon fishery openings in Kodiak target hatchery-produced salmon. For several years, pink salmon were not marked because they return to the 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 techniques. 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 saltwater. 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 saltwater, and 100% of coho were otolith marked with a dry mark technique.

Kodiak had the third-ranked hatchery production of 4 planning areas with active hatcheries (Table 1). There are 2 stocks of concern, Karluk River and Ayakulik River Chinook salmon.[18]

The 2020 salmon season was impacted in many ways by the COVID-19 pandemic. In response to COVID-19, Kodiak hatcheries adjusted activities for human safety, including social-distancing measures, placing fish food orders earlier than normal in anticipation of shipping delays, and quarantining seasonal staff prior to beginning work. Due to state mandates and public health and safety concern, the Kodiak RPT meetings that are normally held in person were held via teleconference.

Hatchery returns in Kodiak

The total hatchery commercial harvest, including cost recovery, was the 16th largest (or 28th smallest) in Kodiak since 1977 (Appendix K5). About 4.9 million hatchery-produced salmon were harvested in the Kodiak commercial common property fisheries in 2020, worth an estimated exvessel value of $5 million, or 19% of the total 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 hatchery returns ($3.8 million), followed by sockeye salmon ($700,000).

The 4.9 million hatchery-produced salmon harvested in the Kodiak commercial common property fishery accounted for 21% of the total commercial common property salmon catch in 2020 (Appendix D1). By species, hatchery contribution to the commercial common property salmon fisheries was an estimated 21% of the pink, 29% of the coho, 7% of the chum, and 10% of the sockeye salmon harvests. No salmon were harvested for cost recovery.

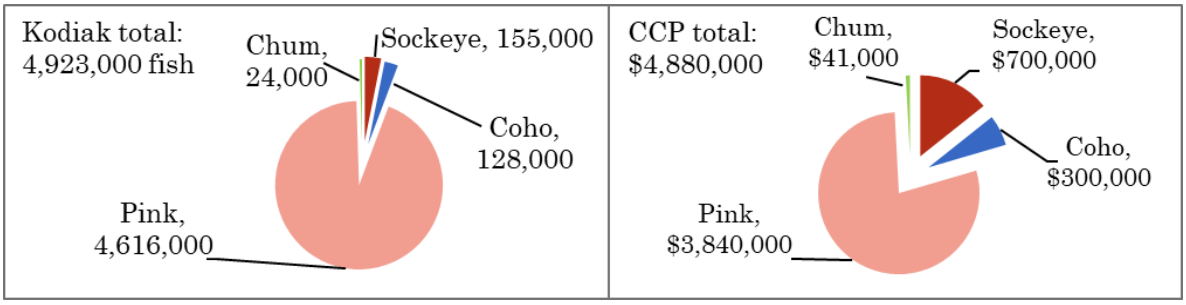

Figure 20.–Commercial common property (CCP) hatchery harvest in numbers of fish and exvessel value of commercial common property hatchery harvest in Kodiak, Alaska, 2020.

Of the sport, personal use, and subsistence fisheries, coho salmon contributed the most hatchery-produced fish (10,700), followed by sockeye (700) and Chinook salmon (40; Table 2).

[18] *Source*: http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks (accessed 2/11/2021).

Egg takes and releases in Kodiak

In 2020, there were 202 million salmon eggs taken in Kodiak: 159 million pink, 36 million chum, 4.3 million sockeye, 2.5 million coho, and 12,000 Chinook salmon (Figure 21; Table 3). The number of eggs taken by area, operator, location, and species are in Appendix G1.

In 2020, there were 197 million salmon released in Kodiak: 175 million pink, 18 million chum, 1.9 million sockeye, 1.8 million coho, and 76,000 Chinook salmon (Figure 22; Table 4). See Appendix H1 for releases by species and release site.

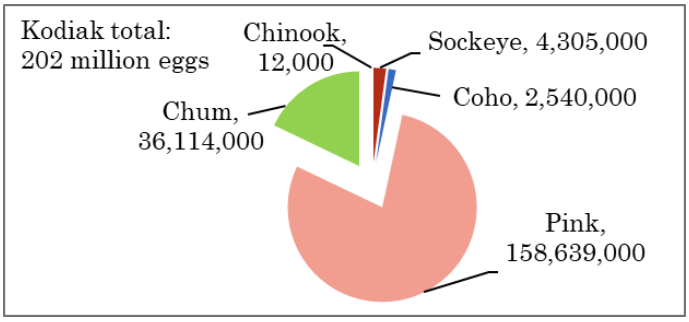

Figure 21.–Eggs collected, by species, for salmon hatchery programs in Kodiak, Alaska, 2020.

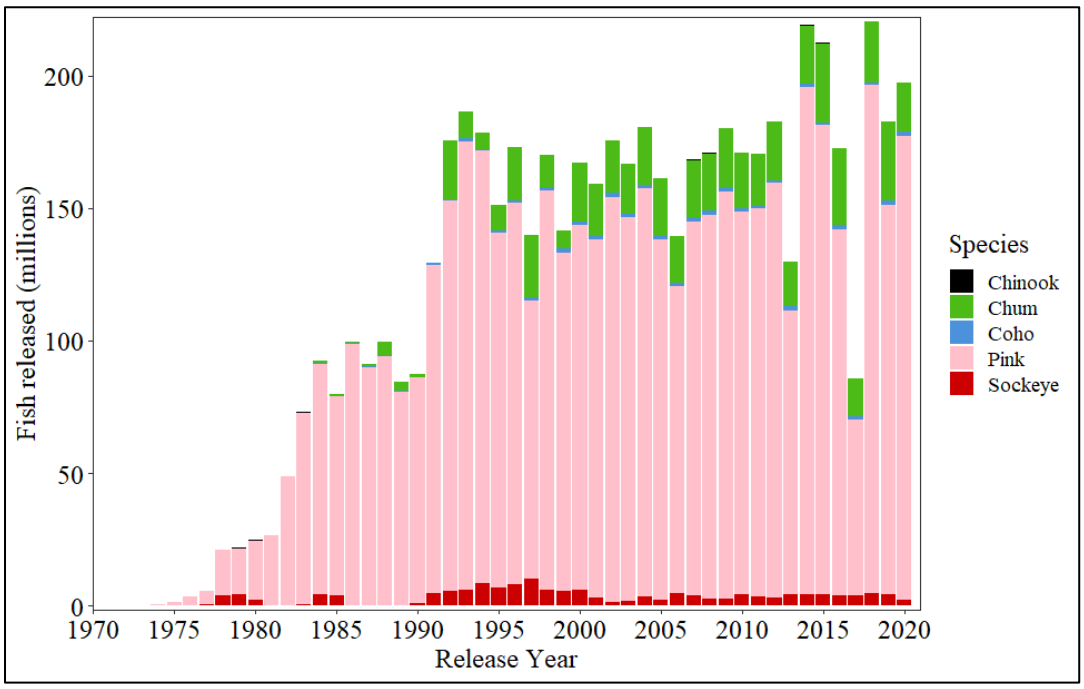

Figure 22.–Total salmon released for Kodiak Alaska hatchery programs, 1970–2020.

Permit alterations for Kodiak hatcheries

There were no permit alterations submitted for consideration in 2020 for Kodiak hatcheries.

Interior

The Interior Alaska hatcheries include Ruth Burnett Sport Fish Hatchery operated by ADF&G in Fairbanks.

Hatchery returns in Interior

About 21,300 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 2020, there were 570,000 rainbow trout, 113,000 Arctic char, 117,600 coho, and 62,000 Chinook salmon eggs taken in interior Alaska (Table 2). The number of eggs by area, operator, location, and species are in Appendix G1.

In 2020, there were 16,800 Arctic char, 313,000 rainbow trout, 77,800 coho salmon, 41,500 Chinook salmon, 27,000 grayling, and 12,000 lake trout released in interior Alaska (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 in 2020.

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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)	16		
1980	1 PNP permit issued to Burro Creek (#12)		12	
	2 state hatcheries constructed (Clear and Main Bay)	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 & 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	
	2 PNP permits issued [Main Bay (#31), Tutka (#32)]			
	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 [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 & 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	
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 & 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		

-continued-

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
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	
2016	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 to Little Port Walter Hatchery (#51)	2	31	3

Note: Two 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 (active), and Auke Creek Hatchery (inactive), and one hatchery facility at Metlakatla is a tribal hatchery.

APPENDIX B: PERMITTED CAPACITY OF ALASKA PRIVATE NONPROFIT HATCHERIES, 2020

Appendix B1.–Permitted capacity of Alaska private nonprofit hatcheries, in millions of eggs, 2020.

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	2.10	0	7.50	0	45.10	0	54.70
		Deer Mountain	0.60	0	0	0	0	0.10	0.70
		Klawock River	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			9.47	3.70	22.75	0	253.00	0.10	289.02
Northern Southeast	NSRAA	Gunnuk Creek	0	0	0.50	20.00	65.00	0	85.50
		Haines projects	0	2.00		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[b]	2.00	0	5.00	105.00	60.00	0	172.00
		Little Port Walter[c]	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			22.32	39.20	45.33	128.30	737.80	0.15	975.10
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[c]	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			33.07	157.86	50.29	1,388.30	938.80	0.35	2,578.67

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

[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] 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.

[c] Inactive.

APPENDIX C: ACTIVE ALASKA HATCHERIES AND CONTACT INFORMATION

Appendix C1.–Active Alaska hatcheries, 2020.

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	9/30/1997	sockeye, coho, chum	http://ssraa.org
				Crystal Lake[b]	NA		Chinook, coho	
				Neets Bay	19	6/17/1983	chum, coho, Chinook	
				Whitman Lake	8	3/9/1978	chum, coho, Chinook	
				Klawock River[b]	47	7/1/2016	coho, sockeye	
				Port Saint Nicholas	43	6/25/2004	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	6/22/1988	chum, Chinook, coho	https://www.nsraa.org/
				Medvejie Creek	16	8/17/1981	chum, coho, Chinook, pink	
				Sawmill Creek	44	3/11/2007	coho, chum	
				Gunnuk Creek	50	4/11/2018	coho, pink, chum	
N		AKI	Armstrong-Keta, Inc.	Port Armstrong	13	2/23/1981	pink, chum, Chinook, coho	https://www.armstrong-keta.org/
N		DIPAC	Douglas Island Pink and Chum, Inc.	Macaulay	25	6/3/1987	chum, coho, Chinook	http://www.dipac.net/
				Snettisham[b]	39	7/15/1996	sockeye	
N		SSSC	Sitka Sound Science Center	Sheldon Jackson	45	4/13/2011	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	9/29/1975	pink, chum	https://pwsac.com
				Cannery Creek[b]	26	6/22/1988	pink	
				Gulkana[b]	42	7/5/2000	sockeye	
				Main Bay[b]	31	4/17/2001	sockeye	
				W Noerenberg	20	6/17/1983	pink, chum, Chinook, coho	
N		VFDA	Valdez Fisheries Development Association, Inc.	Solomon Gulch	15	6/26/1981	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	6/22/1988	sockeye, coho, Chinook	https://www.ciaanet.org/
				Tutka Bay Lagoon[b]	32	1/3/1994	pink, sockeye	
				Port Graham	46	1/14/2014	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	7/5/1988	pink, chum, coho, sockeye	
				Pillar Creek[b]	41	5/1/1998	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

[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, 2020.

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			Dave Landis	davidl@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			Cindy Beamer	generalmanager@armstrong-keta.org
				(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	Tiffany Razo		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	Eric French (asst.)		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	Rob Sangster		rsangster@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

[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, 2020, INCLDUING HATCHERY CONTRIBUTION AND COST RECOVERY

Appendix D1.–Alaska (preliminary) commercial harvest and Alaska hatchery-produced harvest by region, 2020.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Total comm. harv.[a]	205,000	437,000	1,149,000	7,496,000	4,462,000	13,749,000
	Hatchery cost-recovery harv.	4,000	74,000	119,000	995,000	1,309,000	2,502,000
	Common prop. comm. harv.	201,000	363,000	1,029,000	6,501,000	3,153,000	11,247,000
	Hatchery-produced fish in comm. common prop. harv.	28,000	28,000	592,000	59,000	3,010,000	3,718,000
	% of hatchery-produced fish in comm. common prop. harv.	14%	8%	58%	1%	95%	33%
	Hatchery-produced fish in total comm. harv.	32,000	102,000	675,000	1,053,000	4,319,000	6,182,000
	% of hatchery-produced fish in total comm. harv.	15%	23%	59%	14%	97%	45%
Prince William Sound	Total comm. harv.	7,000	942,000	279,000	21,600,000	2,017,000	24,844,000
	Hatchery cost-recovery harv.	0	237,000	12,000	2,796,000	817,000	3,862,000
	Common prop. comm. harv.	7,000	705,000	266,000	18,804,000	1,200,000	20,982,000
	Hatchery-produced fish in comm. common prop. harv.	0	505,000	10,000	13,105,000	1,077,000	14,698,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	72%	4%	70%	90%	70%
	Hatchery-produced fish in total comm. harv.	0	742,000	23,000	15,901,000	1,894,000	18,560,000
	% of hatchery-produced fish in total comm. harv.	0%	79%	8%	74%	94%	75%
Cook Inlet	Total comm. harv.	3,000	896,000	140,000	2,609,000	39,000	3,687,000
	Hatchery cost-recovery harv.	0	90,000	143	796,000	192	886,000
	Common prop. comm. harv.	3,000	806,000	140,000	1,813,000	38,000	2,801,000
	Hatchery-produced fish in comm. common prop. harv.	0	63,000	0	134,000	0	198,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	8%	0%	7%	0%	7%
	Hatchery-produced fish in total comm. harv.	0	153,000	143	930,000	192	1,083,000
	% of hatchery-produced fish in total comm. harv.	0%	17%	0%	36%	0%	29%
Kodiak	Total comm. harv.	8,000	1,524,000	441,000	21,551,000	368,000	23,892,000
	Hatchery cost-recovery harv.	0	0	0	0	0	0
	Common prop. comm. harv.	8,000	1,524,000	441,000	21,551,000	368,000	23,892,000
	Hatchery-produced fish in comm. common prop. harv.	0	155,000	128,000	4,616,000	24,000	4,923,000
	% of hatchery-produced fish in comm. common prop. harv.	0%	10%	29%	21%	7%	21%
	Hatchery-produced fish in total comm. harv.	0	155,000	128,000	4,616,000	24,000	4,923,000
	% of hatchery-produced fish in total comm. harv.	0%	10%	29%	21%	7%	21%
Chignik/Aleutian Islands/Alaska Peninsula	Common prop. comm. harv.	23,000	2,856,000	237,000	5,169,000	971,000	9,256,000
	Hatchery-produced fish in total comm. harv.	0	0	0	0	0	0
	% of hatchery-produced fish in comm. common prop. harv.	0%	0%	0%	0%	0%	0%
Bristol Bay	Common prop. comm. harv.	10,000	39,576,000	114,000	72,000	293,000	40,064,771
	Hatchery-produced fish in total comm. harv.	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 prop. comm. harv.	6,000	145,000	55,000	12,000	200,000	418,000
	Hatchery-produced fish in total comm. harv.	0	0	0	0	0	0
	% of hatchery-produced fish in comm. common prop. harv.	0%	0%	0%	0%	0%	0%
Statewide total[b]	Total comm. harv.	263,000	46,375,000	2,415,000	58,508,000	8,349,000	115,910,000
	Hatchery cost-recovery harv.	4,000	401,000	132,000	4,587,000	2,100,000	7,224,000
	Common prop. comm. harv.	259,000	45,974,000	2,283,000	53,921,000	6,249,000	108,687,000
	Hatchery-produced fish in comm. common prop. harv.	28,000	751,000	730,000	17,914,000	4,111,000	23,535,551
	% of hatchery-produced fish in comm. common prop. harv.	11%	2%	32%	33%	66%	22%
	Hatchery-produced fish in total comm. harv.	32,000	1,152,000	862,000	22,500,000	6,211,000	30,759,000
	% of hatchery-produced fish in total comm. harv.	12%	2%	36%	38%	74%	27%

[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, 2020.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Value of the comm. harvest[ab]	$13,480,649	$2,575,308	$12,151,166	$6,235,630	$15,652,952	$50,095,705
	Value of hatchery-produced fish in cost recovery harvest	$258,624	$436,997	$1,262,249	$827,652	$4,592,999	$7,378,521
	Value of the CCP[c]	$13,222,025	$2,138,311	$10,888,917	$5,407,978	$11,059,953	$42,717,184
	Value of hatchery-produced fish in CCP	$1,822,178	$166,012	$6,261,275	$48,693	$10,559,447	$18,862,226
	% Value of hatchery-produced fish in CCP	14%	8%	58%	1%	95%	44%
	Value of hatchery-produced fish in total comm. harvest	$2,080,802	$603,009	$7,523,524	$876,345	$15,152,446	$26,000,000
	% of hatchery-produced fish in total comm. harvest value	15%	23%	62%	14%	97%	52%
Prince William Sound	Value of the comm. harvest	$468,643	$7,726,681	$3,020,033	$31,383,214	$7,036,949	$49,635,520
	Value of hatchery-produced fish in cost recovery harvest	$0	$1,944,471	$134,880	$4,062,587	$2,849,381	$8,991,319
	Value of the CCP	$468,643	$5,782,210	$2,885,153	$27,320,627	$4,187,568	$40,644,201
	Value of hatchery-produced fish in CCP	$0	$4,140,979	$112,922	$19,040,481	$3,758,661	$27,053,043
	% Value of hatchery-produced fish in CCP	0%	72%	4%	70%	90%	67%
	Value of hatchery-produced fish in total comm. harvest	$0	$6,085,450	$247,802	$23,103,068	$6,608,042	$36,000,000
	% of hatchery-produced fish in total comm. harvest value	0%	79%	8%	74%	94%	73%
Cook Inlet	Value of the comm. harvest	$128,827	$5,963,300	$661,545	$3,192,771	$135,697	$10,082,140
	Value of hatchery-produced fish in cost recovery harvest	$0	$597,710	$674	$973,750	$676	$1,572,810
	Value of the CCP	$128,827	$5,365,590	$660,871	$2,219,021	$135,021	$8,509,330
	Value of hatchery-produced fish in CCP	$0	$421,000	$0	$164,000	$0	$585,000
	% Value of hatchery-produced fish in CCP	0.0%	7.8%	0.0%	7.4%	0.0%	6.9%
	Value of hatchery-produced fish in total comm. harvest	$0	$1,020,000	$674	$1,138,000	$676	$2,159,000
	% of hatchery-produced fish in total comm. harvest value	0%	17%	0%	36%	0%	21%
Kodiak	Value of the comm. harvest	$31,105	$6,879,887	$1,170,682	$17,928,722	$628,234	$26,638,630
	Value of hatchery-produced fish in cost recovery harvest	$0	$0	$0	$0	$0	$0
	Value of the CCP	$31,105	$6,879,887	$1,170,682	$17,928,722	$628,234	$26,638,630
	Value of hatchery-produced fish in CCP	$0	$700,554	$339,725	$3,839,820	$41,208	$4,921,307
	% Value of hatchery-produced fish in CCP	0%	10%	29%	21%	7%	18%
	Value of hatchery-produced fish in total comm. harvest	$0	$700,554	$339,725	$3,839,820	$41,208	$4,921,307
	% of hatchery-produced fish in total comm. harvest value	0.0%	10.2%	29.0%	21.4%	6.6%	18.5%
Chignik, Aleutian Islands, AK Peninsula	Value of the CCP	$123,477	$11,886,520	$399,431	$3,054,975	$1,195,523	$16,659,926
	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
Bristol Bay	Value of the CCP	$41,948	$139,492,852	$467,706	$12,016	$642,386	$140,656,908
	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%
Arctic-Yukon-Kuskokwim	Value of the CCP	$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%
Total[d]	Value of the comm. harvest	$14,304,804	$174,954,193	$18,161,693	$61,810,689	$25,940,357	$295,171,736
	Value of hatchery-produced fish in cost recovery harvest	$258,624	$3,410,000	$1,730,000	$5,960,000	$7,800,000	$19,000,000
	Value of the CCP	$14,046,180	$171,544,193	$17,051,693	$55,850,689	$18,140,357	$277,171,736
	Value of hatchery-produced fish in CCP	$1,822,178	$5,000,000	$7,000,000	$23,000,000	$14,000,000	$51,000,000
	% Value of hatchery-produced fish in CCP	13%	3%	33%	37%	54%	17%
	Value of hatchery-produced fish in total comm. harvest	$2,080,802	$8,410,000	$8,110,000	$28,960,000	$21,800,000	$69,000,000
	% of hatchery-produced fish in total comm. harvest value	15%	5%	43%	47%	84%	23%

[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] CCP = commercial common property harvest.

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

APPENDIX E: PROJECTED HATCHERY RETURN BY SPECIES, 2021

Appendix E1.–Projected adult return, by species, to Alaska fisheries enhancement projects in 2021.

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	422,000	0	0	422,000
		Neck Lake	0	0	27,600	0	0	0	0	27,600
		Anita Bay	0	0	0	0	473,000	0	0	473,000
		Port Asumcion	0	0	0	0	346,000	0	0	346,000
	Crystal Lake	City Cr	950	0	0	0	0	0	0	950
		Anita Bay	11,300	0	0	0	0	0	0	11,300
		Blind Slough	3,400	0	4,100	0	0	0	0	7,500
	Neets Bay	Neets Bay	0	0	135,700	0	800,400	0	0	936,100
		Nakat Inlet	0	0	0	0	5,300	0	0	5,300
	Whitman Lake	Kendrick Bay	0	0	0	0	712,800	0	0	712,800
		Carroll Inlet	9,100	0	0	0	0	0	0	9,100
		Herring Cove	7,700	0	15,600	0	0	0	0	23,300
		Nakat Inlet	0	0	0	0	321,000	0	0	321,000
		Neets Bay	6,700	0	0	0	0	0	0	6,700
	Deer Mountain	Ketchikan Cr	820	0	0	0	0	0	0	820
	Klawock River	Klawock L	0	0	166,000	0	0	0	0	166,000
		Port Asumcion	0	0	7,500	0	0	0	0	7,500
	Port Saint Nicholas	Port Saint Nicholas	4,900	0	0	0	0	0	0	4,900
MIC	Tamgas Creek[a]		0	0	0	0	0	0	0	0
Southern Southeast total			44,870	0	356,500	0	3,080,500	0	0	3,481,870
Northern Southeast										
NSRAA	Haines Projects	Haines Projects	0	0	0	0	0	0	0	0
	Hidden Falls	Hidden Falls	609	0	34,000	0	286,000	0	0	320,609
		Mist Cove	0	0	59,000	0	0	0	0	59,000
		Southeast Cove	0	0	0	0	158,000	0	0	158,000
		Thomas Bay	0	0	0	0	132,000	0	0	132,000
		Banner L	0	0	1,000	0	0	0	0	1,000
		Gunnuk Cr + HFH	326	0	0	0	0	0	0	326
		Gunnuk Cr	87	0	0	0	0	0	0	87

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Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Landlocked Salmon	Total
Northern Southeast (continued)										
NSRAA	Medvejie	Bear Cove	17,700	0	0	2,325	518,000	0	0	538,025
		Halibut Point	2,382	0	0	0	0	0	0	2,382
		Crawfish Inlet	1,031	0	0	0	0	0	0	1,031
		Deep Inlet	0	0	0	0	919,000	0	0	1,090,000
	Sawmill Creek	Bear Cove	0	0	15,000	0	0	0	0	15,000
		Deep Inlet	0	0	80,000	0	0	0	0	80,000
		Crawfish Inlet	0	0	0	0	1,920,000	0	0	1,920,000
	Gunnuk Creek	Gunnuk Cr	0	0	0	0	77,000	0	0	77,000
AKI	Port Armstrong	Port Armstrong	150	0	109,500	325,000	225,000	0	0	659,650
DIPAC	Macaulay	Amalga Harbor	0	0	0	0	468,200	0	0	468,200
		Boat Harbor	0	0	0	0	187,500	0	0	187,500
		Limestone Inlet	0	0	0	0	57,500	0	0	57,500
		Fish Cr	711	0	0	0	0	0	0	711
		Lena Cove	150	0	0	0	0	0	0	150
		Gastineau Channel	1,334	0	44,000	0	349,700	0	0	395,034
		Auke Bay	290	0	0	0	0	0	0	290
		Thane	175	0	0	0	0	0	0	175
	Snettisham	Speel Arm	0	106,100	0	0	0	0	0	106,100
		Stikine River	0	a	0	0	0	0	0	0
		Sweetheart Lake	0	4,100	0	0	0	0	0	4,100
		Taku River	0	a	0	0	0	0	0	0
SSSC	Sheldon Jackson	Crescent Bay	0	0	7,902	140,959	26,397	0	0	175,258
		Deep Inlet	0	0	0	171,000	0	0	0	171,000
NMFS	Little Port Walter	Little Port Walter	2,031	0	0	0	0	0	0	2,031
Northern Southeast total			26,976	110,200	350,402	468,284	5,495,297	0	0	6,451,159
Southeast total			71,846	110,200	706,902	468,284	8,575,797	0	0	9,933,029
Prince William Sound										
PWSAC	A F Koernig	Sawmill Bay	0	0	0	5,800,000	147,000	0	0	5,947,000
	Cannery Creek	Unakwik Inlet	0	0	0	6,000,000	0	0	0	6,000,000
	Gulkana	Crosswind L	0	39,000	0	0	0	0	0	39,000
		Paxson L	0	28,300	0	0	0	0	0	28,300

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Appendix E1.–Page 3 of 4.

Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Landlocked Salmon	Total
Prince William Sound (continued)										
PWSAC	Main Bay	Main Bay	0	1,144,000	0	0	0	0	0	1,144,000
	Wally Noerenberg	Lake Bay	0	0	105,000	6,600,000	1,682,000	0	0	8,387,000
		Chenega	708	0	2,900	0	0	0	0	3,608
		Port Chalmers	0	0	0	0	316,000	0	0	316,000
		Whittier	0	0	5,900	0	0	0	0	5,900
		Fleming Spit	0	0	5,900	0	0	0	0	5,900
VFDA	Solomon Gulch	Solomon Gulch	0	0	87,724	20,593,664	0	0	0	20,681,388
		Boulder Bay	0	0	941	0	0	0	0	941
ADF&G	William Jack Hernandez	Whittier	1,004	0	0	0	0	0	0	1,004
		Fleming Spit	1,026	0	0	0	0	0	0	1,026
		Prince William Sound Lakes	0	0	0	0	0	131	0	131[b]
	Ruth Burnett	Glennallen Lakes	0	0	0	0	0	1,682	14	1,705[b]
Prince William Sound total			2,738	1,211,300	208,365	38,993,664	2,145,000	1,813	14	42,562,903
Cook Inlet										
CIAA	Trail Lakes	Hazel Lake	0	24,642	0	0	0	0	0	24,642
		Leisure Lake	0	51,708	0	0	0	0	0	51,708
		Hidden Lake	0	23,768	0	0	0	0	0	23,768
		Kirschner Lake	0	30,048	0	0	0	0	0	30,048
		Tutka Bay	0	46,340	0	0	0	0	0	46,340
		Shell L	0	762	0	0	0	0	0	762
		Bear Lake	0	121,563	13,365	0	0	0	0	134,928
		Bear Cr	0	0	15,789	0	0	0	0	15,789
		Resurrection Bay	0	90,098	0	0	0	0	0	90,098
	Tutka Bay	Tutka Bay	0	0	0	830,548	0	0	0	830,548
	Port Graham	Port Graham	0	0	0	178,444	0	0	0	178,444
ADF&G	William Jack Hernandez	Bird Cr	0	0	8,214	0	0	0	0	8,214
		Campbell Cr	0	0	3,775	0	0	0	0	3,775
		Eklutna Tailrace	4,228	0	8,456	0	0	0	0	12,684
		Ship Cr	3,409	0	17,239	0	0	0	0	20,648
		Deception Cr	1,007	0	0	0	0	0	0	1,007

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Appendix E1.–Page 4 of 4.

Region/Operator/Hatchery/Location			Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Landlocked Salmon	Total
Cook Inlet (continued)										
ADF&G	William Jack Hernandez	Crooked Cr	1,054	0	0	0	0	0	0	1,054
		Ninilchik River	1,480	0	0	0	0	0	0	1,480
		Halibut Cove	942	0	0	0	0	0	0	942
		Homer Spit	2,024	0	8,247	0	0	0	0	10,271
		Seldovia	1,048	0	0	0	0	0	0	1,048
		Seward Lagoon	3,283	0	17,096	0	0	0	0	20,379
		Anchorage Lakes	1,440	0	0	0	0	7,179	0	8,805[b]
		Kenai Lakes	37	0	272	0	0	4,269	0	4,673[b]
		Matanuska Lakes	1,142	0	303	0	0	7,324	0	9,244[b]
Cook Inlet total			21,094	388,929	92,756	1,008,992	0	18,772	0	1,531,299
Southcentral total			23,832	1,600,229	301,121	40,002,656	2,145,000	20,585	14	44,094,202
Arctic-Yukon-Kuskokwim										
ADF&G	Ruth Burnett	Delta Junction Lakes	0	0	0	0	0	5,435	1,316	7,088[b]
		Fairbanks Lakes	0	0	0	0	0	9,284	1,971	12,000[b]
Arctic-Yukon-Kuskokwim total			0	0	0	0	0	14,719	3,287	19,088
Westward/Kodiak										
KRAA	Kitoi Bay	Kitoi Bay	0	0	123,600	11,301,000	128,100	0	0	11,552,700
		Little Kitoi Bay	0	14,700	0	0	0	0	0	14,700
		Ouzinkie Village	0	2,000	0	0	0	0	0	2,000
	Pillar Creek	Pillar Cr	0	0	4,000	0	0	0	0	4,000
		Island Lake	0	0	1,400	0	0	0	0	1,400
		Monashka Cr	0	0	4,300	0	0	0	0	4,300
		Mission Lake	0	0	900	0	0	0	0	900
		Crescent Lake	0	7,000	0	0	0	0	0	7,000
		Hidden Lake	0	7,700	0	0	0	0	0	7,700
		Spiridon L	0	93,200	0	0	0	0	0	93,200
		Telrod Cove	0	83,500	0	0	0	0	0	83,500
		Waterfall Lakes	0	6,200	0	0	0	0	0	6,200
Westward/Kodiak total			0	214,300	134,200	11,301,000	128,100	0	0	11,777,600
Statewide total			95,678	1,924,729	1,142,223	51,771,940	10,848,897	35,304	3,301	65,823,919

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

[b] There is forecasted harvest of Arctic Grayling not shown here.

APPENDIX F: EGG PRODUCTION FROM AQUATIC RESOURCE PERMITS, 2020

Appendix F1.–Summary of salmon production of eggs collected in 2020 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	100 spawning pair
	NOAA Little Port Walter	Unuk River king at	100 spawning pair
Southcentral			
	Seldovia Village Tribe	Jakolof Creek coho	10 adults
Arctic-Yukon-Kuskokwim			
	Native Village of White Mountain	Boston Creek king	20 spawning pair
	Native Village of White Mountain	Niukluk River coho	30 spawning pair
	Norton Sound Economic Development Corporation	Snake River coho	50 spawning pair
	Norton Sound Economic Development Corporation	Solomon River chum	70 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
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			
	Haines School	chum	500
	Skagway Traditional Council	pink/coho	500
	Southeast Alaska Discovery Center	coho	50
	Stedmen School	coho	250
	USFS/ Point Higgins Elementary	coho	50
Southcentral	ADF&G Anchorage Lobby	coho	500
	ADF&G Palmer office	coho	500
	ADF&G Soldotna office	coho	500
	Airport Heights Elementary	coho	500
	Alpenglow Elementary	coho	500
	Anchor Lutheran School	coho	500
	Anchorage Montessori	coho	500

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Area	Permittee	Species	Max. no. to be collected
Southcentral (cont.)	Aquarian Elementary	coho	500
	Aurora Borealis	coho	500
	Bartlett High School	coho	500
	Baxter Elementary	coho	500
	Bear Valley Elementary	coho	500
	Big Fireweed Academy	coho	500
	Big Lake Elementary	coho	500
	Birchwood ABC School	coho	500
	Bowman Elementary	coho	500
	Butte Elementary	coho	200
	Campbell Elementary	coho	500
	Chapman Elementary	coho	500
	Chester Valley Elementary	coho	500
	Chinook Elementary	coho	500
	Chugiak Elementary	coho	500
	Clark Middle School	coho	500
	College Gate Elementary	coho	500
	Cook Inlet Academy	coho	500
	Copper River Watershed Project	coho	200
	Denali Montessori Elementary	coho	500
	Dimond High School	coho	500
	Eagle Academy Charter School	coho	500
	Eagle River High School	coho	500
	East Anchorage High School	coho	500
	Finger Lake Elementary	coho	200
	Girdwood K-8 School	coho	500
	Gladys Wood Elementary	coho	500
	Glennallen School	coho	200
	Grace Christian Elementary School	coho	500
	Grace Lutheran	coho	500
	Gruening Middle School	coho	500
	Hanshew Middle School	coho	500
	Homestead Elementary	coho	500
	Huffman Elementary	coho	500
	Inlet View 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
	Ketchikan Charter School	coho	150
	Kincaid Elementary	coho	500
	Lake Hood Elementary	coho	500
	Lake Otis Elementary	coho	500
	McLaughlin School	coho	500
	McNeil Canyon Elementary	coho	500

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Area	Permittee	Species	Max. no. to be collected
Southcentral (cont.)	Mentasta Lake School	coho	200
	Mirror Lake Middle School	coho	500
	Mt. View Elementary	coho	500
	Mt. View Elementary	coho	500
	Nikiski North Star Elementary	coho	500
	Nikolaevsk Elementary	coho	500
	Northern lights ABC	coho	500
	Nunaka Valley	coho	500
	Ocean View Elementary	coho	500
	O'Mallley Elementary	coho	500
	Polaris School	coho	500
	Ptarmigan Elementary	coho	500
	Rabbit Creek Elementary	coho	500
	Ravenwood Elementary	coho	500
	Razdolna	coho	500
	Redoubt Elementary	coho	500
	Rilke Schule	coho	500
	Rogers Park Elementary	coho	500
	Scenic Park	coho	500
	Service High School	coho	500
	Shaw Elementary	coho	500
	Slana School	coho	200
	Spring Hill	coho	500
	St John Orthodox Christian School	coho	500
	Steller Secondary School	coho	500
	Susitna Elementary	coho	500
	Tebughna School	coho	500
	Teeland Middle School	coho	500
	The Study (Soldotna)	coho	500
	Trailside Elementary	coho	500
	Tudor Elementary	coho	500
	Turnagain Elementary	coho	500
	Tustumena Elementary	coho	500
	Upstream Learning	coho	200
	Ursa Major Elementary	coho	500
	Ursa Minor Elementary	coho	500
	Voznesenka School	coho	500
	West Homer Elementary	coho	500
	William Tyson Elementary	coho	500
	Winterberry	coho	500
Arctic-Yukon-Kuskokwim	Delta Elementary	coho	500
	Nome-Beltz High School	coho	500
Westward	Chignik Lake School	pink	500

APPENDIX G: HATCHERY EGG COLLECTION, 2020

Appendix G1.–Eggs collected at Alaska hatcheries as reported by operators, 2020 (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	97,100,000	0	97,100,000
				Port Saint Nicholas	0	0	0	0	8,000,000	0	8,000,000
			Crystal Lake	Crystal Lake	1,560,000	0	210,000	0	0	0	1,770,000
			Neets Bay	Neets Bay	0	0	3,500,000	0	120,350,000	0	123,850,000
				Whitman Lake	0	0	0	0	43,300,000	0	43,300,000
			Whitman Lake	Whitman Lake	2,517,000	0	3,686,000	0	0	0	6,203,000
				Burnett Inlet	0	0	650,000	0	0	0	650,000
				Crystal Lake	520,000	0	0	0	0	0	520,000
				Deer Mountain	139,000	0	0	0	0	0	139,000
			William Jack Hernandez	Deer Mountain	0	0	0	0	0	100,000	100,000
			Klawock River	Klawock River	0	0	4,390,600	0	0	0	4,390,600
		MIC	Annette Island	Tamgas Creek	1,310,000	0	12,800,000	1,140,000	33,100,000	0	48,350,000
	Southern Southeast total				6,046,000	0	25,236,600	1,140,000	301,850,000	100,000	334,372,600
	Northern Southeast										
		NSRAA	Hidden Falls	Hidden Falls	423,051	0	7,613,392	0	0	0	8,036,443
				Medvejie	0	0	0	0	47,781,077	0	47,781,077
				Gunnuk Creek	0	0	0	0	10,410,536	0	10,410,536
			Medvejie	Medvejie	6,687,300	0	0	298,760	35,935,643	0	42,921,703
				Hidden Falls	0	0	0	0	116,792,877	0	116,792,877
				Sawmill Creek	918,515	0	0	0	49,723,246	0	50,641,761
			Sawmill Creek	Sawmill Creek	0	0	4,178,223	0	0	0	4,178,223
		AKI	Port Armstrong	Port Armstrong	0	0	4,838,400	64,671,802	14,915,004	0	84,425,206
		DIPAC	Macaulay	Macaulay	1,684,000	0	1,505,000	0	128,012,000	0	131,201,000
			Snettisham	Snettisham	0	10,868,500	0	0	0	0	10,868,500
			Tahltan L (BC)	Snettisham	0	446,000	0	0	0	0	446,000
			Tatsamenie L (BC)	Snettisham	0	1,715,300	0	0	0	0	1,715,300
			Trapper L (BC)	Snettisham	0	467,300	0	0	0	0	467,300
		NMFS	Little Port Walter	Little Port Walter	322,505	0	0	0	0	0	322,505
		SSSC	Sheldon Jackson	Sheldon Jackson	0	0	175,000	3,601,130	0	0	3,776,130
			Medvejie	Sheldon Jackson	0	0	0	0	3,578,715	0	3,578,715
			Medvejie	Medvejie	0	0	0	0	9,000,000	0	9,000,000
	Northern Southeast total				10,035,371	13,497,100	18,310,015	68,571,692	416,149,098	0	526,563,276
Southeast total					16,081,371	13,497,100	43,546,615	69,711,692	717,999,098	100,000	860,935,876

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Appendix G1.–Page 2 of 2.

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	136,800,000	0	0	136,800,000
			Cannery Creek	Cannery Creek	0	0	0	121,600,000	0	0	121,600,000
			Gulkana	Gulkana	0	15,742,800	0	0	0	0	15,742,800
			Main Bay	Main Bay	0	12,400,000	0	0	0	0	12,400,000
			Wally Noerenberg	Wally Noerenberg	0	0	0	99,400,000	153,000,000	0	252,400,000
				A F Koernig	0	0	0	0	20,000,000	0	20,000,000
			Solomon Gulch	Wally Noerenberg	0	0	4,048,000	0	0	0	4,048,000
			WJ Hernandez	Wally Noerenberg	54,000	0	0	0	0	0	54,000
		VFDA	Solomon Gulch	Solomon Gulch	0	0	5,751,041	270,000,268	0	0	275,751,309
	Prince William Sound total				54,000	28,142,800	9,799,041	627,800,268	173,000,000	0	838,796,109
	Cook Inlet										
		CIAA	Port Graham	Port Graham	0	0	0	34,853,545	0	0	34,853,545
			Trail Lakes	Trail Lakes	0	9,538,423	568,414	0	0	0	10,106,837
			Tutka Bay	Tutka Bay	0	0	0	91,573,034	0	0	91,573,034
		ADF&G	WJ Hernandez	WJ Hernandez[a]	2,893,779	0	1,593,384	0	0	3,414,022	8,014,374
	Cook Inlet total				2,893,779	9,538,423	2,161,798	126,426,579	0	3,414,022	144,547,790
Southcentral total					2,947,779	37,681,223	11,960,839	754,226,847	173,000,000	3,414,022	983,343,899
Arctic-Yukon-Kuskokwim											
		ADF&G	Ruth Burnett	Ruth Burnett[b]	0	0	84,000	0	0	570,000	654,000
			WJ Hernandez	Ruth Burnett	62,006	0	33,600	0	0	0	197,106
Arctic-Yukon-Kuskokwim total					62,006	0	117,600	0	0	570,000	851,106
Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	0	517,400	2,319,840	158,639,068	36,114,489	0	197,590,797
			Saltery Lake	Pillar Creek	0	3,086,046	0	0	0	0	3,086,046
			Afognak Lake	Pillar Creek	0	701,916	0	0	0	0	701,916
			Karluk River	Pillar Creek	11,751	0	0	0	0	0	11,751
			Pillar Creek	Pillar Creek	0	0	220,500	0	0	0	220,500
Kodiak total					11,751	4,305,362	2,540,340	158,639,068	36,114,489	0	201,611,010
Statewide total					19,102,907	55,483,685	58,639,068	927,113,587	894,013,587	4,084,020	2,046,741,890

[a] Total eggs at William Jack Hernandez Sport Fish Hatchery includes 113,189 Arctic char eggs.

[b] Total eggs at Ruth Burnett Sport Fish Hatchery includes 101,500 Arctic char eggs.

APPENDIX H: HATCHERY RELEASES, 2020

Appendix H1.–Alaska hatchery releases as reported by operators, 2020.

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	35,808,728	0	35,808,728
				Anita Bay	0	0	262,609	0	22,184,000	0	22,446,609
				Kendrick Bay	0	0	0	0	7,859,314	0	7,859,314
				Nakat Inlet	0	0	0	0	5,300,000	0	5,300,000
				Neck L	0	0	1,378,506	0	0	0	1,378,506
				Neets Bay	0	0	305,884	0	0	0	305,884
				Port Asumcion	0	0	0	0	11,540,000	0	11,540,000
			Crystal Lake	Crystal Cr	614,775	0	134,650	0	0	0	749,425
				Anita Bay	433,192	0	0	0	0	0	433,192
				City Cr	93,400	0	0	0	0	0	93,400
				Neets Bay	299,138	0	0	0	0	0	299,138
			Neets Bay	Neets Bay	0	0	3,690,201	0	86,814,681	0	90,504,882
				Nakat Inlet	0	0	0	0	8,649,494	0	8,649,494
			Whitman Lake	Nakat Inlet	0	0	548,186	0	8,400,000	0	8,948,186
				Anita Bay	0	0	292,513	0	0	0	292,513
				Carroll Inlet	608,661	0	0	0	0	0	608,661
				Ketchikan Cr	85,050	0	0	0	0	0	85,050
				Neets Bay	0	0	528,027	0	0	0	528,027
				Herring Cove	605,651	0	517,597	0	0	0	1,123,248
				Kendrick Bay	0	0	0	0	30,101,882	0	30,101,882
			Klawock River	Klawock L	0	0	4,347,339	0	0	0	4,347,339
				Port Asumcion	0	0	376,076	0	0	0	376,076
			Port Saint Nicholas	Port St Nicholas	298,562	0	0	0	0	0	298,562
				Port Asumcion	0	0	0	0	7,470,000	0	7,470,000
			Deer Mountain	Harriet Hunt L	0	0	0	0	0	21,000	21,000
				Ketchikan Cr	21,180	0	0	0	0	0	21,180
				Carlanna L	0	0	0	0	0	4,948	4,948
		MIC	Tamgas Creek	Tamgas Cr	136,485	0[b]	1,326,619	0	0[b]	0	1,463,104
				Port Chester	134,456	0	0	0	0	0	134,456
	Southern Southeast total				3,330,550	0	13,708,207	0	224,128,099	25,948	241,192,804
	Northern Southeast										
		NSRAA	Hidden Falls	Thomas Bay	0	0	0	0	21,398,311	0	21,398,311
				Kasnyku Bay	315,266	0	3,101,589	0	48,589,947	0	52,006,802
				Southeast Cove	0	0	0	0	40,951,776	0	40,951,776
				Gunnuk Cr	179,754	0	0	0	16,142,492	0	16,322,246
				Blanchard L	0	0	94,733	0	0	0	94,733
				Deer L	0	0	2,073,028	0	0	0	2,073,028

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Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R Trout	Total
Southeast (continued)											
	Northern Southeast										
		NSRAA	Medvejie	Bear Cove	1,719,553	0	0	232,491	34,671,759	0	36,623,803
				Deep Inlet	0	0	0	0	26,261,892	0	26,261,892
				Crescent Bay	388,556	0	0	0	0	0	388,556
				Crawfish Inlet	635,764	0	0	0	0	0	635,764
			Sawmill Creek	Bear Cove	0	0	214,017	0	0	0	214,017
				Deep Inlet	0	0	1,660,849	0	17,657,006	0	19,317,855
				Crawfish Inlet	0	0	0	0	26,506,045	0	26,506,045
			Gunnuk Creek	Gunnuk Cr	0	0	0	0	2,284,105	0	2,284,105
		AKI	Port Armstrong	Port Armstrong	0	0	3,652,153	38,929,384	51,663,892	0	94,245,429
		DIPAC	Macaulay	Gastineau Ch	1,441,400	0	775,600	0	11,803,000	0	14,020,000
				Amalga Harbor	0	0	0	0	43,875,000	0	43,875,000
				Boat Harbor	0	0	0	0	18,239,300	0	18,239,300
				Twin Lakes	4,779	0	0	0	0	7,700	12,479
				Fish Cr	272,200	0	0	0	0	0	272,200
				Limestone Inlet	0	0	0	0	12,329,000	0	12,329,000
				Sheep Cr	0	0	679,200	0	20,826,000	0	21,505,200
			Snettisham	Speel Arm	0	8,872,000	0	0	0	0	8,872,000
				Sweetheart L	0	508,700	0	0	0	0	508,700
				Tahltan L (BC)	0	2,685,000	0	0	0	0	2,685,000
				Trapper L (BC)	0	263,200	0	0	0	0	263,200
				Tatsamenie L (BC)	0	1,621,100	0	0	0	0	1,621,100
		NMFS	Little Port Walter	L Port Walter	207,309	0	0	0	0	0	207,309
		SSSC	Sheldon Jackson	Crescent Bay	0	0	225,775	2,819,195	2,917,289	0	5,962,259
				Deep Inlet	0	0	0	0	7,607,000	0	7,607,000
	Northern Southeast total				5,164,581	13,950,000	12,476,944	41,981,070	403,723,814	7,700	477,304,109
Southeast total					8,495,131	13,950,000	26,185,151	41,981,070	627,851,913	33,648	718,496,913
Southcentral											
	Prince William Sound										
		PWSAC	A F Koernig	Sawmill Bay	0	0	0	123,600,000	18,000,000	0	141,600,000
			Cannery Creek	Unakwik Inlet	0	0	0	109,100,000	0	0	109,100,000
			Gulkana	Crosswind L	0	8,912,385	0	0	0	0	8,912,385
				Paxson L	0	5,962,155	0	0	0	0	5,962,155
			Main Bay	Main Bay	0	9,503,442	0	0	0	0	9,503,442
			Wally Noerenberg	Lake Bay	0	0	1,778,793	132,500,000	70,790,000	0	205,068,793
				Port Chalmers	0	0	0	0	32,500,000	0	32,500,000
				Chenega Cove	0	0	49,750	0	0	0	49,750

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Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R Trout	Total
Southcentral (continued)											
	Prince William Sound										
		PWSAC	Wally Noerenberg	Whittier	0	0	99,916	0	0	0	99,916
				Fleming Spit	0	0	99,804	0	0	0	99,804
		VFDA	Solomon Gulch	Solomon Gulch	0	0	1,858,567	257,742,977	0	0	259,601,544
				Boulder Bay	0	0	19,926	0	0	0	19,926
	Prince William Sound total				0	24,377,982	3,906,756	622,942,977	121,290,000	0	772,517,715
	Cook Inlet										
		CIAA	Trail Lakes	Bear L	0	2,446,353	0	0	0	0	2,446,353
				Bear Cr	0	0	497,699	0	0	0	497,699
				Resurrection B	0	0	0	0	0	0	0
				Kirschner L	0	271,858	0	0	0	0	271,858
				Hazel L	0	266,448	0	0	0	0	266,448
				Leisure L	0	274,443	0	0	0	0	274,443
				Tutka Lagoon	0	363,072	0	0	0	0	363,072
				Shell Lake	0	0	0	0	0	0	0
				Hidden L	0	1,020,382	0	0	0	0	1,020,382
			Tutka Bay	Tutka Lagoon	0	0	0	27,684,949	0	0	27,684,949
			Port Graham	Port Graham	0	0	0	5,948,143	0	0	5,948,143
		ADF&G	William Jack Hernandez[a]	Bird Cr	0	0	121,691	0	0	0	121,691
				Campbell Cr	0	0	55,929	0	0	1,999	57,928
				Ship Cr	595,705	0	255,392	0	0	0	851,097
				Southcentral Lakes	85,177	0	159,949	0	0	692,253	1,008,803
				Eklutna Tailrace	430,400	0	125,279	0	0	0	555,679
				Crooked Cr	141,331	0	0	0	0	0	141,331
				Ninilchik R	157,954	0	0	0	0	0	157,954
				Homer Spit	315,272	0	122,171	0	0	0	437,443
				Seldovia Harbor	102,467	0	0	0	0	0	102,467
				Seward Lagoon	317,194	0	253,274	0	0	0	570,468
				Whittier	108,503	0	0	0	0	0	108,503
				Fleming Spit	111,254	0	0	0	0	0	111,254
				Ruth L (PWS)	0	0	0	0	0	866	866
			Ruth Burnett[a]	Southcentral Lakes	0	0	0	0	0	0	9,633
	Cook Inlet total				2,365,257	4,642,556	1,591,384	33,633,092	0	695,118	42,998,831
Southcentral total					2,365,257	29,020,538	5,498,140	656,576,069	121,290,000	695,118	815,516,546

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Region	Area	Operator	Hatchery	Release site	Chinook	Sockeye	Coho	Pink	Chum	R Trout	Total
Arctic-Yukon-Kuskokwim											
		ADF&G	Ruth Burnett	Region III Lakes	41,495	0	77,835	0	0	313,497	465,006
			William Jack Hernandez	Region III Lakes	0	0	0	0	0	0	11,640
Arctic-Yukon-Kuskokwim total					41,495	0	77,835	0	0	313,497	476,646
Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	0	0	1,071,447	175,359,011	18,173,783	0	194,604,241
				Crescent L	0	0	190,086	0	0	0	190,086
				Ouzinkie	0	49,550	0	0	0	0	49,550
				Jennifer L	0	0	230,170	0	0	0	230,170
				Little Kitoi L	0	400,337	0	0	0	0	400,337
				Katmai L	0	0	34,947	0	0	0	34,947
				Kodiak Lakes	0	0	40,074	0	0	0	40,074
			Pillar Creek	Pillar Cr	0	0	90,094	0	0	0	90,094
				Telrod Cove	0	272,446	0	0	0	0	272,446
				Monashka R	0	0	94,397	0	0	0	94,397
				Spiridon L	0	1,100,000	0	0	0	0	1,100,000
				Jennifer L	0	90,061	0	0	0	0	90,061
				Salonie Cr	39,964	0	0	0	0	0	39,964
				Olds R	36,098	0	0	0	0	0	36,098
				Kodiak Lakes	0	25,000	50,239	0	0	55,657	130,896
Kodiak/Westward total					76,062	1,937,394	1,801,454	175,359,011	18,173,783	55,657	197,403,361
Statewide total					10,977,945	44,907,932	33,562,580	873,916,150	767,315,696	1,097,920	1,731,915,475

[a] William Jack Hernandez and Ruth Burnett Sport Fish hatchery released 65,233 Arctic Char, 50,010 Arctic grayling, and 22,009 lake trout into lakes.

[b] Not available at time of release.

APPENDIX I: COMMERCIAL HARVEST SUMMARY, 2020

Appendix I1.–Summary of commercial harvest of salmon from Alaska fisheries enhancement projects, 1977–2020.

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	2,976	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	5,730,203	5%	4%
1985	144,727,522	1,853,789	142,873,733	12,863,193	10%	9%
1986	126,855,975	1,211,675	125,644,300	9,152,099	8%	7%
1987	95,985,203	4,181,289	91,803,914	17,927,502	23%	20%
1988	99,440,378	2,498,927	96,941,451	12,815,060	15%	13%
1989	151,138,707	15,012,919	136,125,788	16,063,656	21%	12%
1990	153,223,849	10,387,952	142,835,897	34,372,132	29%	24%
1991	183,957,665	13,169,033	170,788,632	29,400,303	23%	17%
1992	135,386,575	7,255,121	128,131,454	11,357,589	14%	9%
1993	191,209,924	4,853,221	186,356,703	23,822,544	15%	13%
1994	194,505,686	15,916,251	178,589,435	34,688,288	26%	19%
1995	215,199,444	9,285,469	205,913,975	24,364,031	16%	12%
1996	173,033,261	14,657,121	158,376,140	29,199,550	25%	18%
1997	122,047,351	19,410,252	102,637,099	26,780,072	38%	26%
1998	150,090,563	15,649,068	134,441,495	34,553,704	33%	26%
1999	215,180,312	22,607,626	192,572,686	42,656,151	30%	22%
2000	135,897,068	18,981,236	116,915,832	39,780,299	43%	34%
2001	172,628,831	18,443,777	154,185,054	38,500,563	33%	25%
2002	128,681,747	19,067,521	109,614,226	25,743,907	35%	23%
2003	159,887,885	22,936,739	136,951,146	49,881,589	46%	36%
2004	164,996,265	22,015,463	142,980,802	20,106,465	26%	14%
2005	219,699,789	21,262,577	198,437,212	53,566,262	34%	27%
2006	139,935,798	18,942,107	120,993,691	23,723,769	30%	20%
2007	211,522,916	19,601,350	191,921,566	57,682,118	37%	30%
2008	144,910,315	12,898,100	132,012,215	44,920,941	40%	34%
2009	160,855,846	13,789,128	147,066,718	28,139,180	26%	19%
2010	169,171,088	10,463,516	158,707,572	77,324,429	52%	49%
2011	175,961,536	12,153,913	163,807,623	32,209,873	25%	20%
2012	125,911,498	7,326,714	118,584,784	36,903,254	35%	31%
2013	280,312,950	9,480,010	270,832,940	97,104,919	38%	36%
2014	154,272,301	7,466,365	146,805,936	50,811,844	38%	35%
2015	263,872,586	14,553,280	249,319,306	78,014,204	35%	31%
2016	109,078,586	8,165,000	100,913,586	16,146,000	22%	16%
2017	221,749,117	9,421,367	212,327,750	37,199,308	21%	18%
2018	113,615,415	7,825,483	105,789,932	31,247,204	34%	30%
2019	204,316,891	9,220,052	195,069,107	40,952,063	25%	21%
2020	115,910,142	7,223,563	108,686,579	23,535,551	27%	22%

Source: Total commercial harvest 1977–1984 from ADF&G HQ fish tickets staff, 1985–2020 from OceanAK statewide salmon fishticket database [URL not publicly available]. Cost-recovery and common property hatchery harvest from PNP annual reports in the PNP hatchery database.

APPENDIX J: HATCHERY RETURNS, 2020

Appendix J1.–Details of the estimated Chinook salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2020.

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	0	86	609	69	1,640	0	0	2,404
				Anita Bay	4,155	4,915	415	91	0	936	0	10,512
				City Cr	0	774	149	20	0	0	0	943
			Whitman Lake	Whitman Lake	57	99	593	88	1,325	1,771	175	4,108
				Carroll Inlet	1,693	1,332	952	163	0	0	100	4,240
			Deer Mountain	Ketchikan Cr	0	64	191	26	124	135	0	540
			Port Saint Nicholas	Port Saint Nick Bay	16	6	925	61	0	1,205	0	2,213
				Coffman Cove	2	5	4	0	0	0	0	11
		MIC	Tamgas Cr	Tamgas Cr	0	0	0	0	0	0	0	0
	Southern Southeast total				5,923	7,281	3,838	518	3,089	4,047	275	24,971
	Northern Southeast											
		NSRAA	Hidden Falls	Kasnyku Bay	39	0	123	5	293	0	186	646
				Gunnuk Cr	0	0	172	12	0	0	4	188
			Medvejie	Medvejie Cr	2,047	3,006	2,278	851	5,041	31	343	13,597
				Halibut Point	213	501	306	117	554	0	14	1,705
				Crawfish Inlet	40	145	123	27	98	579	3	1,015
		AKI	Port Armstrong	Port Armstrong	0	0	0	0	0	0	43	43
		DIPAC	Macaulay	Macaulay Hatchery	1	1,124	264	4,161	787	1,388	34	7,759
		NMFS	Little Port Walter	L Port Walter - Keta	0	12	28	3	133	0	1	177
				L Port Walter - Unuk	4	64	235	18	884	0	10	1,215
	Northern Southeast total				2,344	4,852	3,529	5,194	7,790	1,998	638	26,345
Southeast total					8,267	12,133	7,367	5,712	10,879	6,045	913	51,316
Southcentral												
	Prince William Sound											
		PWSAC	Wally Noerenberg	Chenega	0	0	0	200	0	0	0	200
	Prince William Sound total				0	0	0	200	0	0	0	200
	Cook Inlet											
		ADF&G	WJ Hernandez	Crooked Cr	0	0	0	0	627	0	2,452	3,079
				Eklutna Tailrace	0	0	0	792	0	0	0	792
				Ninilchik R	0	0	0	0	478	0	1,664	2,142
				Ship Creek	0	0	0	1,144	841	0	351	2,336
				RII Lakes	0	0	0	1,309	0	0	0	1,309
	Cook Inlet total				0	0	0	3,245	1,946	0	4,467	9,658
Southcentral total					0	0	0	3,445	1,946	0	4,467	9,858

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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	39	5	0	6	50
	Kodiak total				0	0	0	39	5	0	6	50
Kodiak/Westward total					0	0	0	39	5	0	6	50
Statewide total					8,267	12,133	7,367	9,196	12,830	6,045	5,386	61,224

[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, 2020.

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	285	24,908	0	0	0	6,949	72,868	0	105,010
				Sweetheart L	23	1,252	0	0	4,083	0	0	0	5,358
				Tahltan-Stikine R	0	1,515	0	6,381	739	223	0	6,254	15,112
				Taku R	0	200	0	406	36	251	0	1,120	2,013
Southeast total					308	27,875	0	6,787	4,858	7,423	72,868	7,374	127,493
Southcentral													
	Prince William Sound												
		PWSAC	Gulkana	Gulkana	0	2,138	0	0	1,946	3,758	0	280	8,122
				Crosswind L	0	7,064	0	0	6,431	2,031	0	3,731	19,257
				Gulkana II	0	609	0	0	554	986	0	0	2,149
			Main Bay	Main Bay	0	408,775	86,159	0	2,000	9,735	236,982	100	743,751
	Prince William Sound total				0	418,586	86,159	0	10,931	16,510	236,982	4,111	773,279
	Cook Inlet												
		CIAA	Trail Lakes	Trail Lakes	0	0	0	0	15,000	4,538	62,451	12,760	94,749
				Hidden L	0	0	0	0	0	611	0	2,969	3,580
				Kirschner L	0	0	0	0	0	0	20,189	0	20,189
				Leisure/Hazel L	55,283	0	0	0	1,600	0	75	0	56,958
				Tutka Bay	3,096	4,821	0	0	1,500	2,020	15,272	0	26,709
	Cook Inlet total				58,379	4,821	0	0	18,100	7,169	97,987	15,729	202,185
Southcentral total					58,379	423,407	86,159	0	29,031	23,679	334,969	19,840	975,464
Kodiak/Westward													
	Kodiak												
		KRAA	Kitoi Bay	Kitoi Bay	20,604	0	0	0	0	431	0	1,002	22,037
			Pillar Creek	Spiridon L	70,857	62,758	0	0	76	0	0	2,000	135,691
				Crescent L-PC	0	0	0	0	687	0	0	0	687
				Foul Bay	933	0	0	0	0	0	0	0	933
	Kodiak total				92,394	62,758	0	0	763	431	0	3,002	159,348
Kodiak/Westward total					92,394	62,758	0	0	763	431	0	3,002	159,348
Statewide total					151,081	514,040	86,159	6,787	34,652	31,533	407,837	30,216	1,262,305

Appendix J3.–Details of the estimated coho salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2020.

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 L	136	1,061	287	1,146	0	6,701	0	9,331
				Anita Bay	23	2,035	915	0	0	0	0	2,973
				Neets Bay	102	2,126	3,974	201	0	1,342	0	7,745
			Crystal Lake	Crystal L	0	461	1,362	0	4,318	0	0	6,141
			Neets Bay	Neets Bay	501	10,632	19,865	1,007	1,923	6,709	0	40,637
			Whitman Lake	Anita Bay	23	2,035	915	0	0	0	0	2,973
				Nakat Inlet	86	1,816	1,716	0	0	0	0	3,618
				Neets Bay	23	478	894	0	302	0	0	1,697
				Whitman L	156	840	3,902	224	1,741	180	0	7,043
				Whitman L-Sum	667	936	226	35	1,075	422	0	3,361
			Klawock River	Klawock L	9,348	0	56,534	3,974	4,234	25,917	5,960	105,967
				Port Asumcion	267	0	1,770	76	0	0	0	2,113
		MIC	Tamgas Cr[b]	Tamgas Cr	4,038	80,760	276,603	16,152			14,133	391,686
	Southern Southeast total				15,370	103,180	368,963	22,815	13,593	41,271	20,093	585,285
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls	102	74	3,524	623	12,882	0	17,160	34,365
				Deer L	0	0	20,030	3,583	0	28,441	36,110	88,164
			Sawmill Creek	Deep Inlet	4,860	2,186	16,589	1,739	905	0	0	26,279
				Bear Cove	1,204	546	6,646	1,019	2,618	0	1,821	13,854
		AKI	Port Armstrong	Port Armstrong	0	0	35,978	1,912	98,896	35,285	0	171,891
		DIPAC	Macaulay	Macaulay Hatchery	0	8,909	2,738	9,267	753	13,400	1,496	36,563
		SSSC	Sheldon Jackson	Sheldon Jackson	190	175	847	382	199	1,796	96	3,685
	Northern Southeast total				6,356	11,890	86,172	18,525	116,253	78,922	56,683	374,801
Southeast total					21,726	115,070	455,135	41,340	129,846	120,193	76,776	960,086
Southcentral												
	Prince William Sound											
		PWSAC	Wally Noerenberg	Lake Bay	0	0	0	100	149	0	5,000	5,249
				Chenega	0	0	0	155	0	0	0	155
				Cordova	0	0	0	328	0	0	0	328
				Whittier	0	0	0	296	0	0	0	296
		VFDA	Solomon Gulch	Solomon Gulch	10,419	0	0	19,309	4,925	18,475	840	53,968
	Prince William Sound total				10,419	0	0	20,188	5,074	18,475	5,840	59,996

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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]				
	Cook Inlet											
		CIAA	Trail Lakes	Bear L	0	0	0	0	383	0	617	1,000
		ADF&G	WJ Hernandez	Bird Cr	0	0	0	2,422	0	0	620	3,042
				Eklutna Tailrace	0	0	0	1,702	0	0	0	1,702
				Resurrection Bay	0	0	0	0	169	0	0	169
				Ship Creek	0	0	0	4,751	849	0	1,259	6,859
				RII Lakes	0	0	0	1,884	0	0	0	1,884
	Cook Inlet total				0	0	0	8,875	1,401	0	2,496	14,656
Southcentral total					10,419	0	0	29,063	6,475	18,475	8,336	74,652
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	127,920	0	0	0	1,723	0	13,385	143,028
			Pillar Creek	Kodiak Road System	0	0	0	10,709	113	0	2,678	13,500
	Kodiak total				127,920	0	0	10,709	1,836	0	16,063	156,528
Kodiak/Westward total					127,920	0	0	10,709	1,836	0	16,063	156,528
Statewide total					160,070	115,070	455,140	81,110	138,160	138,670	101,175	1,191,266

[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, 2020.

					Common property harvest					Cost		Total
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Setnet	Sp/PU/S[a]	Broodstock	recovery	Other	return
Southeast												
	Northern Southeast											
		NSRAA	Medvejie	Medvejie Cr	0	0	0	0	1,338	0	100	1,438
		AKI	Port Armstrong	Port Armstrong	0	0	62[b]	0	96,896	705,573	0	802,531
		SSSC	Sheldon Jackson	Sheldon Jackson	26,339	23,412	8,781[b]	584	11,462	185,924	20,000	276,502
	Northern Southeast total				26,339	23,412	8,743[b]	584	109,696	891,497	20,100	1,080,471
Southeast total					26,339	23,412	8,743[b]	584	109,696	891,497	20,100	1,080,471
Southcentral												
	Prince William Sound											
		PWSAC	A F Koernig	Armin F Koernig	802,881	1,407	0	0	279,519	256,983	23,000	1,363,790
			Cannery Creek	Cannery Creek	2,371,361	50,687	545	0	400,004	235,116	60,000	3,117,713
			Wally Noerenberg	Lake Bay	2,260,407	411,477	8,592	0	224,512	1,296,683	70,000	4,271,671
		VFDA	Solomon Gulch	Solomon Gulch	7,179,058	0	18,698	10,883	385,743	1,185,309	24,425	8,804,116
	Prince William Sound total				12,613,707	463,571	27,835	10,883	1,289,778	2,974,091	177,425	17,557,290
	Cook Inlet											
		CIAA	Tutka Bay	Tutka Bay	115,468	18,894	0	100	134,595	656,366	7,445	932,868
			Port Graham	Port Graham	0	0	0	250	53,233	159,884	34,784	248,151
	Cook Inlet total				115,468	18,894	0	350	187,828	816,250	42,229	1,181,019
Southcentral total					12,729,175	482,465	27,835	11,233	1,477,606	3,790,341	219,654	18,738,309
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	4,615,604	0	0	0	349,064	0	2,000	4,966,668
	Kodiak total				4,615,604	0	0	0	349,064	0	2,000	4,966,668
Kodiak/Westward total					4,615,604	0	0	0	349,064	0	2,000	4,966,668
Statewide total					17,371,120	505,880	36,678[c]	11,820	1,936,370	4,681,840	241,750	24,785,448

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

[b] Troll harvest.

[c] Setnet and troll harvest.

Appendix J5.–Details of the estimated chum salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2020.

Region	Area	Agency	Hatchery	Project	Common property harvest					Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Other[a]	Sp/PU/S[b]				
Southeast													
	Southern Southeast												
		SSRAA	Burnett Inlet	Burnett Inlet	515	4,419	0	0	0	3,516	1,203	0	9,653
				BI-Summer	23,445	35,932	0	0	0	94,887	23,662	0	177,926
				Anita Bay	29,106	62,265	0	0	0	0	82,230	0	173,601
				Port Asumcion	41,248	114	0	0	0	0	69,894	0	111,256
			Neets Bay	Neets Bay	52,132	42,978	696	0	0	130,606	65,503	0	291,915
				Neets Bay-Fall	702	3,676	0	0	0	2,481	0	0	6,859
				Nakat Inlet	662	14,829	0	0	0	0	0	0	15,491
			Whitman Lake	Kendrick Bay	185,628	15,081	0	0	0	0	0	0	200,709
				Nakat Inlet-Summer	13,176	151,596	0	0	0	0	0	0	164,772
	Southern Southeast total				346,614	330,890	696	0	0	231,490	242,492	0	1,152,182
	Northern Southeast												
		NSRAA	Haines Projects	Haines Projects	0	680	0	0	0	0	0	1,020	1,700
			Hidden Falls	Hidden Falls	9,021	1,260	1	1,331	0	172,644	0	10,650	194,907
				Southeast Cove	123,857	227	1	1,603	0	5,284	4,481	0	135,453
				Thomas Bay	53,768	731	0	45	0	0	0	0	54,544
			Medvejie	Medvejie Creek	300,110	117,709	4,878	0	0	99,197	3,158	6,302	531,354
				MC-Kadashan	123,879	74,452	1,974	8	0	10,949	0	491	211,753
			Sawmill Creek	Crawfish Inlet	955,730	1,830	64,948	0	0	159	525,152	970	1,548,789
			Gunnuk Creek	Gunnuk Creek	1,057	112	0	149	0	5,333	97	500	7,248
		AKI	Port Armstrong	Port Armstrong	0	0	1,317	0	0	13,387	301	0	15,005
		DIPAC	Macaulay	Gastineau	1,760	96,871	3	0	500	160,134	352	1,500	261,120
				Amalga Harbor	2,186	117,987	4	0	0	0	204,113	0	324,290
				Boat Harbor	1,160	170,885	2	0	0	0	0	0	172,047
				Limestone Inlet	231	34,003	0	0	0	0	0	0	34,234
		SSSC	Sheldon Jackson	Sheldon Jackson	3,948	1,870	628	0	2,448	9,626	12,299	734	31,553
				Deep Inlet	43,186	16,939	702	0	0	14,275	454	907	76,463
	Northern Southeast total				1,619,893	635,556	74,458	3,136	2,948	490,988	750,407	23,074	3,600,460
Southeast total					1,966,507	966,446	74,458	3,136	2,948	722,478	992,899	23,074	4,752,642

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Region	Area	Agency	Hatchery	Project	Common property harvest					Broodstock	Cost recovery	Other	Total return
					Seine	Gillnet	Troll	Other[a]	Sp/PU/S[b]				
Southcentral													
	Prince William Sound												
		PWSAC	Wally Noerenberg	Lake Bay	37,993	263,774	0	2,816	0	183,701	638,757	30,000	1,157,041
				Port Chalmers	575,615	3,335	0	35	0	0	0	0	578,985
			A F Koernig	Armin F Koernig	177,329	15,533	0	795	0	0	0	0	193,657
	Prince William Sound total				790,937	282,642	0	3,646	0	183,701	638,757	30,000	1,929,683
Southcentral total					790,937	282,642	0	3,646	0	183,701	638,757	30,000	1,929,683
Kodiak/Westward													
	Kodiak												
		KRAA	Kitoi Bay	Kitoi Bay	24,155	0	0	0	0	59,086	0	9,003	92,244
	Kodiak total				24,155	0	0	0	0	59,086	0	9,003	92,244
Kodiak/Westward total					24,155	0	0	0	0	59,086	0	9,003	92,244
Statewide total					2,781,600	1,249,090	75,150	6,780	2,948	965,270	1,631,660	62,080	6,774,569

[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, 1977–2020

Appendix K1.–Summary of statewide commercial harvest (including cost recovery) of hatchery-produced salmon from Alaska's fisheries enhancement projects, 1977–2020.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	0	183	0	125,718		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	1,504	362,326	48,857	3,904,308	39,972	4,356,967
1982	3,352	27,590	84,033	6,067,429	73,869	6,256,273
1983	1,175	158,000	80,820	5,256,149	209,771	5,705,915
1984	5,234	236,762	135,524	4,838,680	1,549,559	6,765,759
1985	10,039	447,448	196,502	12,891,224	1,118,379	14,663,592
1986	14,120	872,507	388,535	7,630,445	1,330,333	10,235,940
1987	22,691	613,433	171,542	19,819,167	1,378,464	22,005,297
1988	28,886	1,001,421	117,108	12,099,427	1,952,956	15,199,798
1989	35,150	1,342,578	278,886	28,403,238	955,802	31,015,654
1990	64,859	1,366,025	680,922	39,580,126	1,487,413	43,179,345
1991	71,754	2,289,246	922,466	36,247,398	1,848,535	41,379,399
1992	54,661	1,498,967	1,037,831	12,220,536	2,398,376	17,210,371
1993	56,404	2,062,422	620,872	18,023,439	5,918,512	26,681,649
1994	43,417	1,610,445	1,024,048	38,814,084	7,977,027	49,469,021
1995	79,366	1,075,191	839,924	22,714,552	8,641,336	33,350,369
1996	89,354	2,317,366	930,894	26,178,537	13,974,597	43,490,748
1997	66,039	2,499,554	720,746	30,982,804	11,758,168	46,027,311
1998	35,965	1,882,080	944,447	34,564,050	12,622,840	50,049,382
1999	46,792	2,568,488	1,180,020	47,193,297	14,144,492	65,133,089
2000	81,955	1,520,601	1,179,919	38,191,003	17,684,623	58,658,101
2001	91,462	2,498,569	1,244,963	44,616,086	8,358,543	56,809,623
2002	85,837	2,749,665	1,576,037	28,443,301	11,813,552	44,638,703
2003	88,938	3,694,840	1,102,260	55,071,886	12,764,879	72,721,118
2004	118,583	2,669,905	834,124	28,309,396	10,057,578	41,989,586
2005	72,998	1,972,236	1,021,934	64,949,983	6,655,453	74,672,604
2006	54,854	2,135,578	1,032,130	24,773,517	14,543,841	42,539,920
2007	83,889	2,033,337	809,108	62,677,909	11,473,819	77,078,062
2008	97,145	1,510,062	1,123,080	42,075,688	12,820,747	57,626,722
2009	82,786	1,534,343	813,392	27,483,685	11,765,847	41,680,053
2010	73,593	2,060,770	916,856	72,484,852	11,854,282	87,390,353
2011	101,092	2,673,023	1,073,289	29,876,986	10,255,648	43,980,038
2012	71,923	2,304,090	677,976	26,699,246	14,109,316	43,862,551
2013	95,570	1,801,171	1,517,608	88,942,840	14,227,394	106,584,583
2014	66,173	2,294,284	1,772,277	47,234,781	6,881,646	58,249,161
2015	77,495	2,319,615	936,259	77,896,371	11,327,248	92,556,988
2016	43,861	1,758,419	536,275	11,526,801	9,914,308	23,779,664
2017	42,045	1,447,642	625,758	30,234,269	14,270,961	46,620,675
2018	41,402	1,771,853	714,637	23,280,580	13,091,246	38,899,718
2019	42,607	1,316,119	885,377	35,366,426	12,002,063	49,612,592
2020	33,812	1,165,904	868,950	22,595,518	5,744,280	30,371,292
Grand total	2,283,657	68,403,944	31,666,288	1,292,351,251	331,009,960	1,725,683,726

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, 1977–2020.

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	47,823	139,000	3,286	191,613
1982	3,352	0	82,458	16,568	64,874	167,252
1983	1,175	0	78,918	163,494	196,523	440,110
1984	5,234	0	134,482	235,694	1,465,670	1,841,080
1985	10,039	0	180,821	911,977	931,267	2,034,104
1986	14,045	18,600	378,044	116,114	1,035,304	1,562,107
1987	22,486	36,000	134,157	1,370,029	1,236,283	2,798,955
1988	28,585	20,400	38,414	124,571	1,251,471	1,463,441
1989	34,810	36,672	68,258	859,426	596,879	1,596,045
1990	64,464	113,400	445,739	1,319,810	785,933	2,729,346
1991	71,440	112,332	764,941	1,774,348	1,190,607	3,913,668
1992	52,375	188,126	840,323	3,515,448	2,114,365	6,710,637
1993	53,040	363,468	549,540	688,861	4,663,502	6,318,411
1994	42,222	171,702	850,474	5,787,031	6,938,082	13,789,511
1995	77,090	211,343	646,138	1,530,366	7,595,023	10,059,960
1996	87,724	482,314	705,874	2,009,727	11,861,241	15,146,880
1997	65,115	352,567	545,079	2,447,974	9,866,592	13,277,327
1998	34,987	237,127	730,391	2,235,834	11,553,028	14,791,367
1999	46,792	137,872	976,683	4,087,903	11,386,520	16,635,770
2000	81,955	259,611	562,678	438,750	12,689,973	14,032,967
2001	91,462	390,365	911,015	2,346,847	5,642,197	9,381,886
2002	85,780	120,106	1,321,514	1,924,064	5,613,259	9,064,723
2003	88,166	118,894	884,519	929,740	8,947,620	10,968,939
2004	116,575	555,871	641,779	1,464,011	8,072,702	10,850,938
2005	72,372	240,060	641,025	1,582,244	4,644,569	7,180,270
2006	54,215	377,440	522,774	528,023	12,332,015	13,814,467
2007	83,422	188,510	517,172	1,218,852	7,693,535	9,701,491
2008	97,145	114,047	704,464	173,914	7,984,314	9,073,884
2009	82,756	137,017	619,570	1,318,308	8,687,058	10,844,709
2010	73,593	91,202	765,192	1,198,717	7,593,846	9,722,550
2011	101,092	170,087	796,221	1,339,987	8,284,698	10,692,085
2012	71,923	218,926	618,549	340,783	10,493,980	11,744,161
2013	95,570	179,181	1,206,772	2,500,909	10,489,177	14,471,609
2014	66,173	216,118	1,360,945	511,684	5,733,451	7,888,371
2015	77,495	145,456	822,191	527,887	9,145,108	10,718,137
2016	43,861	277,819	515,812	358,762	6,919,733	8,115,987
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	712,124	950,091	4,001,006	5,798,084
Grand total	2,234,729	6,974,727	24,043,034	51,165,936	246,797,328	331,245,328

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, 1977–2020.

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	367,560	139,430	14,246,639	662,712	15,417,232
1996	588	899,555	166,824	22,751,594	2,076,445	25,895,006
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	1,030,867	8,653	9,930,534	2,924,763	13,894,817
2017	0	723,773	25,888	26,714,899	4,420,141	31,884,701
2018	0	1,040,335	14,211	18,190,368	2,996,641	22,241,555
2019	0	880,572	265,203	29,907,940	4,574,274	35,627,989
2020	0	741,727	28,894	16,079,204	1,712,336	18,562,161
Grand total	9,022	29,579,191	4,488,101	1,047,391,903	79,168,155	1,160,636,372

Source: 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, 1978–2020.

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	0	358,726	1,034	963,350	0	1,323,110
1982	0	23,990	1,575	181,400	7,426	214,391
1983	0	151,400	1,902	577,200	140	730,642
1984	0	231,444	1,042	230,000	898	463,384
1985	0	415,493	3,681	463,600	1,875	884,649
1986	0	808,503	6,628	380,190	23,152	1,218,473
1987	0	521,349	13,745	84,500	5,313	624,907
1988	0	676,669	8,642	836,000	8,423	1,529,734
1989	0	330,263	8,131	877,600	4,560	1,220,554
1990	160	378,708	11,728	167,400	49,257	607,253
1991	130	483,514	18,546	204,800	25,801	732,791
1992	975	388,021	4,706	373,577	2,933	770,212
1993	1,319	497,376	11,681	637,807	38,002	1,186,185
1994		256,977	10,045	1,563,101	74,725	1,904,848
1995	1,385	324,248	4,121	2,423,894	110,962	2,864,610
1996	1,042	425,118	1,346	442,816	22,711	893,033
1997	0	274,873	3,783	2,637,370	1,745	2,917,771
1998	0	192,548	18,638	1,295,388	106	1,506,680
1999	0	1,150,784	7,188	1,080,130	0	2,238,102
2000	0	310,815	5,370	1,052,285	0	1,368,470
2001	0	724,095	7,133	530,265	0	1,261,493
2002	57	840,439	9,032	1,051,320	0	1,900,848
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	0	0	0	1,487,837	311,007	1,798,844
2019	0	191,404	0	198,203	0	389,607
2020	0	161,187	0	950,612	0	1,111,799
Grand total	9,656	17,122,443	176,014	28,832,903	689,282	46,830,298

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, 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	121,100	3,581,100
1986	75	15,000	600	341,500	70,300	427,475
1987	105	8,737	0	1,060,000	3,860	1,072,702
1988	70	211,800	3,600	605,361	150,967	971,798
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	1,397,600	361,719	2,880,228
1992	0	278,800	740	852,295	3,532	1,135,367
1993	0	699,042	16,016	12,278,700	34,525	13,028,283
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	376,386	28,684	2,020,020	154,222	2,579,312
2018	0	166,406	137,050	3,200,710	182,287	3,686,453
2019	0	103,098	34,374	4,913,516	16,483	5,067,471
2020	0	155,152	127,152	4,615,064	24,155	4,922,831
Grand total	250	14,393,908	2,959,127	164,960,502	4,537,488	186,851,831

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