Regional Information Report No. 5J17-04

Alaska Fisheries Enhancement Annual Report 2016

by

Mark Stopha

February 2017

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

REGIONAL INFORMATION REPORT NO. 5J17-04

ALASKA FISHERIES ENHANCEMENT ANNUAL REPORT 2016

by

Mark Stopha
Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau

Alaska Department of Fish and Game
Division of Commercial Fisheries
333 Raspberry Road, Anchorage, AK 99518

February 2017

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/

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

This document should be cited as
Stopha, M. 2017. Alaska fisheries enhancement annual report 2016. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-04, Anchorage.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

ABSTRACT

This annual report reviews the Alaska salmon fisheries enhancement program. The success of this program 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 trait and use large numbers of broodstock for production. Nearly all hatchery releases are marked so that fisheries managers can estimate the strength of wild stocks in the catch and manage wild stocks conservatively.

Currently, 28 salmon hatcheries are operating in the state. Most (24 facilities) are operated by private nonprofit corporations, which are funded primarily from the harvest of a portion of hatchery returns. Two additional sport fish hatcheries are operated by the state, one research hatchery by the National Marine Fisheries Service, and one hatchery by the Metlakatla Indian Community.

About 27 million adult salmon returned to Alaska hatcheries in 2016, which was the lowest hatchery return since 1992. The exvessel value of the commercial hatchery harvest was an estimated $85 million, and represented 21% of the exvessel value of the statewide salmon harvest. About 227,000 Alaska hatchery fish were caught in the sport, personal use and subsistence fisheries.

Hatchery production in Alaska is intended to supplement—not replace—wild stock production. There are no stocks of concern in Prince William Sound or Southeast Alaska, indicating that adequate escapements to wild stock systems are being met over time in areas with the most hatchery production. Abundance-based wild stock management priority and habitat protection reflect the state's commitment to conservation of wild stocks and provide the foundation of its salmon fisheries enhancement program.

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 the information provided by hatchery operators and public harvest information. The report is intended to update the Alaska State Legislature on the status of Alaska's fishery enhancement program in fulfillment of Alaska Statute 16.05.092. Numbers in tables may be rounded for clarity. Hatchery industry acronyms used in this publication are listed in Table 1. Alaska hatchery egg take, release, return and value data by species and region for 2016 are provided in Tables 2–16.

Multiple types of propagative fish resource permits are issued each year for research to accredited institutions of higher learning and for cooperative governmental projects, as well as for educational, vocational, and scientific purposes. A summary of propagative fish resource permits issued in 2016 is provided in Table 17.

Each year, hatchery operators include updates to the previous years' estimated adult salmon return numbers. These updated numbers are highlighted in Tables 18–23. Historical annual summaries are provided in Tables 24–35, including number of eggs collected, juveniles released, adult returns, and harvest.

Additional information, including Alaska hatchery operators contact information, active hatchery permits, permitted capacities by region and hatchery, and Alaska fisheries enhancement program timeline of events, is found in Tables 36–39.

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.

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 *common property* commercial harvest is "public" 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 (SHA) to pay for hatchery operations.[1]

Exvessel value is the value paid to fishermen by a processor for whole fish. *First wholesale value* is the value of processed product sold by a processor. First wholesale values are not yet available for 2016. As a proxy, the 2016 first wholesale value for each region was estimated as the 2016 exvessel value multiplied by the previous 5-year (2011–2015) weighted average quotient of the first wholesale value divided by the exvessel value, by species and region.

Exvessel and first wholesale values of hatchery fish were estimated based on average prices paid for all salmon on fish tickets or annual processor reports by region by calendar year. Cost-recovery fish may be priced under contract to a processor, but cost-recovery value in this report is estimated based on the average price for all salmon sold in each region by species.

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.

Monetary values are not adjusted for inflation unless otherwise noted.

Contributions of hatchery fish are in numbers of fish, and not weight of fish.

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.

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

An Executive Summary intended to provide an overview of the hatchery program begins this report, followed by a more detailed review of Alaska hatchery history, regulatory and policy guidelines, and production.

[1] At Hidden Falls Hatchery, fish are harvested in the special harvest area (SHA) in a common property fishery that is subject to a special cost recovery assessment tax to pay for operations.

EXECUTIVE SUMMARY 2016

Alaska's modern hatchery program was developed in response to historically low salmon abundance in the early 1970s (Figure 1). In 1971, the Alaska Legislature established the Division of Fisheries Rehabilitation Enhancement and Development (FRED) within the Alaska Department of Fish and Game (ADF&G) for hatchery development. In 1972, Alaska voters approved an amendment to the state Constitution (Article 8, section 15), providing for an exemption to the "no exclusive right of fishery" clause, enabling limited entry to Alaska's state fisheries and allowing harvest of broodstock and cost recovery for hatcheries. Alaska's salmon hatchery program developed under this authority and was designed to supplement—not replace—sustainable natural production. In 1974, the Alaska Legislature expanded the hatchery program, authorizing private nonprofit (PNP) corporations to operate salmon hatcheries.

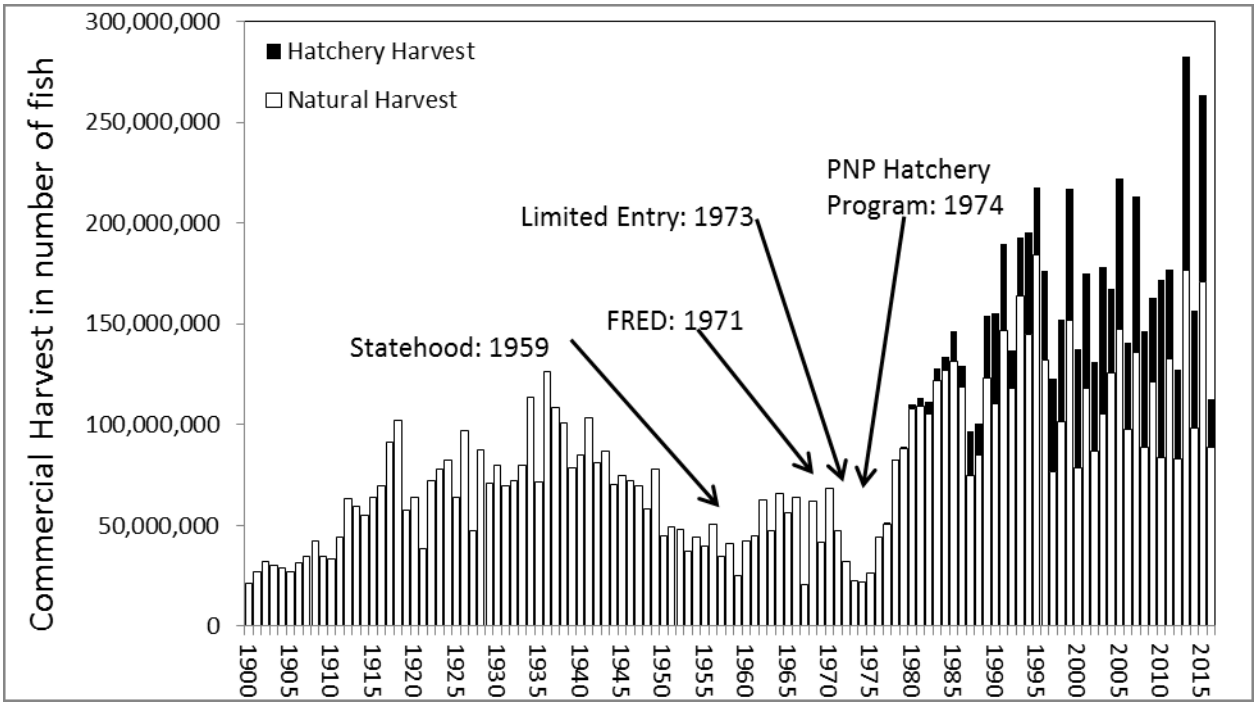

Figure 1.–Commercial salmon harvest in Alaska, 1900–2016.

Salmon fishery enhancement and restoration efforts came in response to low statewide annual salmon harvests of just 22 million fish in 1973 and 1974 (Figure 1). Since then, Alaska's hatchery program has produced significant contributions to the fisheries alongside sustainable, healthy, well managed wild production. The success of the program is attributable to Alaska standards requiring hatcheries to be located away from important natural salmon stocks, to use local broodstock sources, and to mark hatchery fish so that fisheries managers can determine the strength of wild stocks in the catch and manage wild stocks conservatively. In addition, Alaska hatcheries do not selectively breed for size or other trait and use large numbers of broodstock to maintain genetic diversity per the state's *Genetic Policy* (Davis et al. 1985).

Hatcheries function to improve egg-to-juvenile survival. Depending on species, egg-to-fry survival averages about 10% or less in nature due to flooding, freezing, drought, predation, etc. In hatcheries, egg-to-fry survival is usually 90% or higher. Once hatchery-raised juveniles are

released to the ocean, they are subject to the same elements for survival as their naturally spawned counterparts.

Nearly all Alaska hatcheries are operated by PNP hatchery associations, which are primarily self-funded through the sale of a portion of the returning fish. Currently, there are 28 hatcheries operating in Southeast Alaska, Prince William Sound, Cook Inlet, and Kodiak regions (Figure 2).

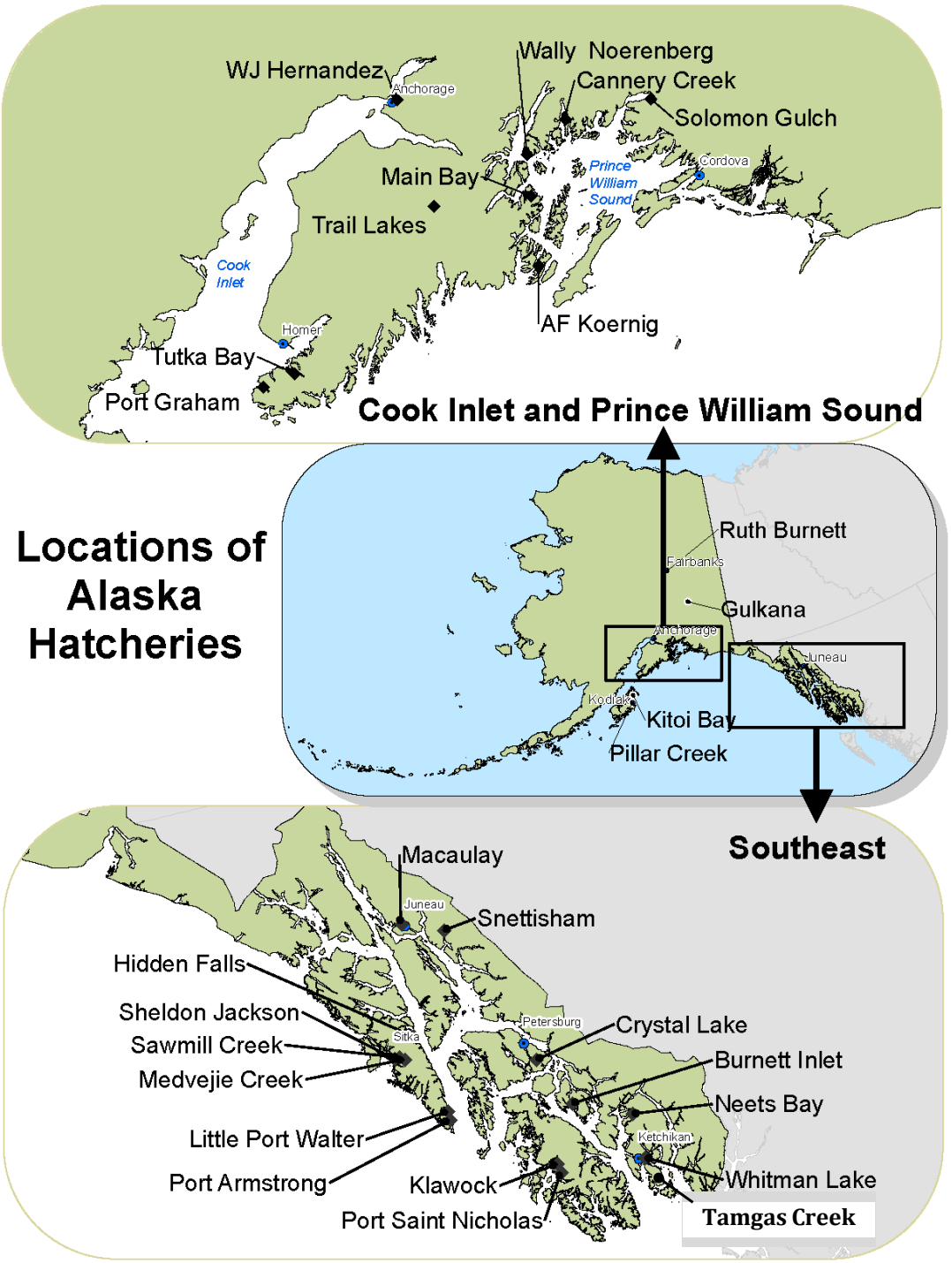

Figure 2.–Salmon hatcheries currently operating in Alaska.

Most facilities (24 hatcheries) are operated by PNPs. ADF&G operates 2 sport fish hatcheries in Anchorage and Fairbanks. The National Marine Fisheries Serivce operates a research hatchery at Little Port Walter. The Metlakatla Indian Community operates Tamgas Creek Hatchery.

Alaska's hatcheries produce primarily pink and chum salmon because hatchery production is limited by freshwater capacity, freshwater rearing space, and costs of production (Figure 3). Pink and chum salmon fry can be released to salt water soon after emergence. Chinook, sockeye, and coho salmon fry must typically spend a year or more in fresh water before development to the smolt stage, when they can tolerate salt water and be released. This makes these 3 species much more expensive to rear, as they require a higher volume of fresh water, holding areas for freshwater rearing, and regular feeding.

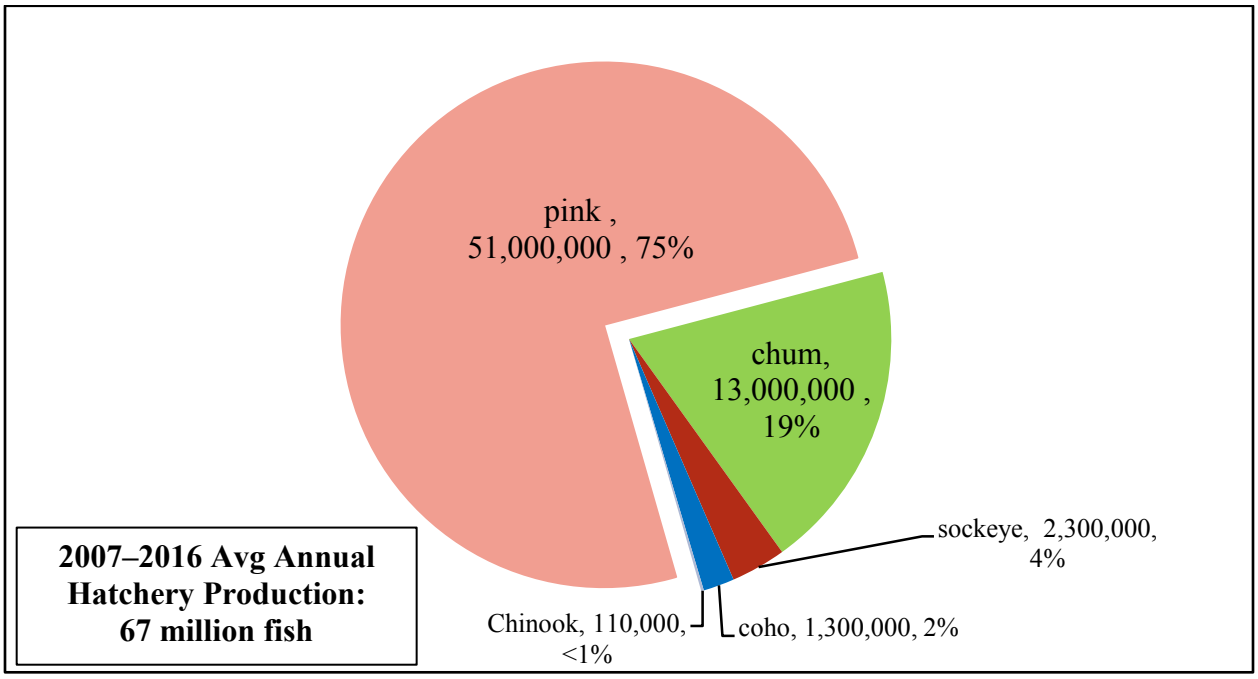

Figure 3.–Alaska hatchery production and percent of hatchery production by species in numbers of fish harvested, 2007–2016 annual average.

Although a majority of the harvest of a species in a region may be made up of hatchery production—chum salmon in Southeast Alaska or pink salmon in Prince William Sound, for example—this does not mean that hatchery production comes at the expense of wild stock production. Hatchery production grew at a pace that managers could assess the returns and understand how to manage for wild stock returns in the presence of hatchery returns and provide for adequate escapement of wild stocks. The development of otolith marking[2] allows all pink and chum salmon produced in Southeast Alaska and Prince William Sound to be marked so that ADF&G staff can determine the harvest composition inseason and manage for wild stocks.

[2] Otolith marking is done by alternating the temperature of the water during egg incubation, which lays down regular marks on the fish ear bone (the otolith). Wild fish usually do not have the otolith markings. Otoliths can be removed from fish harvested and hatchery and wild stock contributions to the catch estimated.

The largest returns of both hatchery and wild salmon stocks have, in fact, largely occurred since hatchery returns began in about 1980. The 2013 season was a record harvest overall, with the 283 million fish commercial salmon harvest composed of the second highest catch for wild stocks (176 million fish) and the highest catch for hatchery stocks (107 million fish) in Alaska's history (Figure 1). The 2015 season was the second highest harvest, with the 263 million fish commercial harvest composed of the third highest catch for wild stocks (170 million fish) and the second highest catch for hatchery stocks (93 million fish). The hatchery harvests *alone* in both 2013 and 2015 were greater than the entire statewide commercial salmon harvest in every year prior to statehood except for 7 years (1918, 1926, 1934, 1936, 1937, 1938 and 1941).

As fisheries management has adapted to hatchery production, so have the fishing fleet and processing sector adapted to harvest the hatchery returns. When fishing is open elsewhere to target wild stocks, the fleet may instead focus effort on hatchery returns at terminal sites where hatchery fish were released—particularly if tender service is also concentrated there. Fishermen can harvest hatchery fish and offload to nearby tenders, saving time and fuel in their operations. This may also have the effect of decreasing fishing pressure on some wild salmon stocks.

There are no *stocks of concern*[3] in Prince William Sound or Southeast Alaska, where most hatchery production occurs, indicating that adequate escapements to wild stock systems are being met in these areas over time. As intended, hatchery production is supplementing fisheries, and is a reflection of the state's priority of conservation of wild stocks as the foundation of its salmon fisheries enhancement program.

[3] ADF&G identifies *stocks of concern* when stocks do not maintain specific escapements or harvestable surplus above escapement needs. See http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks

2016 SEASON SUMMARY

In 2016, Alaska hatcheries contributed an estimated 24 million fish to the commercial fishery[4] (Figure 4; Table 5). Hatchery fish made up 22% of the statewide commercial salmon harvest of 109 million fish. This is the lowest hatchery harvest since 1992, and is primarily due to the low pink salmon returns to Prince William Sound, which on average made up about 70% of the total statewide hatchery harvest in the previous decade (2006–015).

About 34% (8.2 million fish) of the total commercial hatchery harvest fish were harvested for cost recovery to pay for hatchery operations (Table 5). This was greater than the previous decadal (2006–2015) average of 22% of the commercial harvest, and was again due to the low returns of pink salmon to Prince William Sound.

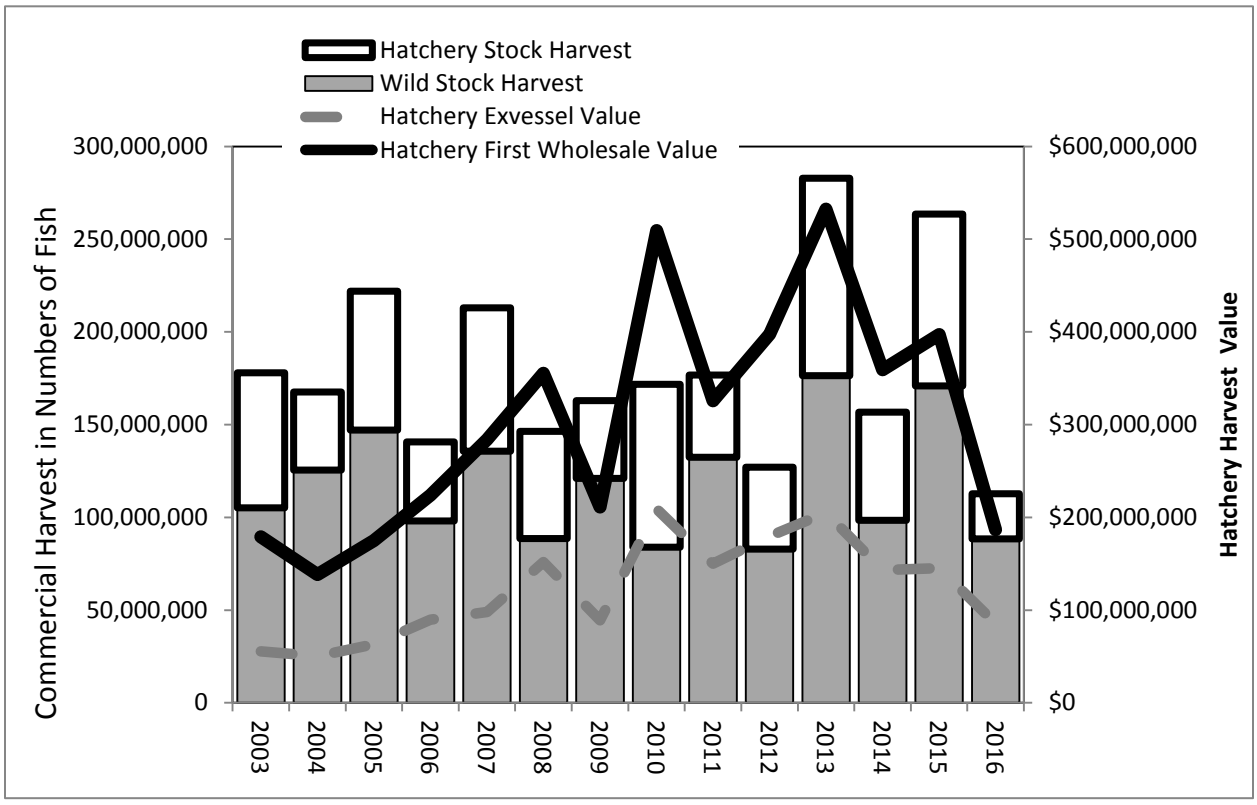

Figure 4.–Hatchery and wild stock harvest in numbers of fish and the estimated exvessel and first wholesale value of the hatchery fish harvest, 2003–2016.

The statewide exvessel value of the commercial hatchery harvest was $85 million (Figures 4 and 5; Table 6), which was the lowest value since 2005. The hatchery harvest contributed an estimated 21% of the statewide harvest exvessel value. Chum salmon accounted for 58% of the value of the hatchery harvest, followed by sockeye (18%), pink (15%), coho (6%), and Chinook

[4] The commercial fishery comprises 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.

salmon (3%; Figure 5).[5] The first wholesale value of the 2016 hatchery harvest was estimated at $187 million (Figure 4).[6]

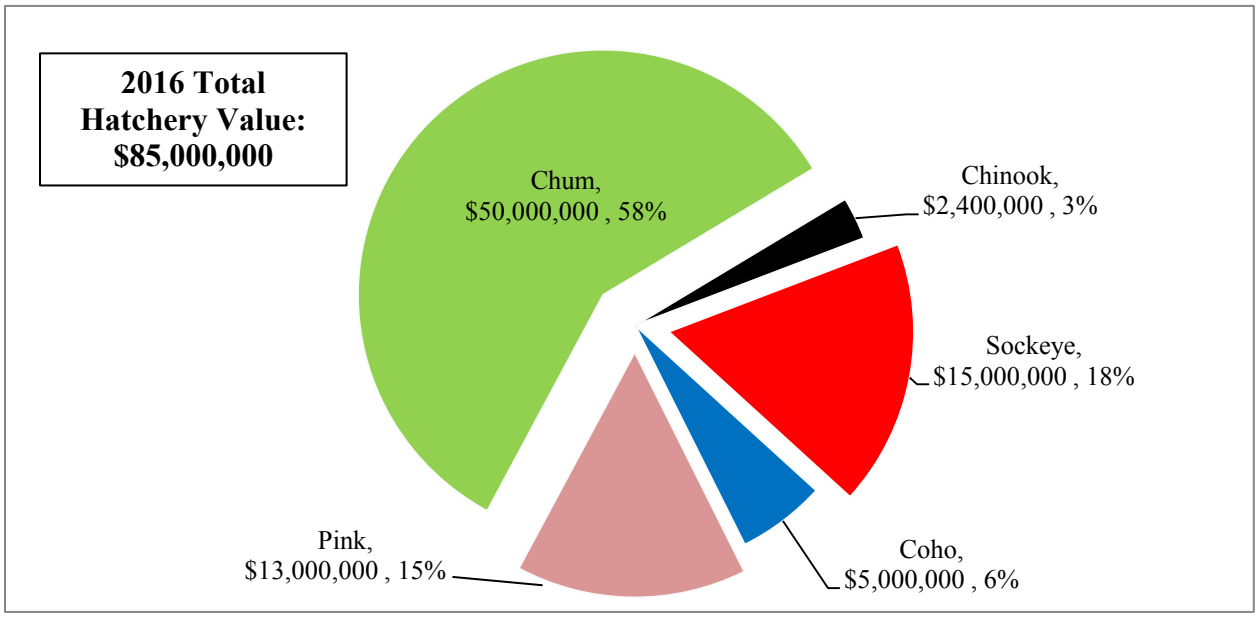

Figure 5.–Exvessel value of 2016 Alaska hatchery commercial harvest by species, with the contribution of each species to the total hatchery value.

About 227,000 hatchery-produced salmon, rainbow trout, arctic char, and grayling were harvested by sport, personal use, and subsistence users in 2016 (Table 7). Hatchery-produced sockeye salmon were the greatest part of this harvest (86,000 fish), followed by coho salmon (72,000 fish), rainbow trout (34,000 fish), pink salmon (12,000 fish), Chinook salmon (10,000 fish), landlocked salmon (7,000 fish), chum salmon (3,000 fish), arctic char (2,000 fish), and grayling (1,000 fish).

[5] 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.

[6] See Preface for method of estimating 2016 first wholesale value.

REGIONAL HATCHERY CONTRIBUTION

Most of Alaska's hatchery production is in Prince William Sound (Figure 6), where pink and sockeye salmon are the primary hatchery species. Next is Southeast Alaska, where chum and coho salmon are the primary species. Kodiak hatcheries produce primarily pink and chum salmon and Cook Inlet hatcheries produce primarily sockeye and pink salmon. Two ADF&G Division of Sport Fish hatcheries produce landlocked salmon, trout, char, and grayling for stocking Interior and Southcentral freshwater systems, as well as Chinook and coho salmon for saltwater release in Cook Inlet and Prince William Sound.

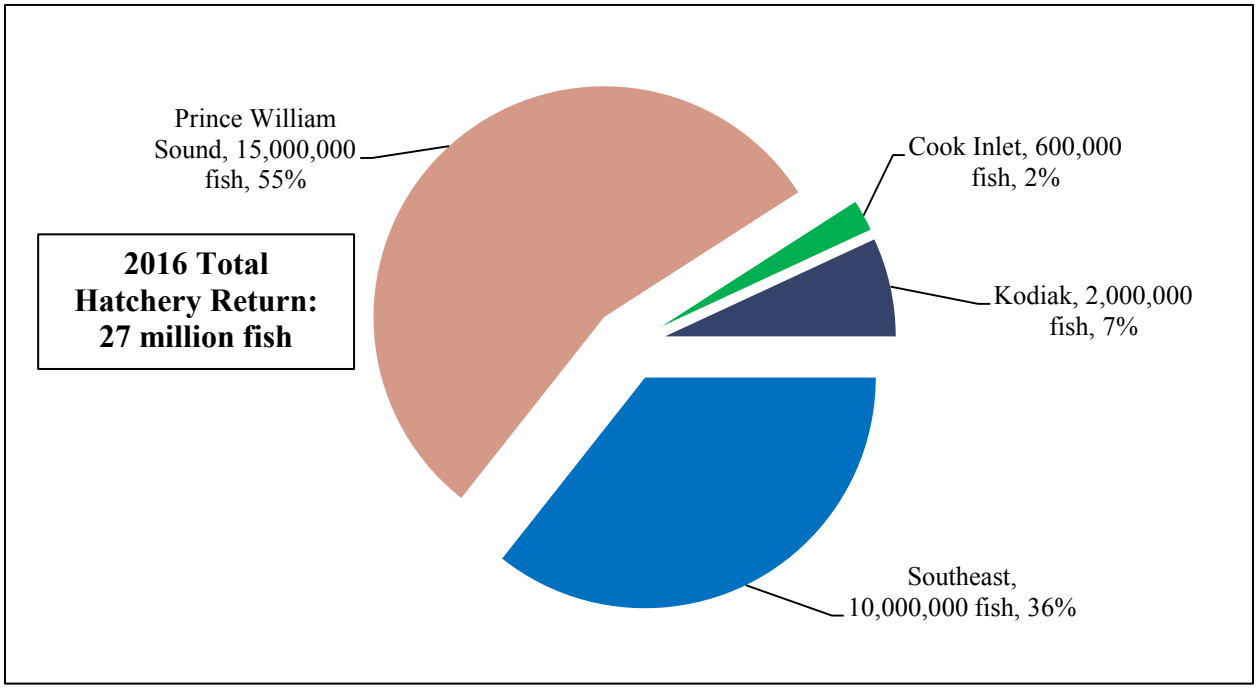

Figure 6.–Alaska hatchery total return by region, 2016. The total return includes both the catch and fish used for broodstock.

COMMON PROPERTY FISHERIES

Southeast Alaska

About 5.9 million Alaska hatchery fish were caught in the Southeast Alaska common property commercial fisheries in 2016, worth an estimated exvessel value of $32 million, or 34% of the total exvessel value for common property commercial salmon fisheries in the region (Tables 5 and 6; Figure 7). Coho salmon contributed the most hatchery fish to the sport/personal use/subsistence fisheries (32,000 fish), followed by Chinook salmon (4,800 fish) (Table 7).

Prince William Sound

About 9.4 million hatchery-produced salmon were harvested in the Prince William Sound common property commercial fisheries in 2016, worth an estimated exvessel value $28 million, or 56% of the total exvessel value for common property commercial salmon fisheries in the

region (Tables 5 and 6; Figure 7). Sockeye salmon contributed the most hatchery fish to the sport/personal use/subsistence fisheries (65,000 fish), followed by coho (31,000 fish) and pink salmon (9,500 fish; Table 7).

Cook Inlet

About 125,000 hatchery-produced salmon were harvested in the Cook Inlet common property commercial fisheries in 2016, worth an estimated exvessel value $660,000, or 3% of the total exvessel value for common property commercial salmon fisheries in the region (Tables 5 and 6; Figure 7). Sockeye salmon contributed the most anadromous salmon to the sport, personal use, and subsistence fisheries (18,000 fish), followed by coho (8,000 fish), 2,500 pink (2,500 fish) and Chinook salmon (1,500 fish; Table 7). An additional 26,000 Arctic char, grayling, landlocked salmon, and rainbow trout were caught in Cook Inlet area lakes (Table 16).

Kodiak

About 580,000 hatchery-produced salmon were harvested in the Kodiak common property commercial fisheries in 2016, worth an estimated exvessel value $1.2 million, or 8% of the total exvessel value for common property commercial salmon fisheries in the region (Tables 5 and 6; Figure 7). Chinook salmon contributed the most hatchery fish to the sport, personal use, and subsistence fisheries (3,500 fish), followed by coho salmon (600 fish) and sockeye salmon (600 fish; Table 7).

Interior

About 18,000 Arctic char, grayling, landlocked salmon and rainbow trout were caught in Interior area lakes (Table 16).

2017 PROJECTED HATCHERY HARVEST

Hatchery operators forecast a return of about 67 million fish in 2017 (Table 10). The 2016 hatchery return of 27 million fish was less than half of the 2016 forecast of 61 million fish due primarily to the low returns of pink salmon to Prince William Sound hatcheries.

HATCHERY PRODUCTION IN ALASKA'S SCHOOLS

In addition to production hatcheries that provide salmon for Alaska's fisheries, an extensive program occurs for education and research across the state that is permitted through ADF&G. About 120 schools across the state participated in educational propagation of salmon in 2016. Fertilized salmon or trout eggs are incubated in aquariums for students to observe the development of the salmon until the fish hatch. Some of the fish are then released at pre-approved locations.

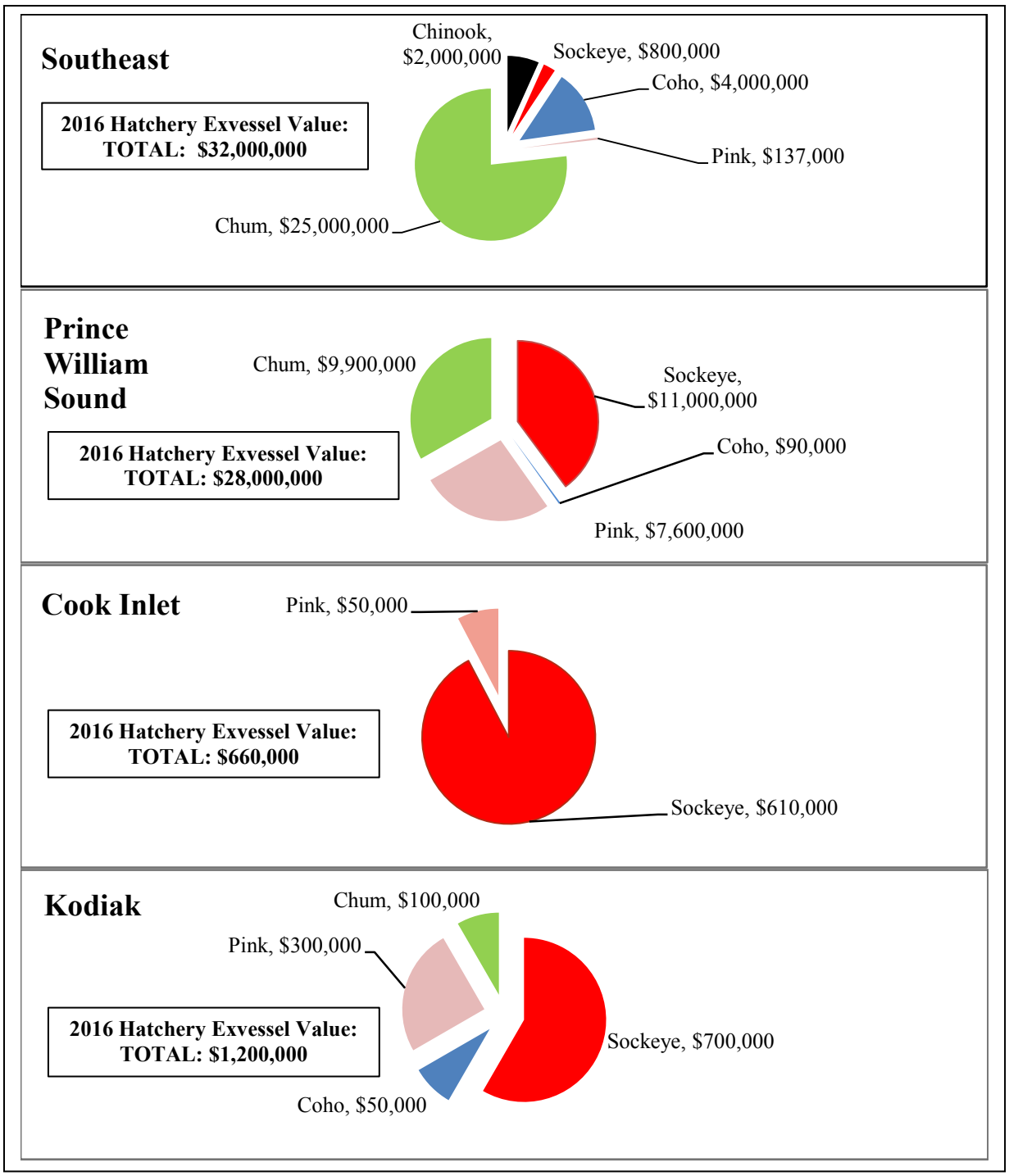

Figure 7.–Exvessel value of commercial common property hatchery harvest by region, 2016.

INTRODUCTION

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). 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 broodstock and cost recovery harvest for hatcheries. Alaska's salmon hatchery program developed under this authority and was designed to supplement—not replace—sustainable natural production.

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."[7]

Salmon fishery restoration efforts came in response to statewide annual salmon harvests of just 22 million fish in 1973 and 1974, among the lowest catches since 1900 (Figure 1). The FRED Division, 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 to provide adult salmon access to previously nonutilized 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, with recent commercial salmon harvests (2007–2016) averaging 180 million fish.[8]

ALASKA'S HATCHERIES

The state of Alaska funded the construction of 18 hatcheries between 1969 and 1983 with a general obligation bond. The 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 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. The PNP corporations hold their own hatchery permits[9] to operate the facilities and are responsible for funding hatchery operations.

---

[7] 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.

[8] Alaska commercial salmon harvests and exvessel values. 1996– .Alaska Department of Fish and Game [cited March 18, 2016]. Available from http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisherySalmon.exvesselquery

[9] 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.

Altogether, a total of 27 production hatcheries and 1 research hatchery are currently operating in Alaska (Figure 2). Of these, PNPs operate 24 of the hatcheries: 11 facilities owned by the state, and 13 owned by PNPs. ADF&G Division of Sport Fish operates 2 additional state-owned hatcheries in Anchorage and Fairbanks. The Metlakatla Indian Community on the federal Annette Islands Reserve south of Ketchikan operates Tamgas Creek Hatchery. The National Marine Fisheries Service operates a federal research hatchery at Little Port Walter in lower Chatham Strait.

An additional 6 PNP hatchery facilities are permitted but currently inactive: Deer Mountain Hatchery (Ketchikan), Gunnuk Creek Hatchery (Kake), Perry Island Hatchery (Prince William Sound), Bell Island Hatchery (Southern Southeast Alaska), Eklutna Hatchery (Eklutna) and Haines Projects Sites (Haines).

ALASKA'S HATCHERY PROGRAMS

In Alaska, the purpose of salmon hatcheries is to supplement natural stock production for public benefit. Hatcheries are efficient at improving survival from the egg to juvenile stage compared to survival in the wild. For example, estimates for pink salmon *Oncorhynchus gorbuscha* egg-to-fry survival in 2 Southeast Alaska creeks ranged from less than 1% to 22%, with average survivals from 4% to 9% (Groot and Margolis 1991). Under hatchery conditions, egg to fry survival is usually 90% or higher.

Alaska hatcheries do not grow fish to adulthood, but incubate fertilized eggs and release resulting progeny as juveniles (i.e., fry or smolt). Juvenile salmon imprint on the release site and return to the release location as mature adults. By state policy, hatcheries generally use stocks taken from close proximity to the hatchery so that any straying of hatchery returns will have similar genetic makeup as the stocks from nearby streams. In addition, Alaska hatcheries do not selectively breed. Large numbers of broodstock are used for gamete collection to maintain genetic diversity, without selection for size or other characteristic.

Hatchery production is limited by freshwater capacity and freshwater rearing space. Soon after emergence from the egg, pink and chum salmon *O. keta* fry can be transferred from fresh water to salt water and released. Most Chinook *O. tshawytscha*, sockeye *O. nerka*, and coho *O. kisutch* salmon stocks must spend a year or more in fresh water while fry develop to the smolt stage and can tolerate salt water; this makes them much more expensive to rear. They require a higher volume of fresh water, a holding area for freshwater rearing, and regular feeding. There are economic tradeoffs between the costs of production versus the value of fish at harvest. Although Chinook, sockeye, and coho salmon garner higher prices per pound at harvest, chum and pink salmon are more economical to rear in the hatchery setting and generally provide a higher economic return on production costs.

Pink salmon have the shortest life cycle of Pacific salmon (2 years), provide a quick return on investment, and provide the bulk of Alaska hatchery production. From 2007 to 2016, pink salmon accounted for an annual average 75% of Alaska hatchery salmon returns by number, followed by chum (19%), sockeye (4%), coho (2%) and Chinook salmon (<1%; Figure 3).

ALASKA HATCHERY POLICIES

Numerous Alaska mandates and policies for hatchery operations were specifically developed to minimize potential adverse effects to wild stocks. Through a comprehensive permitting and

planning process, PNP hatchery operations are subject to continual review by a number of ADF&G staff.

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.

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 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 HATCHERY PLANNING AND PERMITTING

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 the 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 of the hatcheries.

Commercial salmon fishing permit holders may vote to impose a salmon enhancement tax on sale of salmon in their region. These funds are provided to the RAA to finance hatchery operations or other enhancement and rehabilitation activities. Independent PNP corporations, 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[10] to pay for operations. Such harvests are called *cost-recovery* fisheries, and are in contrast to *common property* fisheries, which are fisheries open to all commercial, subsistence, personal use, and sport harvesters.

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, biocriteria, initial proposed broodstock for the hatchery, and a financial plan. ADF&G staff draft a fishery management feasibility analysis for the proposed hatchery. ADF&G staff review the

[10] Designated areas are called special harvest areas (SHA).

application with the applicant, address any deficiencies, and provide the application for public review.

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. The RPT reviews hatchery permit applications within their region to determine if the hatchery operation is compatible with the regional comprehensive salmon plan. The RPT may also make a recommendation on the permit to the ADF&G commissioner.

Following review by the RPT, a public hearing is held. The hatchery applicant describes the proposed hatchery plan, and ADF&G staff present the basic management plan 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 (5AAC 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. Hatcheries on Prince of Wales Island changed ownership in 2016, and the process is described in the "Hatchery Operations Changes" section later in this document.

Alaska PNP hatcheries operate under 4 documents: PNP hatchery permit with basic management plan (BMP), annual management plan (AMP), fish transport permit (FTP), and annual report. The hatchery permit and basic management plan, annual management plan, and fish transport permit must be approved by the ADF&G commissioner.

The hatchery permit authorizes operation of the hatchery, specifies the maximum number of eggs of each species that a facility can incubate, specifies the authorized release locations, and may identify stocks allowed for broodstock. The BMP is an addendum to the hatchery permit and outlines the general operations of the hatchery. Hatchery permits remain in effect unless relinquished by the permit holder or revoked by the ADF&G commissioner. 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 and recommendations are sent to the ADF&G commissioner for consideration.

The AMP outlines operations for the current year and is written cooperatively among ADF&G and PNP hatchery staff. Typically, AMPs include the current year's egg-take goals, fry or smolt releases, expected adult returns, harvest management plans, FTPs (described below) required or

in place, and production strategies. The AMP must be consistent with the hatchery permit and BMP. Final consideration of the plan is made by the ADF&G commissioner.

An FTP is required for egg collections, transports, and releases. The FTP authorizes specific activities described in the hatchery permit and management plans including broodstock sources, gamete collections, and release sites, and must be consistent with the PNP Permit and BMP. 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 may suggest conditions for the FTP. Final consideration of the application is made by the ADF&G commissioner. An FTP is issued for a fixed time period. When the FTP is renewed, the FTP application goes through the same process as the original FTP, providing an ongoing review of all PNP hatchery projects over time.

Each hatchery is required to submit an annual report documenting egg collections, juvenile releases, current year run sizes, contributions to fisheries, and projected run sizes for the following year. Information from all hatchery annual reports is compiled into this annual report to the Alaska Legislature.

The 2 ADF&G Division of Sport Fish hatcheries in Anchorage and Fairbanks produce fish specifically for sport fisheries in Cook Inlet, Resurrection Bay, Prince William Sound, 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 (http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.stockingPlan).

FISHERIES MANAGEMENT

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.

Wild and hatchery returns are managed to meet wild stock escapement goals. In some cases, one species of hatchery fish returns at the same time as other, more predominant, wild stock species, and the hatchery fish are harvested as incidental catch. For example, in Southeast Alaska, salmon fisheries are managed for wild sockeye and pink salmon stocks. Hatchery-produced chum salmon return across the timing of both sockeye and pink salmon and are caught during 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.

For some fisheries, both hatchery and wild stocks of the same species return simultaneously. In Prince William Sound, hatchery stocks of pink salmon return at the same time as the wild pink salmon stocks. The hatchery stocks are otolith marked. Otoliths are read from samples of fish collected from the commercial fishery to apportion the catch between hatchery and wild stocks so that managers can manage for the wild stock return.

In the Kenai River, releases of hatchery sockeye salmon are limited to a small fraction of the wild populations so that they do not unduly influence management.[11]

[11] Pat Shields, ADF&G Division of Commercial Fisheries, Fishery Biologist III, Soldotna, personal communication.

In Southeast Alaska, both hatchery and some wild stocks of coho and Chinook salmon are coded-wire-tagged. Tags are collected and read during the season so that managers can assess the wild and hatchery components of the return to assess wild stock abundance.

In Kodiak, hatchery pink salmon return to the release site on Afognak Island where there are no substantial wild pink salmon stocks in the area. All pink salmon fishery openings in this area target hatchery salmon.

HATCHERY CONTRIBUTION TO ALASKA FISHERIES

The hatchery return is composed primarily of the harvest in the fisheries and the broodstock from which eggs are collected for hatchery production. Most (95%) of the hatchery harvest occurs in the commercial common property fisheries (78%) and the cost recovery fisheries (17%), which collectively make up the commercial harvest. Sport, personal use, and subsistence fisheries harvest about 1% of the return. The remainder (4%) is broodstock, escapement, and estimated unharvested returns (Figure 8).

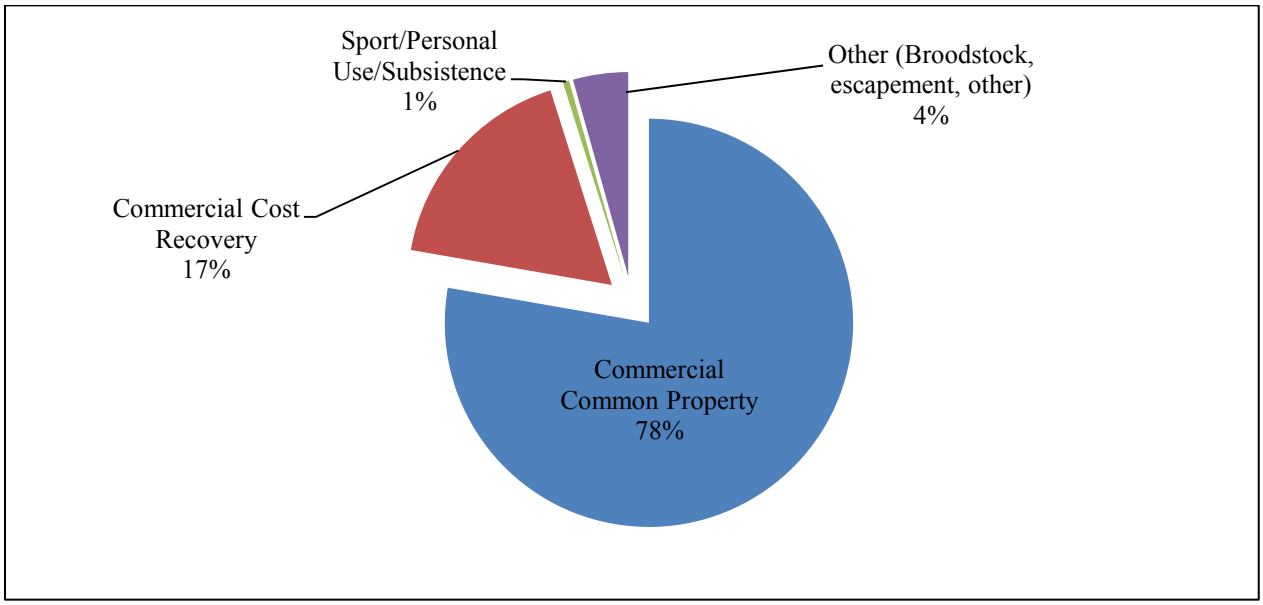

Figure 8.–Alaska salmon hatchery returns in numbers of fish by return category, 2007–2016 average.

Over the past decade (2007–2016), hatcheries contributed an annual average of about one-third of the total Alaska commercial salmon harvest. By species, Alaska hatchery fish contributed an annual average 42% of the pink, 67% of the chum, 24% of the coho, 20% of the Chinook, and 5% of the sockeye salmon in the total commercial harvest over the decade (Figure 9).

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

of wild stocks. The development of otolith marking[12] allowed all the pink and chum salmon produced in Southeast Alaska and Prince William Sound to be marked so that hatchery and ADF&G staff can estimate the harvest composition inseason and manage for wild stocks.

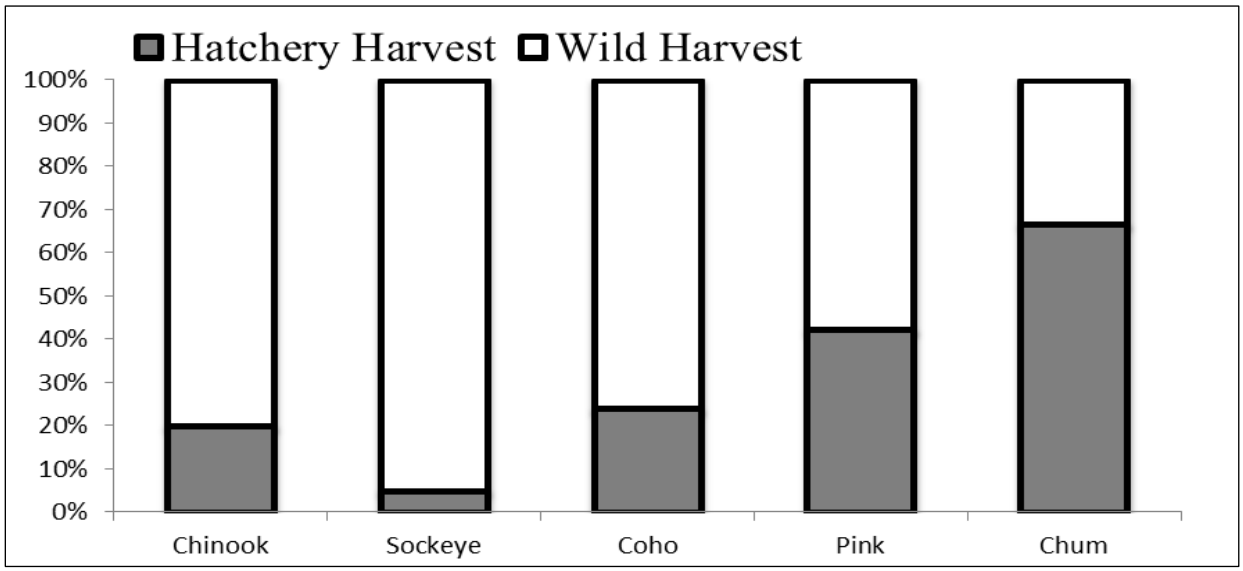

Figure 9.–Alaska hatchery contribution to the statewide commercial fishery harvest, by species, 2007–2016.

As fisheries management has adapted to hatchery production, so has the fishing fleet and processing sector. Most hatchery production provides the fishing fleet with more time and area to fish. When wild stock production provides surplus fish for harvest, fishermen may target those fish during open fishing periods. When those fishing periods close, fishermen can move to the isolated hatchery release sites that remain open and continue fishing there until the wild stock areas reopen. In some parts of the season, fishermen may target hatchery fish in the terminal harvest areas, even when wild stock areas are open. Fishermen can harvest hatchery fish in the terminal fishing area and offload to nearby tenders, saving time and fuel in their operations. This may also have the effect of decreasing fishing pressure on wild salmon stocks. As intended, hatchery production is supplementing fisheries, and is a reflection of the state's priority of conservation of wild stocks as the foundation of its salmon fisheries enhancement program.

A measure of hatchery program success is achieving wild stock escapement goals in the 2 regions of the state where fisheries management is most impacted by hatchery production—Southeast and Prince William Sound. ADF&G manages salmon stocks across the state to meet spawning escapement needs for all 5 species. Where escapements chronically fall short of meeting goals (i.e., over 4 to 5 years), ADF&G may recommend a *stock of concern* designation for those underperforming salmon stocks. In 2015, there were 14 stocks of concern in the state (Munro and Volk 2016). None of these stocks are located in either Prince William Sound or

[12] Otolith marking is done by alternating the temperature of the water during egg incubation, which lays down regular marks on the fish ear bone (the otolith). Wild fish usually do not have the otolith markings. Otoliths can be removed from fish harvested and hatchery and wild stock contributions to the catch estimated.

Southeast Alaska, indicating that wild stock escapements are being met in these 2 regions over time.[13]

The largest returns of wild stocks have largely occurred since the 1980s during the PNP hatchery program (Figure 7). Alaska's salmon fisheries are among the healthiest in the world, with the 2 highest harvests in the past 4 seasons. The 2013 season was a record harvest overall, with the 283 million fish commercial harvest composed of the second highest catch for wild stocks (176 million fish) and the highest catch for hatchery stocks (107 million fish) in Alaska's history. The 2015 season was the second highest harvest overall, with a 263 million fish commercial harvest composed of the third highest catch for wild stocks (170 million fish) and the second highest catch for hatchery stocks (93 million fish). The hatchery harvests *alone* in both 2013 and 2015 were greater than the entire statewide commercial salmon harvest in every year prior to statehood except for 7 years (1918, 1926, 1934, 1936, 1937, 1938 and 1941; Figure 7).

The 2016 total Alaska commercial salmon harvest of 109 million fish was the lowest since 1988. The hatchery portion of this harvest (24 million fish) was the lowest since 1992. In a broader historical context, however, the 2016 salmon harvest ranked 35th out of the 117 fishing seasons since 1900, putting it in the top third of all-time harvests. The 2016 hatchery harvest alone was greater than the statewide annual salmon harvests in 1973, 1974, and 1975, which were disastrous fishing seasons for many and which prompted fishermen to lobby the state legislature for a hatchery program.

2016 HATCHERY PRODUCTION

During the early years of hatchery construction and production, egg collections grew steadily from the late 1970s until about 1995, when production leveled off (Figure 10; Table 24). Since 1995, annual egg collections have ranged from about 1.6 to 2 billion eggs. In 2016, about 1.9 billion eggs were collected, which was similar to the 2015 egg take and near the historic high.

Since 1995, annual releases have ranged from about 1.4 to 1.7 billion juveniles (Figure 10; Table 24). Most of the 2016 releases were from pink and chum salmon eggs collected in 2015, and the remainder from Chinook, sockeye, and coho salmon eggs collected in 2014. About 1.7 billion juvenile salmon were released in 2016, which was near the historic high.

About 27 million adult salmon returned to Alaska hatcheries in 2016, which was the lowest return since 1992 (Figure 10; Table 24). The low return was a largely due to the poor returns of pink salmon to Prince William Sound, which declined from 72 million fish in 2015 to 11 million fish in 2016.

Pink and chum salmon are the predominant species produced by Alaska hatcheries, followed by sockeye, coho, and Chinook salmon (Figure 11; Table 4). As stated earlier, pink and chum salmon are the most economical to raise because fry can migrate to saltwater soon after hatching, whereas sockeye, coho and Chinook salmon typically require a year or more of freshwater rearing.

[13] The 2016 season escapement goal summary is not yet available.

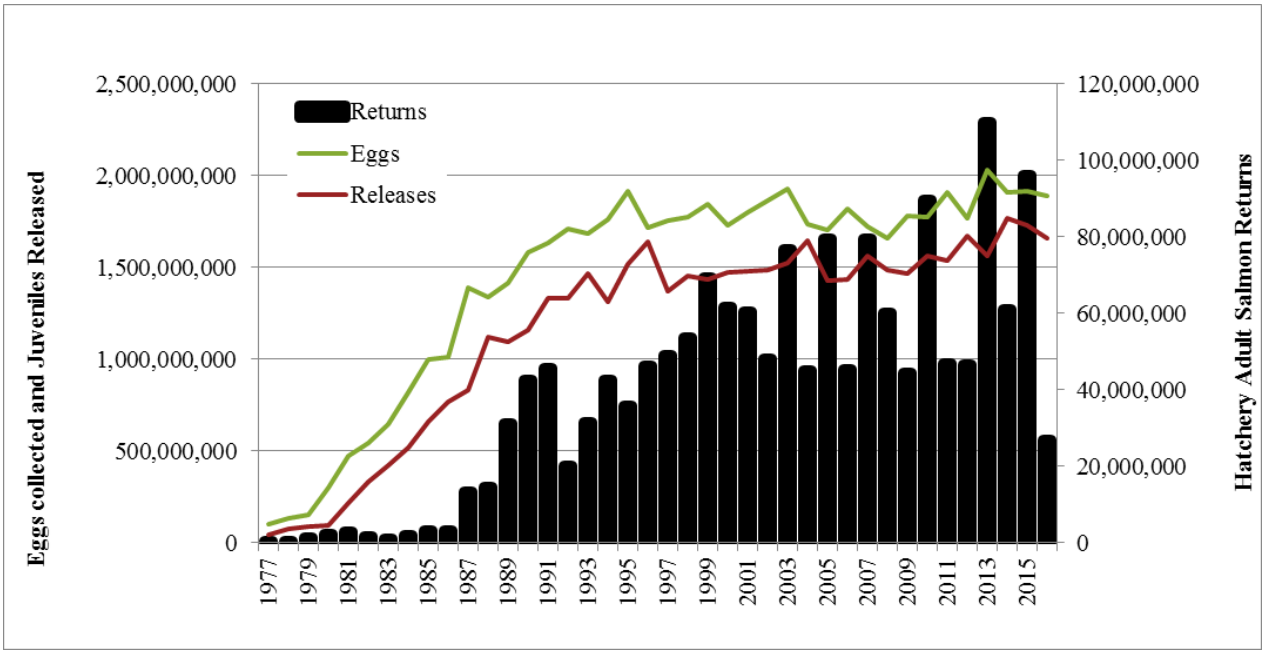

Figure 10.–Total salmon eggs collected, juveniles released and adult returns for Alaska salmon hatchery programs, 1977–2016.

Note: The returns are from previous year's releases, and not the return by brood year. For example, the 2016 returns are from fish released in 2015 and earlier, depending on species.

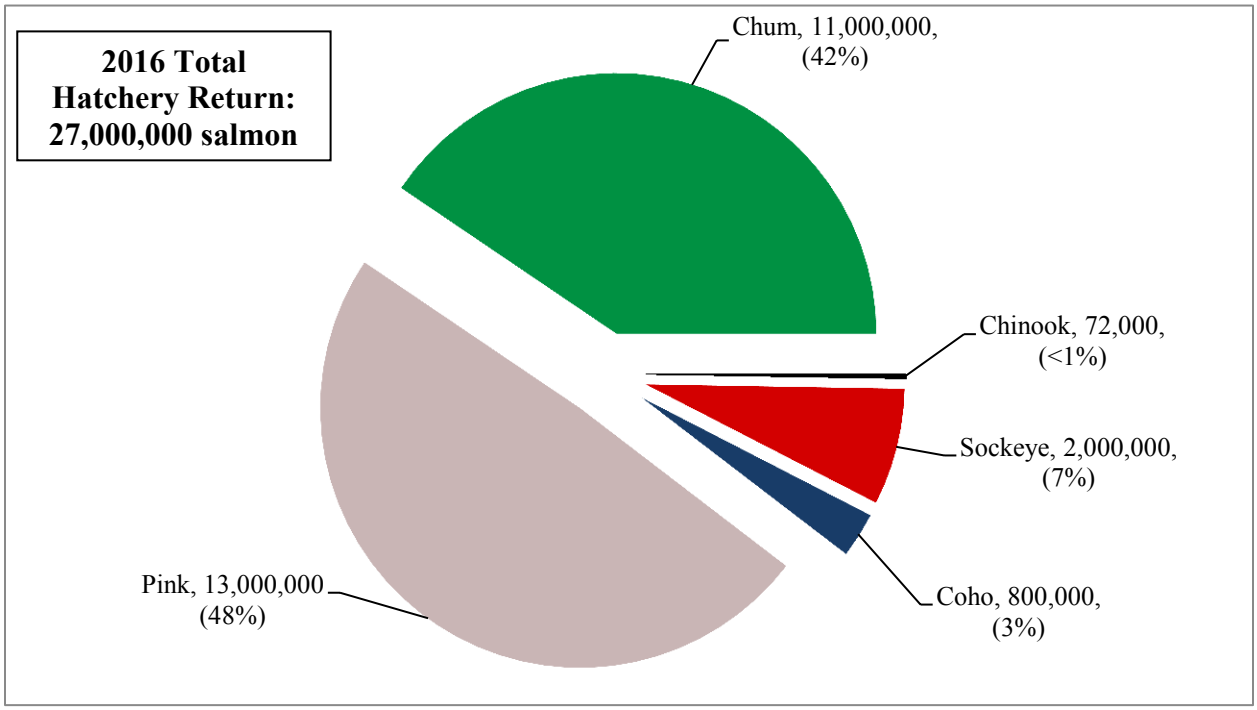

Figure 11.–Species composition of 2016 Alaska hatchery salmon returns, with the number of fish returning by species, and the percent of the total hatchery return of each species in parentheses. The hatchery return includes harvest and broodstock.

2016 HATCHERY HARVEST

In 2016, Alaska hatchery production was harvested primarily in the common property commercial fisheries, followed by the cost-recovery commercial harvest, which pays for hatchery operations. The sport, personal use, and subsistence harvest were a small portion of the overall hatchery harvest; these harvests are particularly important to harvesters in accessible locales such as Ketchikan, Juneau, Petersburg, Sitka, Valdez, Kodiak, Resurrection Bay, and Cook Inlet.

About 24 million salmon were harvested in the commercial fisheries in 2016, with an estimated exvessel value of $85 million (Figure 12; Table 6). Chum salmon made up 58% of the total exvessel value of the commercial hatchery harvest, followed by sockeye salmon (18%), pink salmon (15%), coho salmon (6%), and Chinook salmon (3%). The pink salmon contribution to the total exvessel value of hatchery salmon was less than half of the previous decadal (2006–2015) weighted average of 38% due to low pink salmon returns in 2016.

First wholesale value for hatchery fish totaled an estimated $187 million in 2016. Chum salmon made up 56% of the total value of the commercial hatchery harvest, followed by pink salmon (22%), sockeye salmon (13%), coho salmon (7%), and Chinook salmon (2%; Figure 13).

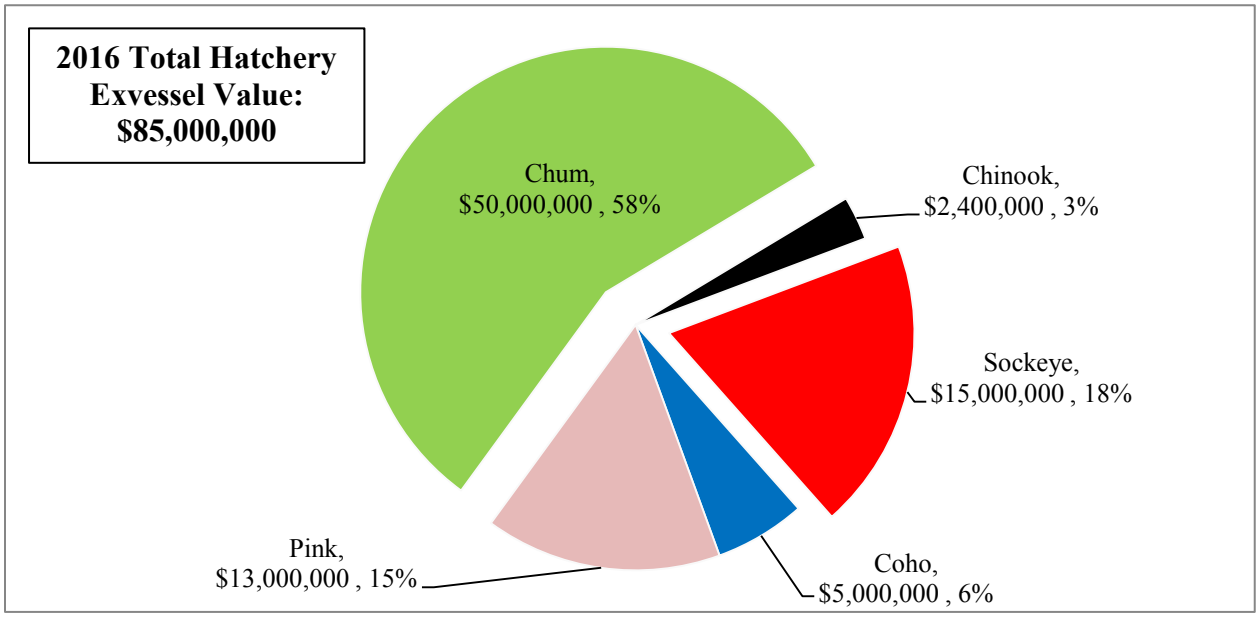

Figure 12.–Species composition of 2016 Alaska hatchery exvessel commercial harvest, with the value by species, and the percent of the total hatchery value for each species. Commercial exvessel value is the estimated value paid to fishermen for the common property harvest and to hatchery associations for the cost recovery harvest.

Note: Exvessel value for hatchery harvest is the total harvest value paid by fish buyers to fishermen for all salmon from http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmoncatch (accessed 02/04/2014), multiplied by he hatchery percent of the commercial harvest.

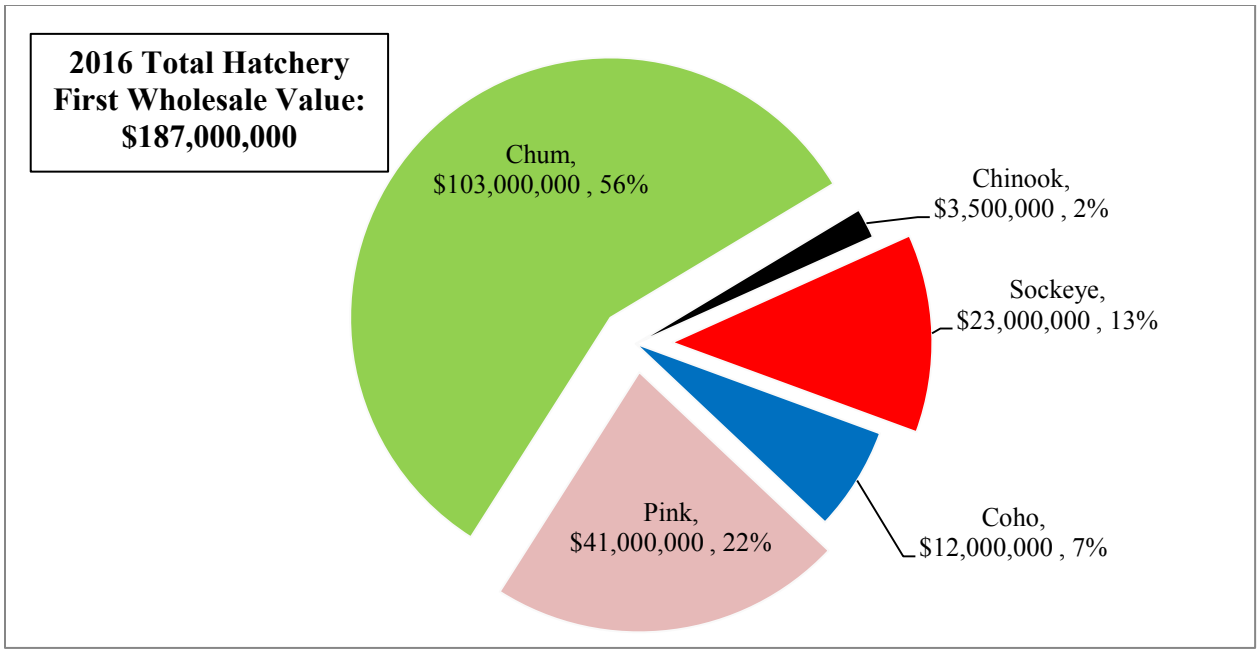

Figure 13.–Species composition of 2016 Alaska hatchery estimated first wholesale value of the commercial harvest, with the value by species, and the percent of the total hatchery value for each species. Commercial first wholesale value is the estimated value of processed product sold by a processor. *Note*: The 2016 first wholesale value was estimated by using the 2011 to 2015 total hatchery first wholesale value divided by the 2011 to 2015 total hatchery exvessel value, multiplied by the 2016 exvessel value.

REGIONAL HATCHERY HARVEST

By region, Prince William Sound and Southeast Alaska hatcheries produced most of the hatchery fish in 2016, followed by Kodiak and Cook Inlet areas (Figure 14; Tables 11– 15). The Fairbanks and Anchorage ADF&G hatcheries provided arctic char, rainbow trout, coho salmon, and Chinook salmon for stocking numerous Interior and Cook Inlet region waters for sport fishing (Table 16).[14]

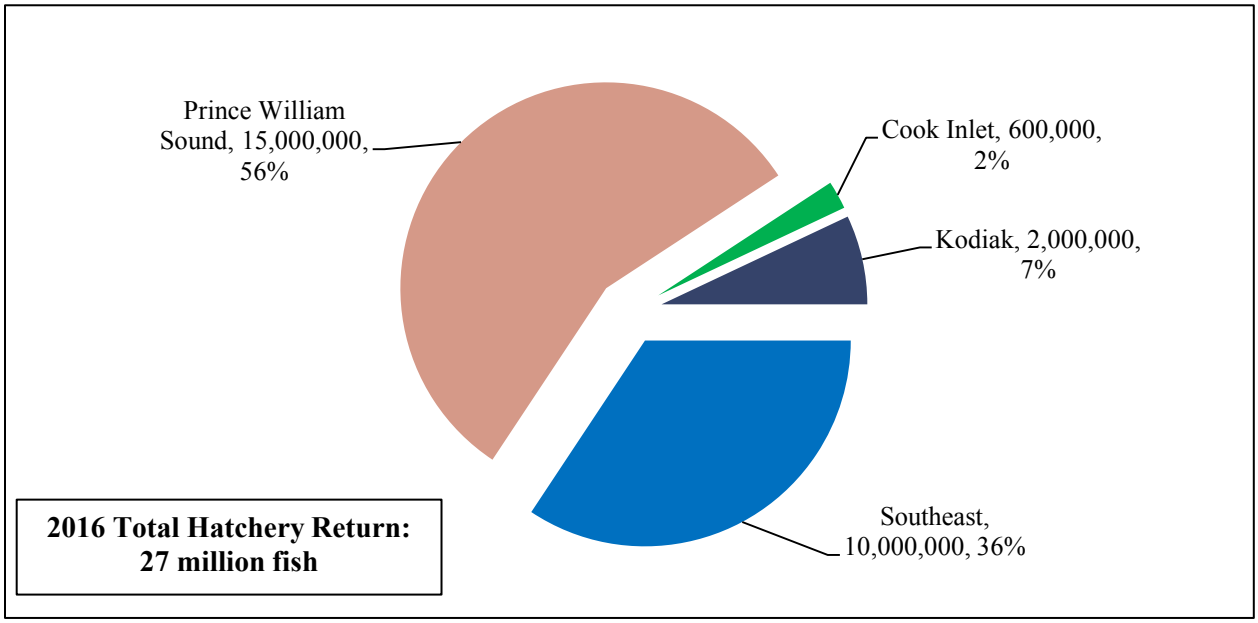

Figure 14.–Alaska hatchery return by region, with the number of returns by species and the percent of the total hatchery return, for 2016. Total return includes harvest and broodstock.

HATCHERY PRODUCTION BY SPECIES

Pink Salmon

Prince William Sound hatcheries produce the majority of hatchery pink salmon in the state (Figure 15). The Prince William Sound purse seine fishery, which harvests primarily pink salmon, was closed in 1972 and 1974, with minimal fishing in 1973. Fishermen and processors were anxious to get hatchery production on line quickly to aid in the recovery of the fishery,[15] and pink salmon were both a targeted species and provided the quickest turnaround from egg take to harvest. Pink salmon were, and continue to be, the most abundant species in Prince William Sound, with an historic infrastructure in place for processing pink salmon.

Chum Salmon

Southeast Alaska hatcheries produce the majority of hatchery chum salmon (Figure 15). Wild chum salmon runs return during the same period as sockeye and pink salmon runs, and chum salmon are the least abundant of these 3 species. During the development of the hatchery

[14] Rainbow trout and arctic char from the sport fish hatcheries are not included.

[15] Prince William Sound Regional Fisheries Planning Team. 1983. Prince William Sound comprehensive salmon plan, Phase I: 20 year plan (1983-2002). Unpublished report. Available from Mark Stopha, ADF&G fishery biologist, Juneau.

program in Southeast Alaska in the early 1980s, fishermen, processors, and ADF&G realized that chum salmon could be produced in hatcheries and that returns would be caught incidentally in the fisheries managed for pink or sockeye salmon. Hatchery release sites were selected so that chum salmon not caught in the sockeye and pink salmon fisheries could be caught at the release sites with minimal impact to wild stocks.

Sockeye Salmon

Prince William Sound hatcheries produce the majority of hatchery sockeye salmon (Figure 15). The largest returns are to Main Bay Hatchery, where a sockeye salmon smolt program was developed to enhance the sockeye salmon drift and set gillnet fisheries on the west side of Prince William Sound to balance the pink salmon fishery enhancement that primarily benefits the seine fleet. Sockeye salmon are also produced from streamside incubators along the Gulkana River (a tributary of the Copper River); these fish are caught primarily during the Copper River commercial drift gillnet, personal use dipnet, and subsistence fish wheel harvests. The streamside incubators were established in 1973 as mitigation for spawning habitat impacts from road construction (Stopha 2013).

Coho Salmon

Southeast Alaska hatcheries produce the majority of hatchery coho salmon (Figure 15). Southeast Alaska has the largest coho salmon commercial fishery in the state, accounting for about 60% of the statewide coho salmon harvest in 2016.[16] Returning coho salmon are available to commercial hook and line salmon trollers in Southeast Alaska—the only region where commercial trolling occurs—from July through September. This is unlike other regions of the state, where coho salmon are commercially fished with net gear and targeted only during a few weeks during the fall return.

Chinook Salmon

Most Chinook salmon hatchery production also occurs in Southeast Alaska (Figure 15). Chinook salmon hatchery production was largely developed after the Pacific Salmon Treaty was signed in 1985. The treaty included funding for Chinook salmon hatchery production in Southeast Alaska to mitigate harvest concessions made in the treaty. Chinook salmon are targeted year round by the commercial troll and sport fleets, and are important seasonally to the net fleets.

[16] Source: http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisherySalmon.exvesselquery.

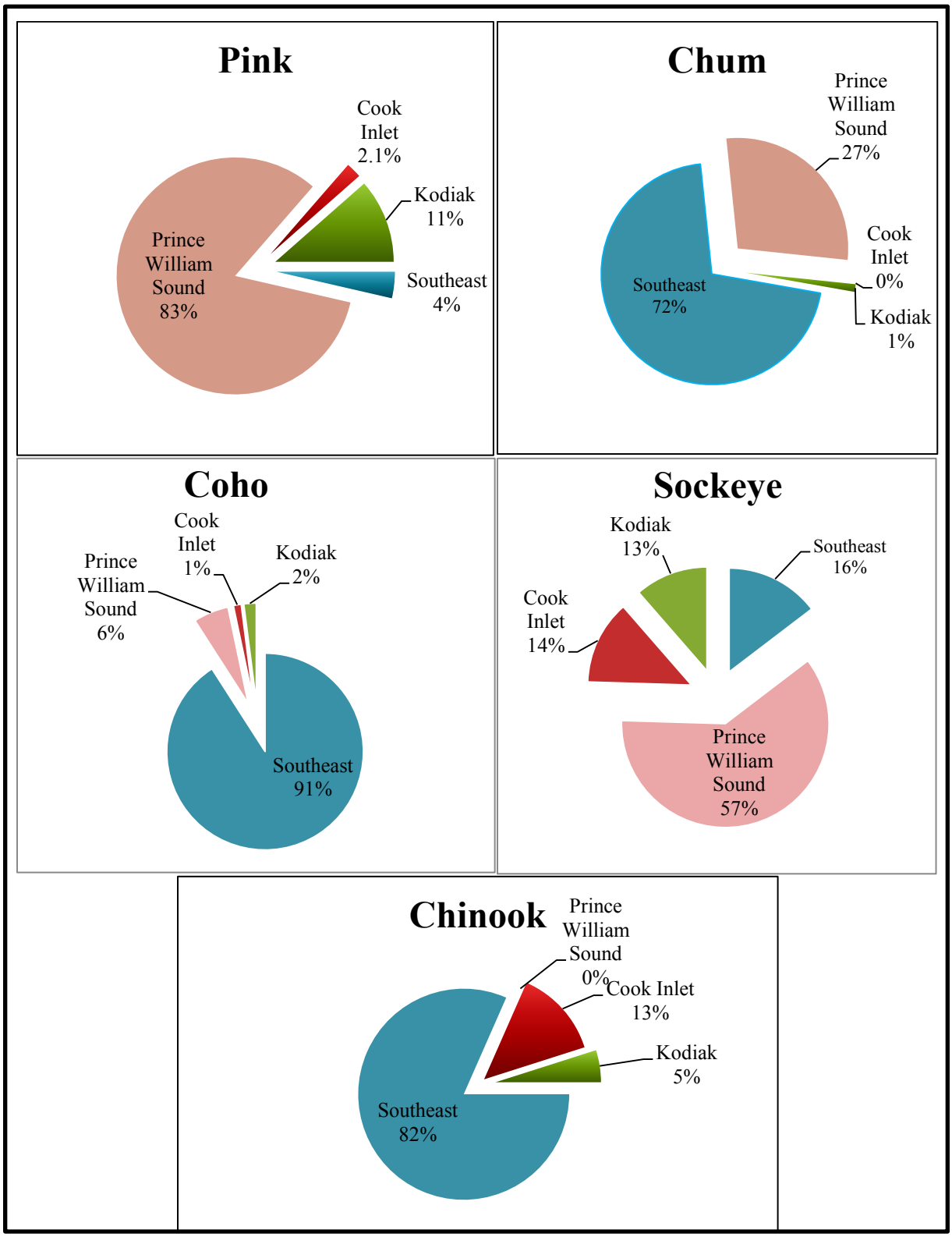

Figure 15.–Regional hatchery return in numbers of fish by species of the hatchery return, 2016.

HATCHERY CONTRIBUTION BY REGION

Southeast Alaska

The 5.9 million hatchery-produced salmon harvested in the commercial common property fishery in Southeast Alaska accounted for 22% of the total common property commercial catch in the region in 2016. By species, hatcheries contributed an estimated 81% of the chum, 19% of the coho, 13% of the Chinook, 11% of the sockeye, and 1% of the pink salmon in the common property commercial fisheries. An additional 2.8 million salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery (including cost recovery) was about $46 million, or 43% of the total exvessel value for commercial salmon fisheries in the region (Figure 16; Tables 5 and 6).

Coho salmon contributed the most hatchery fish to the sport, personal use, and subsistence fisheries (32,000 fish; Table 13), followed by Chinook salmon (4,800 fish, Table 11) and sockeye salmon (3,000 fish; Table 12).

Prince William Sound

The 9.4 million hatchery-produced salmon harvested in the Prince William Sound commercial common property fishery accounted for 72% of the total common property commercial catch in the region in 2016. By species, hatcheries contributed an estimated 100% of the chum, 76% of the pink, 47% of the sockeye, and 1% of the coho salmon in the common property commercial fisheries. An additional 4.4 million salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery (including cost recovery) was about $36 million, or 62% of the total exvessel value for commercial salmon fisheries in the region (Figure 16; Tables 5 and 6).

Sockeye salmon contributed the most hatchery fish to the sport, personal use, and subsistence fisheries (64,000 fish; Table 12), followed by coho salmon (31,000 fish; Table 13) and pink salmon (9,500 fish; Table 14).

Cook Inlet

The 125,000 hatchery-produced salmon harvested in the Cook Inlet commercial common property fishery accounted for 4% of the total catch in the region in 2016. By species, hatchery contribution was an estimated 12% of the pink and 3% of the sockeye salmon in the common property commercial fisheries in 2016. An additional 178,000 salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery (including cost recovery) was about $2 million, or 8% of the total exvessel value for commercial salmon fisheries in the region (Figure 16; Tables 5 and 6).

Sockeye salmon contributed the most hatchery fish to the sport, personal use, and subsistence fisheries (18,000 fish; Table 12), followed by coho salmon (8,000 fish; Table 13), pink salmon (2,500 fish; Table 14) and Chinook salmon (1,500 fish; Table 11).

The value of the cost-recovery harvest of hatchery fish was larger than the common property harvest of hatchery fish in Cook Inlet (Table 6) because the Port Graham and Tutka Bay hatcheries had recently reopened. These facilities are rebuilding their broodstock capacity, and in 2016 most of the fish were needed for broodstock and cost recovery. When these facilities reach their intended permitted production, the hatchery contribution to the common property fisheries should be similar to other regions of the state.

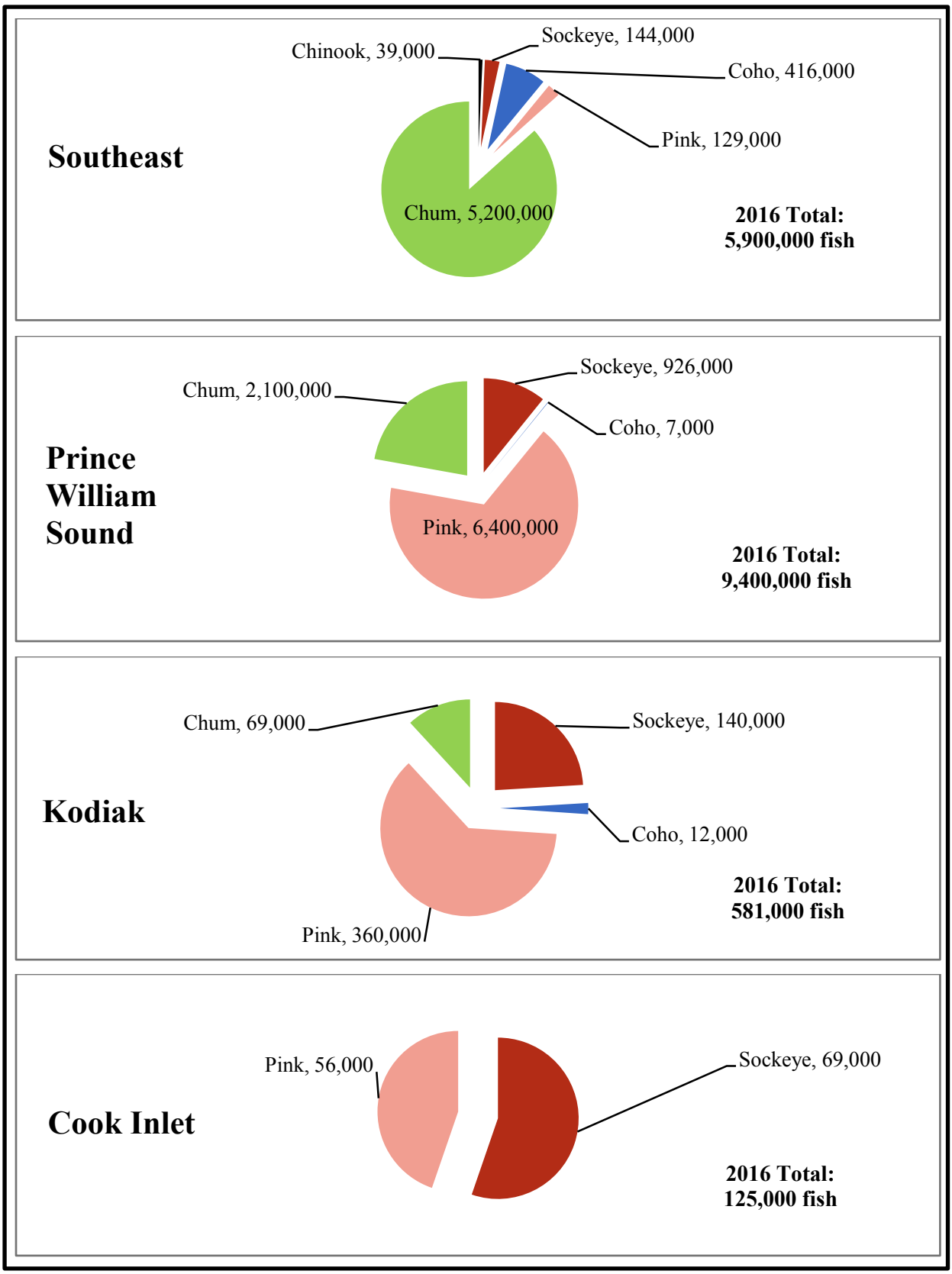

Figure 16.–Commercial common property hatchery harvest in numbers of fish by region, 2016.

Kodiak

The 581,000 hatchery-produced salmon harvested in the Kodiak commercial common property fishery accounted for 12% of the total catch in 2016. By species, hatchery contribution was an estimated 17% of the chum, 15% of the pink, 7% of the sockeye, and 6% of the coho salmon harvest in the common property commercial salmon fisheries. An additional 846,000 salmon were harvested for cost recovery. The exvessel value of hatchery fish to the commercial fishery (including cost recovery) was about $2.2 million, or 14% of the total exvessel value for commercial salmon fisheries in the region (Figure 16; Tables 5 and 6).

Hatchery Chinook salmon (3,500 fish; Table 11) contributed the most hatchery fish to the sport, personal use, and subsistence fisheries, followed by coho salmon (600 fish; Table 13) and sockeye salmon (600 fish; Table 12).

2017 PROJECTED HATCHERY HARVEST

Hatchery operators forecast a return of about 67 million fish in 2017 (Table 10). This includes total returns of 49 million pink, 11 million chum, 2.4 million sockeye, 1.9 million coho, and 117,000 Chinook salmon to PNP Hatchery projects, as well as 86,000 arctic char, rainbow trout, landlocked salmon, and grayling from ADF&G hatcheries in the freshwater sport harvest.

The 2016 hatchery return of 27 million fish was less than half of the 2016 forecast of 61 million fish due primarily to the low returns of pink salmon to Prince William Sound hatcheries.

VALUE OF THE HATCHERY HARVEST

The salmon marketplace has changed substantially since the hatchery program began. As the first adult salmon were returning to newly built hatcheries in 1980, Alaska accounted for nearly half of the world salmon supply, and larger harvests in Alaska generally meant lower prices to fishermen. Some believed the increasing hatchery production in some parts of the state was depressing salmon prices in others (Knapp et al. 2007). By 1996, rapidly expanding farmed salmon production surpassed the wild salmon harvest for the first time (Knapp at al. 2007) and wild salmon prices declined precipitously as year-round supplies of fresh, high quality farmed salmon flooded the marketplace in the U.S., Europe, and Japan. The Alaska fishing industry responded to the competition by improving fish quality, implementing intensive marketing efforts to differentiate Alaska salmon from farmed salmon, and moving part of the processing sector to China. By 2004, these efforts paid off through increasing demand and prices.

Today, Alaska typically accounts for just 12–15% of the global supply of salmon (ASMI 2011). Alaska's diminished influence on world salmon production means that Alaska's harvest volume has less effect on world salmon prices. The value of the hatchery harvest generally increased from 2004 to 2013, despite large fluctuations in harvest volume, before declining from 2014 to 2016 (Figure 9). Exvessel value[17] of the commercial hatchery harvest averaged $146 million over the past decade, and peaked at $209 million in 2010 (Figure 4).

[17] Exvessel value for hatchery harvest is the total harvest value paid by fish buyers to fishermen for all salmon from http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmoncatch (accessed 02/04/2014), multiplied by the hatchery percent of the commercial harvest in Farrington 2003, 2004; White 2005–2011, and Vercessi 2013–2015 and Stopha (2016).

First wholesale value[18] is a better measure of the value of fish to the state since it includes both the money paid to harvesters and the costs of processing before sale to the wholesale market. In addition, it captures the value of roe. Mature salmon—especially chum and pink salmon—provide a valuable product not available from farmed salmon: their roe (eggs). Unlike salmon flesh, salmon roe is not in competition with farmed fish since farmed fish are not raised to maturity. Chum salmon roe is the highest value roe, followed by pink salmon roe. Over the last decade, roe accounted for about one-third of the first wholesale value of chum salmon and one-fifth of the first wholesale value of pink salmon. First wholesale value of the hatchery harvest averaged about $370 million over the past decade, with peak years of over half a *billion* dollars in 2010 and 2013 (Figure 4).

In recent years, the strong dollar, political action in Russia, and the record pink salmon harvests in 2013 and 2015 were key factors influencing price declines of pink and chum salmon, the 2 primary hatchery-produced species, according to the *Spring 2015 Alaska Seafood Market Bulletin* (ASMI 2015). Russia, Japan, and Ukraine are key markets for Alaska salmon roe, an important product impacting the overall value of pink and chum salmon. The Russian embargo on US Seafood Products, and lower currency values in Russia, Ukraine, and Japan, influenced the pink salmon market, as did the large inventory of canned salmon from the 2013 harvest. Chum salmon value was similarly affected by the lower yen value in Japan, where much of the chum salmon roe is sold.

In 2016, exvessel prices increased about 25% for pink salmon in Prince William Sound[19] and 12% for chum salmon statewide over 2015 prices (ASMI 2016). However, this increase was more than offset by a 2016 hatchery harvest that was the lowest in 25 years (Table 31), and the value of the hatchery harvest declined for the third consecutive year (Figure 4). The 2016 hatchery harvest exvessel value ($85 million) and the first wholesale value ($187 million)[20] were the lowest annual values in the past decade.

The market conditions for pink salmon, in particular, are expected to improve in 2017, according to the *Winter 2016 Alaska Salmon Market Summary and Outlook* (ASMI 2017). Alaska salmon is truly in a world market, with multiple influences affecting the value of the harvest, particularly for pink and chum salmon, which make up most of Alaska's hatchery production. Whereas Alaska's pink salmon return was low in 2016, Russian pink salmon harvest spiked; this may be positive in the long run because the large Russian harvest may have helped keep Chinese processors in business during a year of minimal pink salmon harvests in Alaska. Pink salmon prices may increase if the Russian embargo is lifted with a new US president, but could also be negatively affected if any trade wars develop with China. A stronger yen and recent decline in the Japanese chum salmon harvest may also point to a higher total value for chum salmon in 2017 (ASMI 2017).

There are markets for both fresh and frozen salmon worldwide. The low pink salmon harvest in 2016 appears to have boosted the price of frozen farmed salmon. Farmed salmon has been limited in recent years due to disease and sea lice issues. With the limited farmed production,

[18] First wholesale value is the price paid to primary processors for processed fish from ADF&G Commercial Operators' Annual Reports obtained from Shellene Hutter, ADF&G, multiplied by the hatchery percent of the commercial harvest. See the preface of this document for estimation of the 2016 first wholesale value.

[19] http://www.adfg.alaska.gov/index.cfm?adfg=CommercialBySalmon.exvesselquery (Accessed February 16, 2017).

[20] The 2016 value was estimated by using the 2011 to 2015 total hatchery first wholesale value divided by the 2011 to 2015 total hatchery exvessel value, multiplied by the 2016 exvessel value.

nearly all farmed salmon production is going directly to the fresh market to meet demand. With the poor pink salmon run in 2016, there is little frozen salmon available on the world market. What frozen farmed salmon that was available was selling at record prices in early 2017.[21] Therefore, it appears there is a dearth of frozen salmon available on the market, and a market opportunity for the 2017 Alaska salmon season.

VALUE OF HATCHERY OPERATIONS

PNP hatchery operations are primarily funded by cost-recovery harvest and assessment taxes on the commercial salmon harvest, and are a significant sector of the commercial fishing industry in parts of coastal Alaska. In fiscal year 2017, the operation budgets for all PNP hatcheries in the state totaled about $48 million.[22] By comparison, the statewide operating budget for ADF&G Division of Commercial Fisheries for all state fisheries was about $70 million.[23]

HATCHERY OPERATIONS CHANGES IN 2016

The Klawock River Hatchery and Port St. Nicholas Hatchery permits and operations on Prince of Wales Island were taken over by the Southern Southeast Regional Aquaculture Association in 2016 through the state hatchery permitting process described earlier in the Alaska Hatchery Planning and Permitting section. The facilities were previously operated by the Prince of Wales Hatchery Association.

HATCHERY PRODUCTION IN ALASKA'S SCHOOLS

In addition to production hatcheries that provide salmon for Alaska's fisheries, an extensive program occurs for education and research across the state that is permitted through ADF&G. About 120 schools across the state participated in educational propagation of salmon in 2016 (Table 17). Eggs and milt are either received from a hatchery or collected from wild stocks. Fertilized eggs are incubated in aquariums for students to observe the development of the salmon until the fish hatch. Some of the fish are then released at pre-approved locations.

HATCHERY EVALUATION AND PROTECTION OF WILD STOCKS

Alaska's PNP hatchery program has a history of active assessment and innovation. Hatcheries use either coded wire tag or thermal marking (or both) to differentially mark releases. During the fishing season, the catch can be sampled to measure the magnitude of wild and hatchery stock returns, allowing fisheries managers to manage for wild stock escapement goals.

Thermal marking is a technique first used on a production scale at Snettisham Hatchery near Juneau. Thermal marking is done by alternating warmer and colder incubation water over about a 3- to 6-day period, usually during the egg stage. This action will lay down alternating dark and light rings on the fish's ear bone (called the otolith), similar to rings on a tree. Naturally spawned salmon will have less distinct marks that lack regularly spaced intervals. Fish can be marked with different patterns of thermal marks, allowing for stock separation among hatcheries and release sites.

---

[21] "Strong Fresh Salmon Prices, Alaska's Historically Poor Pink Run Send Frozen Market to Record Level," by Michael Ramsingh, January 26, 2017. Available from www.seafoodnews.com (Accessed February 6, 2017).

[22] Informal survey of hatchery associations conducted by the author.

[23] https://www.omb.alaska.gov/ombfiles/17_budget/Fish/Enacted/17compsummary_fish.pdf (Accessed February 16, 2017).

The development of otolith marking is a powerful tool. During the adult harvest, a sample of otoliths can be read to estimate how many hatchery origin fish are in the catch, and which hatcheries the fish were released from. Because all fish in a hatchery can be marked this way—not just a fraction of the releases as occurs with coded wire tags—a much more accurate assessment can be made. In addition, otoliths from immature salmon caught on the high seas can be used to determine origin and migration pattern, and otoliths from spawning carcasses can be collected during stream surveys to assess straying.

Part of the strength of Alaska's salmon industry is the state's proven track record of sustainable fisheries management to a growing audience of discriminating buyers. In 2000, the Marine Stewardship Council (MSC) certified Alaska's salmon fisheries as sustainably managed, and the state's salmon fisheries remained the only MSC-certified salmon fishery in the world for *nearly a decade*. Salmon fisheries elsewhere (Annette Islands Indian Reserve salmon; British Columbia pink and sockeye salmon; and Iturup Island, Russia, pink and chum salmon) were later certified for much smaller geographic areas, and in some cases, only for specific salmon species (MSC 2012). Alaska's certification was MSC's broadest and most complex, covering all 5 salmon species harvested by all fishing gear types in all parts of the state. Achievement of statewide certification is a reflection of the state's commitment to abundance-based fisheries management and constitutional mandate to sustain wild salmon populations.

As part of sustainability certification (Knapman et al. 2009), ADF&G began evaluations of PNP hatcheries for compliance with state policies and regulations. These evaluations have been completed for nearly all hatcheries.[24] The evaluations are an important systematic assessment of Alaska salmon fishery enhancement and its relation to wild stock production at a time of heightened interest for increased hatchery production and potential impacts on wild salmon production.

Straying of hatchery fish has been monitored for many years. Hatchery chum salmon straying has been assessed in Southeast Alaska (Piston and Heinl 2012) and Prince William Sound systems (Brenner et al. 2012). Hatchery Chinook salmon straying has been monitored on several Southeast Alaska systems for decades (Ed Jones, ADF&G fishery biologist, Juneau, personal communication). Hatchery sockeye salmon straying studies have been conducted on Kodiak Island (Baer and Honnold 2002), in the Copper River basin (Bidlack and Valentine 2009) and the Kenai River (Habicht et al. 2013; Stopha 2012). Pink salmon straying has been monitored in Prince William Sound (Brenner et al. 2012) and Cook Inlet (Hollowell et al. 2015).

A panel composed of scientists with broad experience in salmon fishery enhancement, management, and wild and hatchery interactions from ADF&G, University of Alaska, aquaculture associations, and National Marine Fisheries Service, was assembled and designed a long-term research project to potentially answer some of the questions of hatchery and wild stock interactions in Alaska. The study, entitled *Interactions of Wild and Hatchery Pink and Chum Salmon in Prince William Sound and Southeast Alaska*, is currently underway. The proposed study length is about 11 years, with 5 years initially funded (Steve Reifenstuhl, NSRAA Executive Director, personal communication). Study funding is shared between the PNP operators, salmon processors, and State of Alaska, and administered by ADF&G. Field work is conducted by the Prince William Sound Science Center and the Sitka Sound Science Center. The

[24] See Stopha (2017) for a bibliography of Alaska hatchery evaluations completed to date.

study will improve understanding of hatchery and wild stock interactions and provide Alaska-specific scientific guidance for assessing Alaska's hatchery program.

REFERENCES CITED

ASMI (Alaska Seafood Marketing Institute). 2011. May 2011 seafood market bulletin. http://www.alaskaseafood.org/fishingprocessing/seafoodweb_may11/index.html (Accessed March 18, 2016).

ASMI (Alaska Seafood Marketing Institute). 2015. Alaska salmon market analysis. http://www.alaskaseafood.org/industry/market/spring2015/alaska-salmon-analysis.html (Accessed March 2016).

ASMI (Alaska Seafood Marketing Institute). 2016. Alaska seafood market summary & outlook. http://www.alaskaseafood.org/wp-content/uploads/2016/12/Alaska-Salmon-Market-Summary-Outlook.pdf (Accessed February 16, 2017).

ASMI (Alaska Seafood Marketing Institute). 2017. Alaska salmon market summary and outlook. http://www.alaskaseafood.org/wp-content/uploads/2016/12/Alaska-Seafood-Market-Summary-and-Outlook.pdf (Accessed January 2017).

Baer, R. T., and S. G. Honnold. 2002. A straying assessment of an introduced sockeye salmon stock on northern Afognak Island as determined by two methods of stock identification. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K02-56, Kodiak.

Bidlack, A., and E. M. Valentine. 2009. Assessment of Gulkana Hatchery sockeye straying into Upper Copper River tributaries. Ecotrust Copper River Program. http://www.crks.org/wp/wp-content/uploads/Upriver-Sockeye-Straying-Report-10-13-09.pdf

Brenner, R. E., S. D. Moffitt, and W. S. Grant. 2012. Straying of hatchery salmon in Prince William Sound. Environmental Biology of Fishes 94:179–195.

Davis, B., B. Allee, D. Amend, B. Bachen, B. Davidson, T. Gharrett, S. Marshall, and A. Wertheimer. 1985. Genetic policy. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development, Juneau.

Farrington, C. 2003. Alaska salmon enhancement program, 2002 Annual Report. Alaska Department of Fish and Game, Regional Information Report No. 5J03-05, Juneau.

Farrington, C. 2004. Alaska salmon enhancement program, 2003 Annual Report. Alaska Department of Fish and Game, Regional Information Report No. 5J04-02, Juneau.

Groot, C., and L. Margolis, editors. 1991. Pacific salmon life histories. UBC Press, Vancouver, BC Canada.

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

Hollowell, G., E. O. Otis, and E. Ford. 2015. 2014 Lower Cook Inlet area finfish management report, Appendix A10. Alaska Department of Fish and Game, Fishery Management Report No 15-32, Anchorage.

Knapman, P. G. Ruggerone, J. Brady, and A. Hough. 2009. Alaska salmon fisheries: first annual surveillance report 2007/08. February 2009 (MML-F-017), Houston, TX. Prepared by Moody Marine Ltd., for the Alaska Department of Fish and Game.

Knapp, G., K. Roheim, and J. Anderson. 2007. The great salmon run: Competition between wild and farmed salmon. TRAFFIC North America, World Wildlife Fund, 1250 24th Street NW, Washington, D.C.

MSC (Marine Steward Ship Council). 2012. www.msc.org (Accessed February 6, 2012).

Munro, A. R., and E. C. Volk. 2016. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2007 to 2015. Alaska Department of Fish and Game, Fishery Manuscript Series No. 16-04, Anchorage.

Piston, A. W., and S. C. Heinl. 2012. Hatchery chum salmon straying studies in Southeast Alaska, 2008–2010. Alaska Department of Fish and Game, Fishery Manuscript Series No. 12-01, Anchorage.

REFERENCES CITED (Continued)

Stopha, M. 2012. An evaluation of the Trail Lakes salmon hatchery for consistency with statewide policies and prescribed management practice. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-21, Anchorage.

Stopha, M. 2013. An evaluation of the Gulkana salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-05, Anchorage.

Stopha, M. 2016. Alaska fisheries enhancement annual report 2015. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-03, Anchorage.

Stopha, M. 2017. An evaluation of the Burnett Inlet salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-01, Anchorage.

Vercessi, L. 2013. Alaska salmon fisheries enhancement program 2012 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 13-05, Anchorage.

Vercessi, L. 2014. Alaska salmon fisheries enhancement program 2013 annual report. Alaska Department of Fish and Game, Fishery Management Report 14-12, Anchorage.

Vercessi, L. 2015. Alaska salmon fisheries enhancement program 2014 annual report. Alaska Department of Fish and Game, Fishery Management Report 15-15, Anchorage.

White, B. 2005. Alaska salmon enhancement program 2004 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 05-09, Anchorage.

White, B. 2006. Alaska salmon enhancement program 2005 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 06-19, Anchorage.

White, B. 2007. Alaska salmon enhancement program 2006 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 07-04, Anchorage.

White, B. 2008. Alaska salmon enhancement program 2007 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 08-03, Anchorage.

White, B. 2009. Alaska salmon enhancement program 2008 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 09-08 Anchorage.

White, B. 2010. Alaska salmon enhancement program 2009 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 10-05, Anchorage.

White, B. 2011. Alaska salmon enhancement program 2010 annual report. Alaska Department of Fish and Game, Fishery Management Report No. 11-04, Anchorage.

TABLES

Table 1.–List of hatchery acronyms used in this report.

Acronym	Organization
ADF&G	Alaska Department of Fish and Game
AKI	Armstrong-Keta, Inc.
CIAA	Cook Inlet Aquaculture Association
DIPAC	Douglas Island Pink and Chum, Inc.
KNFC	Kake Nonprofit Fisheries Corporation
KRAA	Kodiak Regional Aquaculture Association
MIC	Metlakatla Indian Community
NMFS	National Marine Fisheries Service
NSRAA	Northern Southeast Regional Aquaculture Association
POWHA	Prince of Wales Hatchery Association
PWSAC	Prince William Sound Aquaculture Corporation
SSSC	Sitka Sound Science Center
SSRAA	Southern Southeast Regional Aquaculture Association
VFDA	Valdez Fisheries Development Association Incorporated

Table 2.–Estimated egg takes for Alaska hatcheries, by region, 2016.

Area	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
Southeast	8,595,000	19,315,000	30,500,000	59,349,000	613,923,000	0	0	731,705,000
Prince William Sound	53,000	38,324,000	3,342,000	740,908,000	160,100,000	0	0	942,727,000
Cook Inlet	2,768,000	9,368,000	1,557,000	75,080,000	0	238,000	2,996,000	92,007,000
Arctic/Yukon/Kuskokwim	63,000	0	108,000	0	0	0	653,000	823,000
Kodiak	169,000	5,658,000	533,000	92,219,000	20,519,000	0	200,000	119,299,000
Total[a]	11,647,000	72,665,000	36,040,000	967,557,000	794,542,000	238,000	3,873,000	1,887,000,000

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

Table 3.–Estimated juvenile releases from Alaska hatcheries, by region, 2016.

Area	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
Southeast	8,752,000	12,693,000	23,225,000	99,847,000	514,886,000	0	0	659,404,000
Prince William Sound	50,000	26,044,000	1,913,000	643,064,000	133,200,000	0	0	804,271,000
Cook Inlet	2,239,000	6,002,000	1,674,000	12,744,000	0	21,000	1,550,000	24,230,000
Arctic/Yukon/Kuskokwim	43,000	0	68,000	0	0	12,000	185,000	308,000
Kodiak	27,000	3,928,000	1,523,000	138,103,000	29,123,000	0	124,000	172,828,000
Total[a]	11,110,000	48,667,000	28,404,000	893,758,000	677,209,000	33,000	1,860,000	1,661,000,000

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

Table 4.–Estimated total returns attributed to Alaska hatcheries (including common property harvest, cost recovery harvest, broodstock, and other), by region, 2016.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	59,000	300,000	719,000	477,000	8,270,000	9,826,000
Prince William Sound	0	1,033,000	44,000	10,972,000	3,102,000	15,152,000
Cook Inlet	9,000	258,000	10,000	280,000	0	557,000
Kodiak	4,000	234,000	16,000	1,522,000	122,000	1,897,000
Total[a]	72,000	1,800,000	790,000	13,000,000	11,500,000	27,000,000

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

Table 5.–Alaska (preliminary) commercial harvest of hatchery-produced fish, by region, 2016.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Total commercial harvest[a]	309,000	1,473,000	2,296,000	16,927,000	8,712,000	29,717,000
	Hatchery cost-recovery harvest	5,000	145,000	112,000	230,000	2,372,000	2,819,000
	Common Property Commercial Harvest	304,000	1,328,000	2,184,000	16,697,000	6,385,000	26,898,000
	Hatchery-produced fish in commercial common property harvest	39,000	144,000	416,000	129,000	5,189,000	5,917,000
	% of hatchery-produced fish in commercial common property harvest	13%	11%	19%	1%	81%	22%
	Hatchery-produced fish in total commercial harvest	44,000	290,000	528,000	359,000	7,516,000	8,736,000
	% of hatchery-produced fish in total commercial harvest	14%	20%	23%	2%	86%	29%
Prince William Sound	Total commercial harvest[a]	13,000	1,978,000	480,000	11,989,000	2,925,000	17,384,000
	Hatchery cost-recovery harvest	0	0	2,000	3,549,000	810,000	4,360,000
	Common Property Commercial Harvest	13,000	1,978,000	478,000	8,440,000	2,115,000	13,024,000
	Hatchery-produced fish in commercial common property harvest	0	926,000	7,000	6,382,000	2,115,000	9,430,000
	% of hatchery-produced fish in commercial common property harvest	0%	47%	1%	76%	100%	72%
	Hatchery-produced fish in total commercial harvest	0	926,000	9,000	9,931,000	2,925,000	13,790,000
	% of hatchery-produced fish in total commercial harvest	0%	47%	2%	83%	100%	79%
Cook Inlet	Total commercial harvest[a]	11,000	2,648,000	147,000	481,000	197,000	3,483,000
	Hatchery cost-recovery harvest	80	150,000	0	28,000	0	178,000
	Common Property Commercial Harvest	10,000	2,499,000	147,000	452,000	197,000	3,305,000
	Hatchery-produced fish in commercial common property harvest	0	69,000	0	56,000	0	124,000
	% of hatchery-produced fish in commercial common property harvest	0%	3%	0%	12%	0%	4%
	Hatchery-produced fish in total commercial harvest	80	219,000	0	81,000	0	303,000
	% of hatchery-produced fish in total commercial harvest	1%	8%	0%	17%	0%	9%
Kodiak	Total commercial harvest[a]	7,000	2,063,000	206,000	3,196,000	404,000	5,875,000
	Hatchery cost-recovery harvest	0	52,000	9	793,000	937	846,000
	Common Property Commercial Harvest	7,000	2,011,000	206,000	2,403,000	403,000	5,029,000
	Hatchery-produced fish in commercial common property harvest	0	140,000	12,000	360,000	69,000	581,000
	% of hatchery-produced fish in commercial common property harvest	0%	7%	6%	15%	17%	12%
	Hatchery-produced fish in total commercial harvest	0	191,000	12,000	1,154,000	70,000	1,427,000
	% of hatchery-produced fish in total commercial harvest	0%	9%	6%	36%	17%	24%
Chignik/Aleutian Islands/Alaska Peninsula	Common Property Commercial Harvest	35,000	7,372,000	355,000	3,020,000	631,000	11,413,000
	Hatchery-produced fish in total commercial harvest	0	0	0	0	0	0
	% of hatchery-produced fish in commercial common property harvest	0%	0%	0%	0%	0%	0%
Bristol Bay	Common Property Commercial Harvest	33,000	37,328,000	91,000	768,000	967,000	39,186,527
	Hatchery-produced fish in total commercial harvest	0	0	0	0	0	0
	% of hatchery-produced fish in commercial common property harvest	0%	0%	0%	0%	0%	0%
Arctic-Yukon-Kuskokwim	Common Property Commercial Harvest	8,000	3,000	284,000	336,000	1,414,000	2,045,000
	Hatchery-produced fish in total commercial harvest	0	0	0	0	0	0
	% of hatchery-produced fish in commercial common property harvest	0%	0%	0%	0%	0%	0%

-continued-

Table 5.–Page 2 of 2.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Statewide Total[b]	Total commercial harvest[a]	414,000	52,865,00	3,858,000	36,716,000	15,250,00	109,103,00
	Hatchery cost-recovery harvest	5,000	347,000	113,000	4,600,000	3,138,000	8,204,000
	Common Property Commercial Harvest	409,000	52,517,00	3,745,000	32,116,000	12,112,00	100,900,00
	Hatchery-produced fish in commercial common property	39,000	1,279,000	435,000	6,927,000	7,372,000	16,052,000
	% of hatchery-produced fish in commercial common property	10%	2%	12%	22%	61%	16%
	Hatchery-produced fish in total commercial harvest	44,000	1,719,000	526,000	11,524,000	9,914,000	23,727,000
	% of hatchery-produced fish in total commercial harvest	11%	3%	14%	31%	69%	22%

[a] Total commercial harvest by all commercial gear types, including fish harvested by hatcheries for cost recovery. ADF&G Oceans AK database (Accessed 1/27/2016). URL not publicly available.

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

Table 6.–Estimated exvessel value of the total Alaska commercial common property harvest (preliminary), by region, 2016.

Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast	Value of the commercial harvest	$16,381,000	$8,245,000	$22,477,000	$17,968,000	$41,963,000	$107,034,000
	Value of hatchery-produced fish in cost recovery harvest	$300,000	$800,000	$1,100,000	$200,000	$11,200,000	$13,600,000
	Value of the common property commercial harvest	$16,100,000	$7,400,000	$21,400,000	$17,800,000	$30,800,000	$93,500,000
	Value of hatchery-produced fish in common property commercial harvest	$2,100,000	$803,000	$4,100,000	$137,000	$25,000,000	$32,140,000
	% value of hatchery-produced fish in common property commercial harvest	13%	11%	19%	1%	81%	34%
	Value of hatchery-produced fish in total commercial harvest	$2,400,000	$1,603,000	$5,200,000	$337,000	$36,200,000	$45,700,000
	% of hatchery-produced fish in total commercial harvest value	15%	19%	23%	2%	80%	43%
Prince William Sound	Value of the commercial harvest	$1,268,000	$23,103,000	$6,233,000	$14,338,000	$13,629,000	$58,571,000
	Value of hatchery-produced fish in cost recovery harvest	$0	$0	$20,000	$4,240,000	$3,770,000	$8,030,000
	Value of the common property commercial harvest	$1,300,000	$23,100,000	$6,210,000	$10,100,000	$9,900,000	$50,610,000
	Value of hatchery-produced fish in common property commercial harvest	$0	$10,818,000	$91,000	$7,637,000	$9,900,000	$28,446,000
	% value of hatchery-produced fish in common property commercial harvest	0%	47%	1%	76%	100%	56%
	Value of hatchery-produced fish in total commercial harvest	$0	$10,818,000	$111,000	$11,877,000	$13,670,000	$37,476,000
	% of hatchery-produced fish in total commercial harvest value	0%	47%	2%	83%	100%	62%
Cook Inlet	Value of the commercial harvest	$473,000	$22,978,000	$530,000	$408,000	$609,000	$24,998,000
	Value of hatchery-produced fish in cost recovery harvest	$3,600	$1,300,000	$0	$24,000	$0	$1,300,000
	Value of the common property commercial harvest	$470,000	$22,000,000	$530,000	$400,000	$609,000	$24,000,000
	Value of hatchery-produced fish in common property commercial harvest	$0	$606,000	$0	$49,000	$0	$655,000
	% value of hatchery-produced fish in common property commercial harvest	0%	3%	0%	12%	0%	3%
	Value of hatchery-produced fish in total commercial harvest	$3,600	$1,906,000	$0	$73,000	$0	$1,983,000
	% of hatchery-produced fish in total commercial harvest value	1%	8%	0%	18%	0%	8%
Kodiak	Value of the commercial harvest	$126,000	$10,619,000	$936,000	$3,169,000	$777,000	$15,627,000
	Value of hatchery-produced fish in cost recovery harvest	$0	$267,000	$0	$786,000	$1,800	$1,050,000
	Value of the common property commercial harvest	$126,000	$10,000,000	$936,000	$2,000,000	$800,000	$13,862,000
	Value of hatchery-produced fish in common property commercial harvest	$0	$700,000	$50,000	$300,000	$100,000	$1,150,000
	% value of hatchery-produced fish in common property commercial harvest	0%	7%	6%	15%	13%	8%
	Value of hatchery-produced fish in total commercial harvest	$0	$967,000	$50,000	$1,086,500	$102,000	$2,205,000
	% of hatchery-produced fish in total commercial harvest value	0%	9%	5%	34%	13%	14%
Chignik/Aleutian Islands/ Alaska Peninsula	Value of the commercial harvest	$325,000	$33,272,000	$586,000	$1,302,000	$881,000	$36,366,000
	Value of hatchery-produced fish in total commercial harvest	$0	$0	$0	$0	$0	$0
	% value of hatchery-produced fish in common property commercial harvest	0%	0%	0%	0%	0%	0%
Bristol Bay	Value of the commercial harvest	$249,000	$153,204,000	$260,000	$451,000	$2,001,000	$156,165,000
	Value of hatchery-produced fish in total commercial harvest	$0	$0	$0	$0	$0	$0
	% value of hatchery-produced fish in common property commercial harvest	0%	0%	0%	0%	0%	0%
Arctic-Yukon-Kuskokwim	Value of the commercial harvest	$5,000	$14,000	$2,135,000	$138,000	$5,323,000	$7,615,000
	Value of hatchery-produced fish in total commercial harvest	$0	$0	$0	$0	$0	$0
	% value of hatchery-produced fish in common property commercial harvest	0%	0%	0%	0%	0%	0%

Table 6.–Page 2 of 2.

Total[a]	Value of the commercial harvest	$18,827,000	$251,435,000	$33,157,000	$37,774,000	$65,183,000	$406,376,000
	Value of hatchery-produced fish in cost recovery harvest	$300,000	$2,000,000	$1,000,000	$5,000,000	$15,000,000	$23,000,000
	Value of the common property commercial harvest	$18,527,000	$249,435,000	$32,157,000	$32,774,000	$50,183,000	$383,376,000
	Value of hatchery-produced fish in common property commercial harvest	$2,100,000	$13,000,000	$4,000,000	$8,000,000	$35,000,000	$61,000,000
	% value of hatchery-produced fish in common property commercial harvest	11%	5%	12%	21%	54%	15%
	Value of hatchery-produced fish in total commercial harvest	$2,400,000	$15,000,000	$5,000,000	$13,000,000	$50,000,000	$85,000,000
	% of hatchery-produced fish in total commercial harvest value	13%	6%	15%	34%	77%	21%

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

Table 7.–Estimated sport, personal use and subsistence harvest of hatchery-produced fish, 2016.

Region	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Grayling	Landlocked Salmon	Total
Southeast	4,775	3,050	32,713	0	1,500					42,000
Prince William Sound		64,633	30,861	9,514	1,000					106,000
Cook Inlet	1,450	17,500	7,925	2,500	0					29,000
Kodiak	3,450	591	600	0	0					5,000
Southcentral Lakes						1,395	19,670	419	4,720	26,000
Interior Lakes						646	14,510	644	2,353	18,000
Total	10,000	86,000	72,000	12,000	3,000	2,000	34,000	1,000	7,000	227,000

Table 8.–Eggs collected at Alaska hatcheries, 2016. Eggs transferred from one facility to another are listed with the receiving hatchery.

Region/Area/Operator/Hatchery		Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow	Total
Southeast									
Southern Southeast									
SSRAA	Burnett Inlet			2,474,000		42,819,531			45,294,000
	Crystal Lake	2,078,400		210,000					2,288,000
	Neets Bay			2,942,688		93,300,000			96,243,000
	Whitman Lake	1,690,000		4,088,000		39,500,000			45,278,000
	Klawock River			5,059,600					5,060,000
	Port Saint Nicholas	160,000							160,000
Southern Southeast Total		3,928,000		14,774,000		175,620,000			194,322,000
Northern Southeast									
NSRAA	Hidden Falls	878,000		7,692,330		155,890,765			164,461,000
	Medvejie Creek	2,882,940			206,400	86,297,000			89,387,000
	Sawmill Creek			1,646,150		30,013,836			31,660,000
AKI	Port Armstrong			4,684,800	56,590,473	28,179,529			89,455,000
DIPAC	Macaulay	648,000		1,532,500		125,597,400		23,767	127,802,000
	Snettisham		19,315,000						19,315,000
NMFS	Little Port Walter	257,040							257,000
SSSC	Sheldon Jackson			170,000	2,552,197	12,325,000			15,047,000
Northern Southeast Total		4,666,000	19,315,000	15,726,000	59,349,000	438,304,000			537,383,000
Southeast Total		8,595,000	19,315,000	30,500,000	59,349,000	613,923,000		24,000	731,705,000
Southcentral									
Prince William Sound									
PWSAC	AF Koernig				159,000,000	31,100,000			190,100,000
	Cannery Creek				178,000,000				178,000,000
	Gulkana		25,924,000						25,924,000
	Main Bay		12,400,000						12,400,000
	W Noerenberg	52,500		3,342,000	152,000,000	129,000,000			284,395,000
VFDA	Solomon Gulch				251,908,491				251,908,000
Prince William Sound Total		53,000	38,324,000	3,342,000	740,908,000	160,100,000			942,727,000
Cook Inlet									
CIAA	Port Graham				9,076,353				9,076,000
	Trail Lakes		9,368,000	288,711					9,657,000
	Tutka Bay Lagoon				66,003,411				66,003,000
ADF&G	WJ Hernandez	2,768,000		1,268,119			238,320	2,996,446	7,271,000
Cook Inlet Total		2,768,000	9,368,000	1,557,000	75,080,000		238,320	2,996,000	92,007,000
Southcentral Total		2,820,000	47,692,000	4,889,000	815,988,000	160,100,000	238,000	2,996,000	1,034,734,000
Arctic-Yukon-Kuskokwim									
ADF&G	Ruth Burnett	63,019		107,957				652,500	823,000
Arctic-Yukon-Kuskokwim Total		63,000		108,000				653,000	823,000

-continued-

Table 8. Page 2 of 2.

Region/Area/Operator/Hatchery		Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow	Total
Kodiak									
KRAA	Kitoi Bay		765,178	441,240	92,219,351	20,519,184			113,945,000
	Pillar Creek	169,030	4,893,000	92,000				200,000	5,354,000
Kodiak Total		169,000	5,658,000	533,000	92,219,000	20,519,000	0	200,000	119,299,000
Statewide Total		12,000,000	73,000,000	36,000,000	968,000,000	795,000,000	240,000	3,900,000	1,886,600,000

Note: Some figures may not total exactly due to rounding.

Table 9.–Alaska hatcheries releases as reported by operators, 2016.

Region/Operator/Hatchery/Release Site				Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
Southeast	Southern Southeast										
	SSRAA	Burnett Inlet	Burnett Inlet			229,917		10,406,000			10,636,000
			Anita Bay			369,890		22,141,000			22,511,000
			Neck L			1,821,575					1,822,000
			Neets Bay			1,495,947					1,496,000
		Crystal Lake	Crystal Cr	573,117		239,000					812,000
			Anita Bay	450,425							450,000
			City Cr	98,000							98,000
		Neets Bay	Neets Bay			3,657,405		79,775,000			83,432,000
			Nakat Inlet					8,210,000			8,210,000
		Whitman Lake	Whitman L H	747,862		298,164					1,046,000
			Neets Bay	715,846							716,000
			Anita Bay			188,978					189,000
			Kendrick Bay					29,352,000			29,352,000
			Nakat Inlet			538,179		8,287,000			8,825,000
			Deer Mt Hatchery	84,064							84,000
			Crystal L Hatchery	520,000							520,000
			Carroll Inlet	383,400							383,000
		Klawock River	Klawock River			4,348,000					4,348,000
		Port Saint Nicholas	Port St Nicholas	100,318							100,000
			Coffman Cove	37,695							38,000
	Southern Southeast Total			3,711,000		13,187,000		158,171,000			175,068,000
	Northern Southeast										
	NSRAA	Hidden Falls	Takatz Bay					38,377,787			38,378,000
			Kasnyku Bay	588,842		3,282,361		46,019,340			49,891,000
			Southeast Cove					42,758,270			42,758,000
			Cliff L			29,789					30,000
			Mist Cove			2,410,096					2,410,000
		Medvejie Creek	Bear Cove	2,767,937			292,992	18,891,029			21,952,000
			Deep Inlet					43,089,762			43,090,000
			Halibut Point	392,677							393,000
			Crawfish Inlet	129,250							129,000
		Sawmill Creek	Bear Cove			205,176					205,000
			Deep Inlet			673,516					674,000
			Crawfish Inlet					27,794,243			27,794,000
	AKI	Port Armstrong	Port Armstrong	231,839		2,192,592	97,116,922	34,944,513			134,486,000
	DIPAC	Macaulay	Macaulay	221,000		318,100		10,270,800			10,809,000
			Auke Bay	88,000							88,000
			Amalga Harbor					31,617,400			31,617,000
			Boat Harbor					20,655,900			20,656,000

-continued-

Table 9.–Page 2 of 3.

Region/Operator/Hatchery/Release Site			Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
DIPAC	Macaulay	Dredge/Twin L	8,930							9,000
		Fish Cr	279,000							279,000
		Lena Cove	179,000							179,000
		Limestone Inlet					13,167,700			13,168,000
		Sheep Creek	124,000		736,600		19,267,500			20,128,000
	Snettisham	Snettisham		8,355,300						8,355,000
		Sweetheart L		467,900						468,000
		Tahltan/Tuya Lakes		3,399,500						3,400,000
		Tatsamenie L		470,500						471,000
NMFS	Little Port Walter	L Port Walter	30,358							30,000
SSSC	Sheldon Jackson	Crescent Bay			190,596	2,437,062	2,795,979			5,424,000
		Deep Inlet					7,065,000			7,065,000
Northern Southeast Total			5,041,000	12,693,000	10,039,000	99,847,000	356,715,000			484,336,000
Southeast Total			8,752,000	12,693,000	23,225,000	99,847,000	514,886,000			659,404,000
Southcentral										
Prince William Sound										
PWSAC	AFK	Sawmill Bay				136,000,000	23,200,000			159,200,000
	Cannery Creek	Unakwik Inlet				158,000,000				158,000,000
	Gulkana I and II	Gulkana R		16,004,000						16,004,000
	Main Bay	Main Bay		10,040,000						10,040,000
	W Noerenberg	Lake Bay				123,000,000	71,700,000			194,700,000
		Port Chalmers					38,300,000			38,300,000
		Chenega Bay	49,600							50,000
VFDA	Solomon Gulch	Solomon Gulch			1,893,789	226,063,710				227,957,000
		Boulder Bay			19,606					20,000
Prince William Sound Total			50,000	26,044,000	1,913,000	643,064,000	133,200,000			804,271,000
Cook Inlet										
CIAA	Trail Lakes	Bear L		2,374,000	100,000					2,474,000
		Resurrection B.		1,680,165	446,600					2,127,000
		Hidden Lk		1,231,000						1,231,000
		Kirschner L		185,000						185,000
		Tutka Lagoon		531,625						532,000
CIAA	Tutka Bay Lagoon	Tutka Lagoon				11,433,515				11,434,000
	Port Graham	Port Graham				1,310,762				1,311,000

-continued-

Table 9.–Page 3 of 3.

Region/Operator/Hatchery/Release Site		Site	Chinook	Sockeye	Coho	Pink	Chum	Arctic Char	Rainbow Trout	Total
ADF&G	WJ Hernandez	Bird Cr			131,981					132,000
		Campbell Cr			52,807					56,000
		Cordova, Fleming	104,210							104,000
		Crooked Cr	143,280							143,000
		Deception Cr	69,933							70,000
		Eklutna Tailrace	425,097		138,263					563,000
		Halibut Cove	110,546							111,000
		Homer Spit	213,779		122,528					336,000
		Ninilchik R	147,510							148,000
		Seldovia Harbor	102,552							103,000
		Seward Lagoon	320,711		272,212					593,000
		Ship Cr	363,545		275,402					639,000
		Whittier	92,954							93,000
		Lakes	144,698		133,939			21,167	1,547,083	1,847,000
Cook Inlet Total			2,239,000	6,002,000	1,674,000	12,744,000	0	21,000	1,550,000	24,230,000
Southcentral Total			2,288,000	32,046,000	3,587,000	655,808,000	133,200,000	21,000	1,550,000	828,501,000
Arctic-Yukon-Kuskokwim										
ADF&G	Ruth Burnett	Region III Lakes	42,711		68,040			12,176	185,147	308,000
Arctic-Yukon-Kuskokwim Total			43,000	0	68,000	0	0	12,000	185,000	308,000
Kodiak										
KRAA	Kitoi Bay	Kitoi B		683,359	1,210,099	138,103,485	29,122,550			169,119,000
		Crescent L			12,000					12,000
		Katmai L			12,000					12,000
		Ouzinkie L		79,565						80,000
	Pillar Creek	Pillar Cr			139,400					139,000
		Telrod Cove		628,898						629,000
		Monashka R			99,582					100,000
		Salonie Cr	26,671							26,671
		Hidden L		99,969						278,000
		Waterfall Lks		99,363						99,000
		Spiridon L		2,276,878						2,277,000
		Ruth L		62,000						62,000
		Jennifer L		97,000						97,000
		Island L			30,056					30,000
		Mission L			20,023					20,000
		Kodiak Road Lks							124,231	124,000
Kodiak/WestwardTotal			27,000	3,928,000	1,523,000	138,103,485	29,123,000	0	124,000	172,828,000
Statewide Total			11,000,000	49,000,000	28,000,000	894,000,000	677,000,000	33,000	1,860,000	1,661,000,000

Note: Some figures may not total exactly due to rounding.

Table 10.–Projected adult returns, by species, to Alaska fisheries enhancement projects in 2017.

Region/Operator/Release Site		Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Arctic Char	Landlocked Salmon	Total
Southern Southeast										
SSRAA	Anita Bay	15,400		20,000		481,000				516,400
	Nakat Inlet			117,800		226,000				343,800
	Burnett Inlet Hatchery			18,000						18,000
	Neck Lake			41,000						41,000
	Crystal Lake Hatchery	3,580		6,400						9,980
	City Creek	3,000								
	Neets Bay Hatchery	22,200		205,000		1,532,600				1,759,800
	Whitman Lake Hatchery	16,750		21,000						37,750
	Kendrick Bay					842,000				842,000
	Klawock River Hatchery			217,376						217,000
	Port Saint Nicholas Hatchery	6,624								6,600
	Coffman Cove	1,859								1,900
Southern Southeast Total		69,413		646,576		3,081,600				3,794,000
Northern Southeast										
NSRAA	Haines Projects					31,000				31,000
	Hidden Falls Hatchery	3,600		197,000		510,000				710,600
	Mist Cove			145,000						145,000
	Southeast Cove					206,000				206,000
	Medvejie Creek Hatchery	15,058		12,300		352,275				379,633
	Halibut Point	4,013								4,013
	Sawmill Creek Hatchery									
	Deep Inlet			40,400		1,002,725				1,043,125
	Crawfish Inlet					33,400				
AKI	Port Armstrong Hatchery	1,509		153,481	1,456,754	377,751				1,989,495
DIPAC	Macaulay Hatchery									
	Amalga Harbor					1,125,000				1,125,000
	Boat Harbor					358,000				358,000
	Limestone Inlet					128,000				128,000
	Fish Creek	680								680
	Lena Cove	470								470
	Gastineau Channel	1,900		50,000		647,000				698,900
	Auke Bay	740								740
	Pullen Cr/Lutak Inlet	110								110
	Snettisham Hatchery		236,200							236,200
	Stikine River		[a]							
	Sweetheart Lake		2,100							2,100
	Taku River		[a]							
SSSC	Sheldon Jackson Hatchery			7,623	56,052	46,667				110,342
NMFS	Little Port Walter	682								682
Northern Southeast Total		28,762	238,300	611,804	1,512,806	4,817,818				7,170,090
Southeast Total		98,175	238,300	1,258,380	1,512,806	7,899,418				10,964,679

-continued-

Table 10.–Page 2 of 3.

Region/Operator/Release Site			Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Arctic Char	Landlocked Salmon	Total
Prince William Sound											
	PWSAC	Armin F. Koernig Hatchery				6,200,000	299,000				6,499,000
		Cannery Creek Hatchery				7,100,000					7,100,000
		Gulkana I&II Hatchery		204,200							204,200
		Main Bay Hatchery		1,169,000							1,169,000
		Wally Noerenberg Hatchery			216,000	5,600,000	2,191,000				8,007,000
		Chenega			3,500						3,500
		Cordova			7,000						7,000
		Port Chalmers					335,000				335,000
		Whittier			7,000						7,000
	VFDA	Solomon Gulch Hatchery			104,537	18,785,894					18,890,431
		Boulder Bay			1,082						1,082
	ADF&G	Whittier	937								937
		Cordova Fleming Spit	871								871
	CIAA	Trail Lakes Hatchery									
		Bear Lake		120,583	17,120						137,703
Prince William Sound Totals			1,809	1,493,783	356,239	37,685,894	2,825,000	0	0	0	42,362,725
Cook Inlet											
	CIAA	Trail Lakes Hatchery									
		English Bay Lakes		3,715							3,715
		Hazel/Leisure		62,811							62,811
		Hidden Lake		27,754							27,754
		Kirschner Lake		13,020							13,020
		Tutka Bay		62,236							62,236
		Shell Lake		134							134
		Tutka Bay Lagoon Hatchery		62,236							62,236
		Port Graham Hatchery				39,323					
	ADF&G	WJ Hernandez Hatchery									
		Region II Lakes[b]						19,670	1,395	4,720	26,204
		Eklutna Tailrace	3,953		9,333						13,286
		Deception Creek	2,118								2,118
		Ship Creek	3,585		18,590						22,175
		Campbell Creek			3,564						3,564
		Bird Creek			8,909						8,909
		Crooked Creek	1,438								1,438
		Ninilchik River	499								499
		Homer Spit	2,063		8,271						10,333
		Halibut Cove	859								859
		Seldovia	743								743
		Resurrection Bay	1,835		18,374						20,209
Cook Inlet Totals			17,091	231,906	67,041	39,323	0	19,670	1,395	4,720	342,242
Southcentral Total			18,900	1,725,689	423,280	37,725,217	2,825,000	19,670	1,395	4,720	42,704,966

-continued-

Table 10.–Page 3 of 3.

Region/Operator/Release Site		Chinook	Sockeye	Coho	Pink	Chum	Rainbow Trout	Arctic Char	Landlocked Salmon	Total
Arctic-Yukon-Kuskokwim										
ADF&G	Ruth Burnett Hatchery									
	Region III Stocked Lakes[c]						45,111	2,911	7,286	60,029
Arctic-Yukon-Kuskokwim Total							45,111	2,911	7,286	60,029
Kodiak										
KRAA	Kitoi Bay Hatchery		72,230	171,834	10,118,874	87,018				10,449,956
	Crescent Lake			1,200						1,200
	Katmai			1,200						1,200
	Pillar Creek Hatchery			6,140						
	Crescent Lake		6,211							6,211
	Hidden Lake		10,536							10,536
	Spiridon Lake		288,106							288,106
	Telrod Cove									0
	Anton Larsen Bay		22,281							22,281
	Ouzinkie Village		10,737							10,737
	Kodiak Road System			7580						7,580
Westward/Kodiak Total			410,101	180,374	10,118,874	87,018				10,797,807
Statewide Total		117,000	2,400,000	1,900,000	49,400,000	10,800,000	65,000	4,000	12,000	65,000,000[d]

[a] Not available in time for publication.
[b] Southcentral Alaska Lakes (e.g., Matanuska Valley)
[c] Northcentral Alaska Lakes (Fairbanks area)
[d] An additional 420 arctic grayling are expected for harvest in Region II lakes and 4,700 arctic grayling harvested in Region III Lakes in 2017.

Table 11.–Details of the estimated Chinook salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2016.

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	24	193	790	433	1,677			3,000
				Anita Bay	576	10,053	1,659	246				13,000
				City Cr	25	968	55	18				1,000
			Neets Bay	Neets Bay	4,544	3,528	2,363	1,120				12,000
			Whitman Lake	Whitman Lake	317	482	2,100	890	1,930	1,864	250	8,000
			Port Saint Nicholas	Port Saint Nicholas	38	23	220	17		468		766
				Coffman Cove	19	132	33	9		51		244
	Southern Southeast Total				6,000	15,000	7,000	3,000	4,000	2,000	250	37,000
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls	77	109	498	170	553		16	1,000
			Medvejie Creek	Medvejie Creek	1,363	2,382	4,683	1,265	2,821	2,021	1,448	16,000
		AKI	Port Armstrong	Port Armstrong	10	21	450	9		380	335	1,000
		DIPAC	Macaulay	Macaulay Hatchery	10	419	114	559	696	24	351	2,000
				Lutak Inlet								0
				Skagway site		17						17
		FED	Little Port Walter	L Port Walter	21	12	637	28			736	1,000
		SSSC	Sheldon Jackson	Sheldon Jackson	3	-	2					5
	Northern Southeast Total				1,000	3,000	6,000	2,000	4,000	2,000	3,000	22,000
Southeast Total					7,000	18,000	14,000	5,000	8,000	5,000	3,000	59,000
Southcentral												
	Cook Inlet											
		ADF&G	WJ Hernandez	Crooked Cr						80	2,646	3,000
				Deception Cr					73		1,096	1,000
				Eklutna Tailrace				411				400
				Ninilchik R					280		872	1,000
				Ship Creek				1,039	1,646		1,078	4,000
	Cook Inlet Total				0	0	0	1,000	2,000	80	6,000	9,000
Southcentral Total					0	0	0	1,000	2,000	80	6,000	9,000
Kodiak/Westward												
	Kodiak											
		KRAA	Pillar Creek	Kodiak Road Sys Lakes				3,450	112			4,000
	Kodiak Total				-	-	-	3,450	112	-	-	4,000
Kodiak/Westward Total					0	0	0	3,000	112	0	0	4,000
Statewide Total					7,000	18,000	14,000	10,000	10,000	5,000	9,000	72,000

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

Table 12.–Details of the estimated sockeye salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2016.

Region	Area	Agency	Hatchery	Project	Common Property Harvest				Broodstock	Cost Recovery	Other	Total Return
					Seine	Gillnet	Troll	Sp/PU/S[a]				
Southeast												
		DIPAC	Snettisham	Snettisham	1,454	141,551		50	6,782	145,414	432	295,683
				Sweetheart L	17	1,105		3,000				4,122
				Stikine R								NA
				Taku R								NA
Southeast Total					1,471	142,656	0	3,050	6,782	145,414	432	288,805
Southcentral												
	Prince William Sound											
		PWSAC	Gulkana I and II	Gulkana		157,059		63,133	15,451		16,890	252,533
			Main Bay	Main Bay	54,719	714,425		1,500	9,651		195	780,490
	Prince William Sound Total				54,719	871,484	0	64,633	25,102		17,085	1,033,023
	Cook Inlet											
		CIAA	Trail Lakes	Bear L	2,505			10,000	3,764	74,386	9,033	99,688
				English Bay Lk		562		294			1,474	1,474
				Hidden L							774	1,630
				Kirschner L	13,038					44,765		57,803
				Leisure/Hazel L	35,567			500		11,951		48,018
				Tutka Bay	9,775	7,887		7,000	2,961	18,750	4,031	50,404
	Cook Inlet Total				60,885	7,887	0	17,500	6,725	149,852	15,312	258,161
Southcentral Total					115,604	879,933	0	82,427	31,827	149,852	32,397	1,292,040
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	47,077			91		481	1,795	49,444
			Pillar Creek	Foul Bay								0
				Spiridon L	92,514			500		51,328	31,966	176,308
				Waterfall Bay								
				Hidden L	7,943							7,943
	Kodiak Total				139,591	0	0	591	0	51,809	33,761	233,695
Kodiak/Westward Total					139,591	0	0	591	0	51,809	33,761	233,695
Statewide Total					257,000	1,0227,000	0	86,000	39,000	347,000	67,000	1,800,000

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

Table 13.–Details of the estimated coho salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2016.

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	Burnett Inlet	1,147	5,355	1,152	401	3,414	2,785	1,000	15,254
				Neck L	1,074	9,424	730	6,600		9,836		27,664
			Crystal Lake	Crystal Lake		78	383	8	697			1,166
			Neets Bay	Neets Bay	888	23,335	58,501	1,575	10,000			94,299
			Whitman Lake	Whitman Lake	122	2,413	6,477	612	3,359	1,145		14,128
				Anita Bay	702	6,192	4,343	258				11,495
				Nakat Inlet	166	6,334	4,556	288				11,344
			Klawock River	Klawock Lake	21,794	396	158,931	10,083	4,274	27,573	38,303	261,354
	Southern Southeast Total				25,893	53,527	235,073	19,825	21,744	41,339	39,303	436,704
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls		130	11,803	871	12,395	278	10,065	35,542
				Deer Lake			12,372	2,816		31,235	12,697	59,120
				Banner Lake			827				300	1,127
			Sawmill Creek	Deep Inlet	2,861	1,094	10,467	857		763	526	16,568
				Medvejie Creek	182	138	3,325	306	1,301	25	1,119	6,396
		AKI	Port Armstrong	Port Armstrong		82	39,867	965	4,969	27,258	52,236	125,377
		DIPAC	Macaulay	Macaulay Hatchery		11,856	5,996	7,073	987	10,819	1,007	37,738
		SSSC	Sheldon Jackson	Sheldon Jackson	27	14	727		56	1	4	829
	Northern Southeast Total				3,070	13,314	85,384	12,888	19,708	70,379	77,954	282,697
Southeast Total					28,963	66,841	320,457	32,713	41,452	111,718	117,257	719,401
Southcentral	Prince William Sound											
		PWSAC	W Noerenberg	Lake Bay	347			100	6		239	692
				Chenega				120				120
				Cordova				120				120
				Whittier				120				120
		VFDA	Solomon Gulch	Solomon Gulch	6,686			30,401	4,527	1,620	96	43,330
	Prince William Sound Total				7,033			30,861	4,533	1,620	335	44,382
Cook Inlet		CIAA	Trail Lakes	Bear L				648	257		135	1,040
		ADF&G	WJ Hernandez	Bird Cr				1,995			463	2,458
				Eklutna Tailrace				2,486				2,486
				Ship Creek				2,796	814		223	3,833
	Cook Inlet Total							7,925	1,071	0	821	9,817
Southcentral Total					7,033			38,786	5,604	1,620	1,156	54,199
Kodiak	Kodiak	KRAA	Kitoi Bay	Kitoi Bay	11,801				335	9	2,793	14,938
			Pillar Creek	Kodiak Road Sys Lakes				600				600
	Kodiak Total				11,801			600	335	9	2,793	15,538
Kodiak/Westward Total					11,801	0	0	600	335	9	2,793	15,538
Statewide Total					48,000	67,000	320,000	72,000	47,000	113,000	121,000	790,000

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

Table 14.–Details of the estimated pink salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2016.

					Common Property Harvest							
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Troll	Sp/PU/S[a]	Broodstock	Cost Recovery	Other	Total Return
Southeast												
	Northern Southeast											
		NSRAA	Medvejie Creek	Medvejie Creek					808		800	1,608
		AKI	Port Armstrong	Port Armstrong	128,925				73,758	47,589	30,000	280,272
		KNFC	Gunnuk Creek	Gunnuk Creek								-
		SSSC	Sheldon Jackson	Sheldon Jackson					11,257	182,248	1,575	195,080
	Northern Southeast Total				128,925	0	0	0	85,823	229,837	32,375	476,960
Southeast Total					128,925	0	0	0	85,823	229,837	32,375	476,960
Southcentral												
	Prince William Sound											
		PWSAC	Armin F Koernig	Sawmill Bay	180,265	555			217,837	1,079,171	5,000	1,482,828
			Cannery Creek	Cannery Creek	111,856	141			241,233	351,268	1,000	705,498
			W Noerenberg	Lake Bay	155,571	10,127			162,214	408,408	1,000	737,320
		VFDA	Solomon Gulch	Solomon Gulch	5,923,249			9,514	318,339	1,709,923	85,567	8,046,592
	Prince William Sound Total				6,370,941	10,823	0	9,514	939,623	3,548,770	92,567	10,972,238
	Cook Inlet											
		CIAA	Tutka Bay Lagoon	Tutka Bay	55,646			2,000	108,486	25,709	69,285	261,126
			Port Graham	Port Graham				500	12,783	2,647	2,595	18,525
	Cook Inlet Total				55,646	0	0	2,000	108,486	25,709	69,285	279,651
Southcentral Total					6,426,587	10,823	0	11,514	1,048,109	3,574,479	161,852	11,251,889
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	360,388				348,573	793,115	19,953	1,522,029
	Kodiak Total				360,388	-	-	-	348,573	793,115	19,953	1,522,029
Kodiak/Westward Total					360,388	0	0	0	348,573	793,115	19,953	1,522,029
Statewide Total					7,000,000	10,000	0	12,000	1,500,000	5,000,000	214,000	13,000,000

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

Table 15.–Details of the estimated chum salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2016.

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	Anita Bay	277,722	281,527						559,249
			Neets Bay	Nakat Inlet	1,281	69,385						70,666
				Neets Bay	446,771	94,074	145,282		191,275	745,501	50,756	1,673,659
			Whitman Lake	Kendrick Bay	794,332	44,288						838,620
				Nakat Inlet	34,014	234,778						268,792
	Southern Southeast Total				1,554,120	724,052	145,282		191,275	745,501	50,756	3,410,986
	Northern Southeast											
		NSRAA	Haines Projects	Haines Projects		11,584					17,375	28,959
			Hidden Falls	Hidden Falls	17,048		7		202,132	42,218	11,315	272,720
				Southeast Cove						149,520		149,520
			State of Alaska[b]	Southeast Cove						59,160		59,160
			Medvejie Creek	Medvejie Creek	574,134	392,588	24,872		99,230	360,519	3,439	1,454,782
		AKI	Port Armstrong	Port Armstrong	1,010	-	4,041		34,186	10,277	1,000	50,514
		DIPAC	Macaulay	Gastineau Channel	4,137	359,328	1,430	1,500	170,462	219,829	14,500	771,186
				Amalga Harbor	259,455	344,896	2,405			690,217		1,296,973
				Boat Harbor	2,662	492,478	920					496,060
				Limestone Inlet	734	135,830	254					136,818
		SSSC	Sheldon Jackson	Sheldon Jackson					2,812	704		3,516
				Deep Inlet	78,324	53,557	3,393		13,537	49,886	469	198,462
	Northern Southeast Total				937,504	1,790,261	37,322	1,500	522,359	1,581,626	48,098	4,918,670
Southeast Total					2,491,624	2,514,313	182,604	1,500	713,634	2,327,127	98,854	8,329,656
Southcentral												
	Prince William Sound											
		PWSAC	W Noerenberg	Lake Bay	139,573	1,566,876		1,000	174,593	810,090	2,000	2,694,132
				Port Chalmers	8,771	150,180						158,951
			Armin F Koernig	Sawmill Bay	188,935	60,338						249,273
	Prince William Sound Total				337,279	1,777,394	0	1,000	174,593	810,090	2,000	3,102,356
Southcentral Total					337,279	1,777,394	0	1,000	174,593	810,090	2,000	3,102,356
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	68,875				51,999	937	133	121,944
	Kodiak Total				68,875	0	0	0	51,999	937	133	121,944
Kodiak/Westward Total					68,875	0	0	0	51,999	937	133	121,944
Statewide Total					2,600,000	4,300,000	183,000	2,500	940,000	3,100,000	101,000	11,600,000

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

[b] State of Alaska repossessed Gunnuk Creek Hatchery and split the cost recovery harvest with NSRAA by agreement.

Table 16.–Estimated return of other hatchery-produced fish to Alaska fisheries enhancement projects as reported by operators, 2016.

Region	Area	Agency	Hatchery	Project	Species	Sport	Broodstock	Total Return
Southcentral								
	Cook Inlet							
		ADF&G	WJ Hernandez	WJH Region II Lakes	Arctic Char	1,395	11	1,406
					Arctic Grayling	419		419
					Landlocked Salmon	4,720		4,720
					Rainbow Trout	19,670	2,502	22,172
	Cook Inlet Total					26,204	2,513	28,717
Southcentral Total						26,204	2,513	28,717
Arctic/Yukon/Kuskokwim								
		ADF&G	Ruth Burnett	Ruth Burnett	Arctic Char	646		646
					Arctic Grayling	644		644
					Landlocked Salmon	2,353		2,353
					Rainbow Trout	14,510		14,510
Arctic/Yukon/Kuskokwim Total						18,153		18,153
Statewide Total						44,000		47,000

Table 17.–Summary of salmon production of eggs collected in 2016 from Fish 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 released, by the issued permit for the particular project.

A. 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	Maximum number allowed to be collected
Southeast			
	City of Pelican	Gastineau chum	250,000 eggs
	NOAA Little Port Walter	Keta River king	400,000 eggs
	NOAA Little Port Walter	Unuk River king	400,000 eggs
	US Forest Service	Taku River coho	100,000 eggs
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	North River chum	20 spawning pair
	Norton Sound Economic Development Corporation	Snake River chum	250 spawning pair
	Norton Sound Economic Development Corporation	Snake River coho	63 spawning pair
	Norton Sound Economic Development Corporation	Solomon River chum	60 spawning pair
	Norton Sound Economic Development Corporation	Unalakleet River king	20 spawning pair

B. Educational and Vocational Permits

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

Area	Permittee	Stock/Species	Maximum number allowed to be collected
Southeast			
	Juneau-Douglas High School	Dredge Lake coho	5,000 eggs
	Petersburg High School	5 Mile Creek pink	50,000 eggs
	Petersburg High School	Sandy Beach pink	35,000 eggs
	Petersburg High School	Blind Slough coho	50,000 eggs
Westward			
	Unalaska City School	Iliuliuk River coho	3 spawning pair

C. Educational and Vocational Permits

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

Area	Permittee	Stock/Species	Maximum number allowed to be collected
Southeast			
	Juneau-Douglas High School	Dredge Lake coho	5,000 eggs
	Petersburg High School	5 Mile Creek pink	50,000 eggs
	Petersburg High School	Sandy Beach pink	35,000 eggs
	Petersburg High School	Blind Slough coho	50,000 eggs
Westward			
	Unalaska City School	Iliuliuk River coho	3 spawning pair

-continued-

Table 17.–Page 2 of 4.

D. 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 and not released. Resultant fry can be released at approved locations.

Area	Permittee	Species	Maximum number to be collected
Southeast			
	Haines School	chum	300
	Point Higgins ES/ USFS	coho	30
	Taiya Inlet Watershed Council	coho	200
Southcentral			
	ADF&G Lobby (Public)	coho	500
	Alpenglow Elementary	coho	500
	Anchor Lutheran	coho	500
	Aquarian Charter Elementary	coho	500
	Aurora Borealis	coho	500
	Bartlet High School	coho	500
	Bear Valley Elementary	coho	500
	Big Lake Elementary	coho	500
	Birchtree Elementary	coho	500
	Birchwood ABC Elementary	coho	500
	Butte Elementary	coho	500
	Campbell Elementary	coho	500
	Central Middle School	coho	500
	Chapman Elementary	coho	500
	Chinook Elementary	coho	500
	College Gate Elementary	coho	500
	Colony High School	coho	500
	Connections School	coho	500
	Cook Inlet Academy	coho	500
	Cooper Landing	coho	500
	Copper River Watershed Project	coho	500
	Cottonwood Creek	coho	500
	Denali Montessori	coho	500
	Eagle Academy Charter School	coho	500
	Eagle River High School	coho	500
	East Anchorage High School	coho	500
	Finger Lake Elementary	coho	500
	Fronteras Spanish Immersion School	coho	500
	Girdwood K-8	coho	500
	Glennallen Elementary	coho	500
	Grace Christian Elementary School	coho	500
	Gruening Middle School	coho	500
	Hanshew Middle School	coho	500
	Hermon Hutchens	coho	500
	Homer Flex High School	coho	500
	Homer High School	coho	500
	IDEA Home School	coho	500
	Inlet View Elementary	coho	500
	Jesse Lee	coho	500
	Kaleidoscope Elementary	coho	500

-continued-

Table 17.–Page 3 of 4.

Area	Permittee	Species	Maximum number to be collected
	Kalifornsky Beach Elementary	coho	500
	Kenai Central High School	coho	500
	Kenai Middle School	coho	500
	Kincaid Elementary	coho	500
	Klatt Elementary	coho	500
	Knik Elementary	coho	500
	Lake Hood Elementary	coho	500
	Lake Otis Elementary	coho	500
	Larson Elementary School	coho	500
	Little Fireweed Academy	coho	500
	Louise Farm School	coho	500
	Machetanz Elementary School	coho	500
	McGlaughlin Youth Center	coho	500
	McNeil Canyon Elementary	coho	500
	Meadow Lakes Elementary	coho	500
	Midnight Sun Elementary School	coho	500
	Mirror Lake Middle School	coho	500
	Mt. View Elementary	coho	500
	Nanwalek School	pink	500
	Newhalen School	coho	500
	Nikiski North Star Elementary	coho	500
	Nikolaevsk Elementary	coho	500
	Ninilchik School	coho	500
	Northern Lights ABC	coho	500
	Nunaka Valley Elementary	coho	500
	Oceanview Elementary	coho	500
	Paul Banks Elementary	coho	500
	Pioneer Peak Elementary	coho	500
	Polaris K-12	coho	500
	Port Graham School	pink	500
	Rabbit Creek Elementary	coho	500
	Razdolna School	coho	500
	Redoubt Elementary School	coho	500
	Seward Elementary School	coho	500
	Seward Middle School	coho	500
	Shaw Elementary School	coho	500
	Sherrod Elementary	coho	500
	Snowshoe Elementary	coho	500
	Soldotna Elementary School	coho	500
	Soldotna Prep Middle School	coho	500
	Spring Hill Elementary	coho	500
	Sterling Elementary School	coho	500
	Stream Academy	coho	500
	Swanson Elementary School	coho	500
	Talkeetna Elementary	coho	500
	Tanalian School	coho	500
	Teeland Middle School	coho	500
	The Study School	coho	500
	Trailside Elementary	coho	500
	Tustumena Elementary	coho	500
	Voznesenka School	coho	500

-continued-

Table 17.–Page 4 of 4.

Area	Permittee	Species	Maximum number to be collected
Arctic-Yukon-Kuskokwim			
	Wasilla High School	coho	500
	West High School	coho	500
	West Homer Elementary	coho	500
	Whaley School 6-12	coho	500
	William Tyson Elementary	coho	500
	Willow Crest Elementary	coho	500
	Willow Elementary	coho	500
	Delta Elementary	coho	500
	Delta Junior School	coho	200
	Emmonak School	coho	500
	Gladys Jung	coho	500
	Ladd Elementary	coho	250
	Pearl Creek Elementary	coho	250
	Scammon Bay	pink	300
	Ticasuk Brown Elementary	coho	250
	Two Rivers School	coho	250
	University Park Elementary	coho	250
	Watershed Charter School	coho	250
	Weller Elementary	coho	250
	Woodriver Elementary	coho	250
Westward			
	East Elementary School	coho	500
	Kodiak Christian School	coho	500
	Kodiak High School	coho	500
	Main Elementary	coho	500
	North Star Elementary	coho	500
	Peterson Elementary School	coho	500
	Pribilof School District	coho	500
	St. Mary's School	coho	500

Table 18.–Details of the estimated Chinook salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Highlighted numbers are updated numbers from the Alaska salmon fisheries enhancement 2015 annual report (Stopha 2016).

Region	Area	Agency	Hatchery	Project	Common Property Harvest				Broodstock	Cost Recovery	Other	Total Return
					Seine	Gillnet	Troll	Sp/PU/S				
Southeast												
	Southern Southeast											
		SSRAA	Crystal Lake	Crystal Lake	28	794	979	302	1,494		903	4,500
				Anita Bay	4,849	17,144	3,340				490	25,823
			Neets Bay	Neets Bay	9,661	2,598	5,279	937		2,005		20,480
			Whitman Lake	Whitman Lake	17	355	2,905	2,883	1,887	3,959	1,296	13,302
		KTHC	Deer Mountain	Deer Mountain								
		POWHA	Port Saint Nicholas	Port Saint Nick Bay	26	28	190	56		302		602
				Coffman Cove	7	243	123	25		145		543
	Southern Southeast Total				14,588	21,162	12,816	4,203	3,381	6,411	2,689	65,250
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls	800	117	743	367	659		139	2,825
				Lutak Inlet								
			Medvejie Creek	Medvejie Creek	3,455	3,252	9,632	1,692	6,067	2,725	688	27,511
		AKI	Port Armstrong	Port Armstrong	4		64	1	650	1,137		1,856
		DIPAC	Macaulay	Macaulay Hatchery	54	502	269	2,555	810	26	353	4,569
				Lutak Inlet								-
				Skagway site			10	151				161
		FED	Little Port Walter	L Port Walter	82	14	1,323	22	772		251	2,464
		SSSC	Sheldon Jackson	Sheldon Jackson			16	3				19
	Northern Southeast Total				4,395	3,885	12,057	4,791	8,958	3,888	1,431	39,405
Southeast Total					18,983	25,047	24,873	8,994	12,339	10,299	4,120	104,655
Southcentral												
	Cook Inlet											
		ADF&G	WJ Hernandez	Crooked Cr					2,175		510	2,685
				Deception Cr					226		41	267
				Eklutna Tailrace				956				956
				Ninilchik R					573		135	708
				Ship Creek				1,777	1,437		646	3,860
	Cook Inlet Total							2,733	4,411	0	1,332	8,476
Southcentral Total								2,733	4,411	0	1,332	8,476
Kodiak/Westward												
	Kodiak											
		KRAA	Pillar Creek	Kodiak Road Sys Lakes				1,391	74			1,465
	Kodiak Total							1,391	74			1,465
Kodiak/Westward Total								1,391	74			1,465
Statewide Total					19,000	25,000	25,000	13,000	17,000	11,000	5,500	115,000

Table 19.–Details of the estimated sockeye salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Highlighted numbers are updated numbers from the Alaska salmon fisheries enhancement 2015 annual report (Stopha 2016).

					Common Property Harvest							
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Troll	Sp/PU/S	Broodstock	Cost Recovery	Other	Total Return
	Southeast											
		DIPAC	Snettisham	Snettisham	21,638	34,702			6,709	74,866	20,381	158,296
				Sweetheart L	317	165		1,714				2,196
				Stikine R								0
				Taku R								0
Southeast Total					21,955	34,867	0	1,714	6,709	74,866	20,381	160,492
Southcentral												
	Prince William Sound											
		PWSAC	Gulkana I and II	Gulkana		137,415		59,178	16,516		23,607	236,716
			Main Bay	Main Bay	175,819	1,167,217		1,500	15,250	180,516	16,005	1,556,307
	Prince William Sound Total				175,819	1,304,632		60,678	31,766	180,516	39,612	1,793,023
	Cook Inlet											
		CIAA	Trail Lakes	Bear L	4,633			12,000	3,945	92,596	11,685	124,859
				English Bay Lk				90			789	879
				Hidden L		7,933		7,755	890		12,253	28,831
				Kirschner L					3,666	23,571		27,237
				Leisure/Hazel L	4,516			500				5,016
				Tutka Bay	28,882	16,553		500	6,769	31,105		83,809
	Cook Inlet Total				38,031	24,486		20,845	15,270	147,272	24,727	270,631
Southcentral Total					213,850	1,329,118		81,523	47,036	327,788	64,339	2,063,654
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	48,843			80	602	8,379	3,791	61,695
			Pillar Creek	Foul Bay	8,237			-			-	8,237
				Spiridon L	57,999	145,722		600		34,223	700	239,244
				Waterfall Bay				-			500	500
				Settlers Cove				2,129				2,129
	Kodiak Total				115,079	145,722	0	2,809	602	42,602	4,991	311,805
Kodiak/Westward Total					115,079	145,722	0	2,809	602	42,602	4,991	311,805
Statewide Total					351,000	1,510,000	0	86,000	54,000	445,000	90,000	2,500,000

Table 20.–Details of the estimated coho salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Highlighted numbers are updated numbers from the Alaska salmon fisheries enhancement 2015 annual report (Stopha 2016).

					Common Property Harvest							
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Troll	Sp/PU/S	Broodstock	Cost Recovery	Other	Total Return
Southeast												
	Southern Southeast											
		SSRAA	Burnett Inlet	Burnett Inlet	608	5,925	1,313	863	3,270	4,100	1,500	17,579
				Neck L	1,399	30,375	2,756	29,140		37,950		101,620
				Anita Bay	106	2,857	2,551	115				5,629
			Crystal Lake	Crystal Lake	118	655	3,065	76	329		500	4,743
			Neets Bay	Neets Bay	24,542	28,287	58,178	7,124	2,286	2,366		122,783
			Whitman Lake	Whitman Lake	893	977	6,410	786	3,853			12,919
				Anita Bay	196	5,258	4,694	212				10,360
				Nakat Inlet	827	17,554	7,308	456				26,145
		KTHC	Deer Mountain	Deer Mountain								0
		POWHA	Klawock River	Klawock Lake	28,005	167	94,965	6,468	3,685	34,178	32,513	199,981
	Southern Southeast Total				56,694	92,055	181,240	45,240	13,423	78,594	34,513	501,759
	Northern Southeast											
		NSRAA	Hidden Falls	Hidden Falls	857	130	15,622	889	19,813	12,676	8,049	58,036
				Deer Lake	1,996		69,449	2,636		56,729	14,873	145,683
				Cliff Lake			493					493
			Sawmill Creek	Deep Inlet	1,868	608	7,248	702	181		536	11,143
				Medvejie Creek	344	111	2,216	281	1,115		104	4,171
		AKI	Port Armstrong	Port Armstrong	3,189		74,731	462	7,525	120,422	38,213	244,542
		DIPAC	Macaulay	Macaulay Hatchery	794	6,885	17,281	13,989	962	32,690	1,830	74,431
		SSSC	Sheldon Jackson	Sheldon Jackson					7			7
	Northern Southeast Total				9,048	7,734	187,040	18,959	29,603	222,517	63,605	538,506
Southeast Total					65,742	99,789	368,280	64,199	43,026	301,111	98,118	1,040,265
Southcentral												
	Prince William Sound											
		PWSAC	W Noerenberg	Lake Bay	16,466	11,583		500	3,084			31,633
				Chenega				2,100				2,100
				Cordova				2,100				2,100
				Whittier				2,100				2,100
		VFDA	Solomon Gulch	Solomon Gulch	32,108			36,395	2,555	14,571	167	85,796
	Prince William Sound Total				48,574	11,583		43,195	5,639	14,571	167	123,729
	Cook Inlet											
		CIAA	Trail Lakes	Bear L				5,238	471		1,448	7,157
		ADF&G	WJ Hernandez	Bird Cr				4,201			1,003	5,204
				Eklutna Tailrace				2,224			-	2,224
				Ship Creek				7,232	1,558		665	9,455
	Cook Inlet Total							18,895	2,029		3,116	24,040
Southcentral Total					48,574	11,583		62,090	7,668	14,571	3,283	147,769

-continued-

Table 20.–Page 2 of 2.

Region	Area	Agency	Hatchery	Project	Common Property Harvest				Broodstock	Cost Recovery	Other	Total Return
					Seine	Gillnet	Troll	Sp/PU/S				
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	35,722	-	-	-	1,520	3,618	-	40,860
			Pillar Creek	Kodiak Road Sys Lakes	-	-	-	1,765	-	-	-	1,765
	Kodiak Total				35,722	0	0	1,765	1,520	3,618	0	42,625
Kodiak/Westward Total					35,722	0	0	1,765	1,520	3,618	0	42,625
Statewide Total					150,000	111,000	368,000	128,000	52,000	319,000	101,000	1,230,000

Table 21.–Details of the estimated pink salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Highlighted numbers are updated numbers from the Alaska salmon fisheries enhancement 2015 annual report (Stopha 2016).

					Common Property Harvest							
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Troll	Sp/PU/S	Broodstock	Cost Recovery	Other	Total Return
Southeast												
	Northern Southeast											
		NSRAA	Medvejie Creek	Medvejie Creek					8,310	36	800	9,146
		AKI	Port Armstrong	Port Armstrong	269,871				250,171	141,569	60,000	721,611
		KNFC	Gunnuk Creek	Gunnuk Creek								
		SSSC	Sheldon Jackson	Sheldon Jackson					4,520	116,411	1,250	122,181
	Northern Southeast Total				269,871	0	0	0	263,001	258,016	62,050	852,938
Southeast Total					269,871	0	0	0	263,001	258,016	62,050	852,938
Southcentral												
	Prince William Sound											
		PWSAC	AF Koernig	Armin F Koernig	9,287,046	9,276			244,902	1,074,146	15,000	10,630,370
			Cannery Creek	Cannery Creek	9,316,981	10,594			293,451	282,455	10,000	9,913,481
			W Noerenberg	Lake Bay	14,006,384	508,630			308,469	2,412,739	3,500	17,239,722
		VFDA	Solomon Gulch	Solomon Gulch	31,390,744	-		9,076	561,547	2,076,370	56,357	34,094,094
	Prince William Sound Total				64,001,155	528,500		9,076	1,408,369	5,845,710	84,857	71,877,667
	Cook Inlet											
		CIAA	Tutka Bay Lagoon	Tutka Bay	70,400	11,385		2,000	165,008	2,084,948	138,653	2,472,394
				Port Graham	19,896				1,740		14,791	36,427
	Cook Inlet Total				70,400	11,385		2,000	165,008	2,084,948	138,653	2,472,394
Southcentral Total					64,071,555	539,885		11,076	1,573,377	7,930,658	223,510	74,350,061
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	1,940,062				296,424	2,886,216	473,570	5,596,272
	Kodiak Total				1,940,062				296,424	2,886,216	473,570	5,596,272
Kodiak/Westward Total					1,940,062				296,424	2,886,216	473,570	5,596,272
Statewide Total					66,000,000	540,000	0	11,000	2,100,000	11,000,000	759,000	81,000,000

Table 22.–Details of the estimated chum salmon returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Hatchery operators had no changes from the returns reported in Stopha (2016).

					Common Property Harvest							
Region	Area	Agency	Hatchery	Project	Seine	Gillnet	Troll	Sp/PU/S	Broodstock	Cost Recovery	Other	Total Return
Southeast												
	Southern Southeast											
		SSRAA	Burnett Inlet	Anita Bay	131,966	193,005	1,809					326,780
			Neets Bay	Anita Bay	22,705	33,207	311					56,223
				Nakat Inlet	3,820	168,315	0					**172,135**
				Neets Bay	956,483	254,722	185,863		184,277	649,320	142,203	2,372,868
			Whitman Lake	Kendrick Bay	853,927	111,428	2,479					967,834
				Nakat Inlet	0	47,319	347,034					394,353
				Anita Bay	5,676	8,301	78					14,055
	Southern Southeast Total				1,974,577	816,297	537,574		184,277	649,320	142,203	4,290,193
	Northern Southeast											
		NSRAA	Haines Projects	Haines Projects		13,524					20,284	33,808
			Hidden Falls	Hidden Falls	49,417				224,330	4,728	10,460	288,935
				Southeast Cove					0	13,428	0	13,428
			Medvejie Creek	Medvejie Creek	1,232,635	611,930	203,775		88,302	6,511	3,527	2,146,680
		AKI	Port Armstrong	Port Armstrong	4,573		3,049		44,016	19,579	5,000	76,217
		DIPAC	Macaulay	Gastineau Channel	25,248	366,488	8,446	4,100	171,717	344,030	20,900	940,929
				Amalga Harbor	251,488	314,122	12,351			798,025		1,375,986
				Boat Harbor	12,344	443,555	4,129					460,028
				Limestone Inlet	3,958	142,217	1,324					147,499
		SSSC	Sheldon Jackson	Sheldon Jackson					498	765		1,263
				Deep Inlet	165,383	82,103	27,341		11,847	874	473	288,021
	Northern Southeast Total				1,745,046	1,973,939	260,415	4,100	540,710	1,187,940	60,644	5,772,794
Southeast Total					3,719,623	2,790,236	797,989	4,100	724,987	1,837,260	202,847	10,062,987
Southcentral												
	Prince William Sound											
		PWSAC	AF Koernig	Armin F Koernig	128,355	55,082						183,437
			W Noerenberg	Lake Bay	163,240	803,414		1,000	179,453	844,995	15,000	2,007,102
				Port Chalmers	13,371	130,273						143,644
	Prince William Sound Total				304,966	988,769	0	1,000	179,453	844,995	15,000	2,334,183
Southcentral Total					304,966	988,769	0	1,000	179,453	844,995	15,000	2,334,183
Kodiak/Westward												
	Kodiak											
		KRAA	Kitoi Bay	Kitoi Bay	41,988	0	0	0	71,456	1,422	11,848	126,714
	Kodiak Total				41,988	0	0	0	71,456	1,422	11,848	126,714
Kodiak/Westward Total					41,988	0	0	0	71,456	1,422	11,848	126,714
Statewide Total					4,100,000	3,800,000	798,000	5,100	976,000	2,700,000	230,000	12,500,000

Table 23.–Details of the estimated "other" hatchery-produced returns to Alaska fisheries enhancement projects, as reported by operators, 2015.
Note: Highlighted numbers are updated numbers from the Alaska salmon fisheries enhancement 2015 annual report (Stopha 2016).

Region	Area	Agency	Hatchery	Project	Species	Common Property Harvest		Total Return
						Sport	Broodstock	
Southcentral								
	Cook Inlet							
		ADF&G	WJ Hernandez	WJH Region II Lakes	Arctic Char	659	69	728
					Grayling	156		156
					Landlocked Salmon	2,922		2,922
					Rainbow	27,009	4,674	31,683
	Cook Inlet Total					30,746	4,743	35,489
Southcentral Total						30,746	4,743	35,489
Arctic/Yukon/Kuskokwim								
		ADF&G	Ruth Burnett	Ruth Burnett	Arctic Char	733		733
					Grayling	737		737
					Landlocked Salmon	2,653		2,653
					Rainbow	9,965		9,965
Arctic/Yukon/Kuskokwim Total						14,088		14,088
Statewide Total						44,834		49,577

Table 24.–Summary of anadromous salmon production (all species) from Alaska hatcheries and fisheries enhancement projects, in millions, 1966–2016.

Year	Egg Takes	Fry Releases	Total Returns
1966	0	1	
1967	0	1	
1968	0	1	
1969	0	1	
1970	0	1	
1971	0	1	
1972	2	2	
1973	4	2	
1974	9	3	
1975	36	11	0
1976	61	13	0
1977	100	41	0
1978	134	75	0
1979	153	87	2
1980	299	96	3
1981	475	217	5
1982	548	365	7
1983	647	419	7
1984	829	512	8
1985	997	659	17
1986	1,025	763	13
1987	1,388	814	25
1988	1,341	1,115	18
1989	1,419	1,087	35
1990	1,602	1,154	49
1991	1,635	1,319	49
1992	1,725	1,324	23
1993	1,685	1,465	33
1994	1,759	1,299	56
1995	1,913	1,503	37
1996	1,688	1,638	50
1997	1,730	1,477	51
1998	1,773	1,451	56
1999	1,847	1,434	72
2000	1,734	1,470	63
2001	1,804	1,478	62
2002	1,866	1,484	49
2003	1,933	1,521	80
2004	1,734	1,648	46
2005	1,705	1,427	81
2006	1,822	1,433	47
2007	1,724	1,560	80
2008	1,661	1,487	60
2009	1,783	1,463	45
2010	1,808	1,561	91
2011	1,912	1,539	48
2012	1,744	1,674	47
2013	2,005	1,551	111
2014	1,908	1,765	62
2015	1,983	1,748	97
2016	1,887	1,661	27
Total	57,847	46,868	1,716

Table 25.–Summary of Chinook salmon production from Alaska hatcheries and fisheries enhancement projects, 1966–2016.

Year	Egg Takes (millions)	Fry Releases (millions)	Total Returns (thousands)
1966	0	0	0
1967	0	1	0
1968	0	0	0
1969	0	0	0
1970	0	0	0
1971	0	0	0
1972	0	0	0
1973	0	0	0
1974	0	1	0
1975	1	0	0
1976	1	0	0
1977	3	1	0
1978	2	1	0
1979	2	1	3
1980	3	1	7
1981	1	1	5
1982	3	1	12
1983	7	2	13
1984	10	4	21
1985	19	4	26
1986	16	6	40
1987	17	8	94
1988	18	9	75
1989	15	8	78
1990	17	10	118
1991	20	7	174
1992	13	10	132
1993	12	12	112
1994	13	10	127
1995	14	7	169
1996	12	7	166
1997	12	7	150
1998	13	7	104
1999	12	8	114
2000	12	8	174
2001	14	9	188
2002	19	8	157
2003	15	10	159
2004	16	10	207
2005	15	10	139
2006	17	10	108
2007	17	11	137
2008	18	11	140
2009	17	12	116
2010	13	11	106
2011	13	8	131
2012	11	10	93
2013	14	9	124
2014	14	9	92
2015	14	9	113
2016	12	11	72
Total	506	299	3,996

Table 26.–Summary of sockeye salmon production from Alaska hatcheries and fisheries enhancement projects, 1972–2016.

Year	Egg Takes (millions)	Fry Releases (millions)	Total Returns (thousands)
1972	0	0	0
1973	2	0	0
1974	2	1	0
1975	8	1	0
1976	24	2	0
1977	19	14	27
1978	35	16	13
1979	30	17	318
1980	38	15	700
1981	51	28	401
1982	59	45	56
1983	68	53	210
1984	86	52	382
1985	108	73	754
1986	102	77	1,296
1987	107	60	992
1988	107	69	1,651
1989	112	77	2,037
1990	99	74	4,165
1991	113	70	5,432
1992	104	74	4,185
1993	122	61	5,139
1994	114	78	4,177
1995	115	81	1,505
1996	127	75	2,911
1997	97	77	3,304
1998	95	71	2,488
1999	91	66	3,588
2000	73	60	2,076
2001	89	39	3,329
2002	92	67	3,645
2003	94	64	4,750
2004	60	71	3,554
2005	81	39	2,761
2006	92	53	2,618
2007	83	63	2,347
2008	79	61	1,781
2009	80	57	1,791
2010	81	56	2,548
2011	91	54	3,036
2012	86	61	2,642
2013	83	57	2,351
2014	75	60	2,718
2015	68	59	2,500
2016	73	49	1,800
Total	3,415	2,297	91,179

Table 27.–Summary of coho salmon production from Alaska hatcheries and fisheries enhancement projects, 1966–2016.

Year	Egg Takes (millions)	Fry Releases (millions)	Total Returns (thousands)
1966	0	1	0
1967	0	1	0
1968	0	1	0
1969	0	1	0
1970	0	1	0
1971	0	0	0
1972	2	2	0
1973	2	2	0
1974	1	2	0
1975	7	4	0
1976	5	3	0
1977	5	5	13
1978	6	3	0
1979	4	3	71
1980	4	2	21
1981	8	3	55
1982	17	3	108
1983	17	10	96
1984	21	11	180
1985	21	15	309
1986	22	13	659
1987	26	15	455
1988	28	19	287
1989	24	16	503
1990	22	18	946
1991	24	14	1,287
1992	21	15	1,397
1993	25	15	1,023
1994	28	18	1,327
1995	27	21	1,313
1996	30	21	1,369
1997	34	23	1,088
1998	29	21	1,393
1999	23	22	1,542
2000	33	15	1,655
2001	32	20	1,799
2002	35	21	2,120
2003	38	19	1,495
2004	33	23	1,203
2005	33	22	1,444
2006	36	22	1,361
2007	34	26	1,133
2008	40	25	1,453
2009	39	24	1,152
2010	35	29	1,359
2011	42	30	1,420
2012	41	25	973
2013	36	28	1,743
2014	41	28	2,058
2015	36	31	1,200
2016	36	28	790
Total	1,103	736	39,799

Table 28.–Summary of pink salmon production from Alaska hatcheries and fisheries enhancement projects, 1973–2016.

Year	Egg Takes (millions)	Fry Releases (millions)	Total Returns (thousands)
1973	1	0	0
1974	5	0	0
1975	15	5	6
1976	23	4	8
1977	66	18	147
1978	79	50	202
1979	91	60	1,224
1980	181	64	2,318
1981	328	140	4,396
1982	344	252	6,610
1983	406	261	5,939
1984	443	338	5,866
1985	604	366	14,158
1986	511	484	8,739
1987	859	432	21,860
1988	797	730	13,767
1989	975	675	31,476
1990	1,013	811	41,631
1991	998	862	39,493
1992	1,077	797	14,429
1993	1,031	919	20,497
1994	1,076	787	41,055
1995	1,162	921	24,770
1996	929	999	29,214
1997	1,064	892	33,957
1998	1,119	873	38,651
1999	1,085	878	51,973
2000	1,074	880	40,395
2001	1,101	942	47,247
2002	1,168	938	30,835
2003	1,108	962	59,773
2004	960	965	30,565
2005	949	808	69,076
2006	964	809	26,702
2007	952	851	64,308
2008	908	823	43,411
2009	943	818	29,276
2010	979	855	73,849
2011	1,023	883	31,623
2012	861	943	27,999
2013	1,133	798	91,790
2014	1,059	1,016	49,123
2015	1,082	948	81,000
2016	968	894	13,000
Total	33,514	27,753	1,262,359

Table 29.–Summary of chum salmon production from Alaska hatcheries and fisheries enhancement projects, 1974–2016.

Year	Egg Takes (millions)	Fry Releases (millions)	Total Returns
1974	1	0	0
1975	5	1	0
1976	7	2	0
1977	8	3	0
1978	12	4	3
1979	26	7	6
1980	74	13	16
1981	87	46	53
1982	125	63	153
1983	149	94	301
1984	269	108	1,809
1985	245	201	1,404
1986	374	182	1,939
1987	380	298	1,963
1988	392	289	2,653
1989	294	310	1,347
1990	450	241	2,037
1991	480	365	2,181
1992	510	428	3,094
1993	496	459	6,707
1994	529	407	8,989
1995	596	473	9,533
1996	590	535	16,353
1997	524	478	12,761
1998	517	479	13,407
1999	636	461	15,073
2000	541	508	18,806
2001	568	467	9,166
2002	551	451	12,568
2003	679	466	13,710
2004	665	578	10,939
2005	627	549	7,558
2006	714	539	15,714
2007	639	609	12,338
2008	615	567	13,655
2009	705	552	12,670
2010	700	609	12,955
2011	743	563	11,627
2012	743	635	15,544
2013	739	659	15,377
2014	720	651	8,041
2015	786	701	13,000
2016	795	677	11,500
Total	19,305	15,732	316,949

Table 30.–Summary of commercial harvest of salmon from Alaska fisheries enhancement projects, 1977–2016.

Year	Total Commercial Carvest[a]	Total Cost Recovery Harvest	CCPH[b]	Hatchery-Produced Fish in CCPH[b]	% Hatchery-Produced Fish in Total Commercial Harvest	% Hatchery-Produced Fish in CCPH[b]
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%

Source: Total commercial harvest 1977–1984 from ADF&G HQ fish ticket staff. 1985–2016 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.

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

[b] CCPH = commercial common property harvest

Table 31.–Summary of statewide commercial harvest (including cost recovery) of hatchery-produced salmon from Alaska's fisheries enhancement projects, in thousands of fish, 1977–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977	-	0	-	126	-	126
1978	0	1	-	127	2	130
1979	0	301	-	532	2	835
1980	4	638	0	1,406	9	2,057
1981	2	362	49	3,904	40	4,357
1982	3	28	84	6,067	74	6,256
1983	1	158	81	5,256	210	5,706
1984	5	237	136	4,839	1,550	6,766
1985	10	447	197	12,891	1,118	14,664
1986	14	873	389	7,630	1,330	10,236
1987	23	613	172	19,819	1,378	22,005
1988	29	1,001	117	12,099	1,953	15,200
1989	35	1,343	279	28,403	956	31,016
1990	65	1,366	681	39,580	1,487	43,179
1991	72	2,289	922	36,247	1,849	41,379
1992	55	1,499	1,038	12,221	2,398	17,210
1993	56	2,062	621	18,023	5,919	26,682
1994	43	1,610	1,024	38,814	7,977	49,469
1995	79	1,075	840	22,715	8,641	33,350
1996	89	2,317	931	26,179	13,975	43,491
1997	66	2,500	721	30,983	11,758	46,027
1998	36	1,882	944	34,564	12,623	50,049
1999	47	2,568	1,180	47,193	14,144	65,133
2000	82	1,521	1,180	38,191	17,685	58,658
2001	91	2,499	1,245	44,616	8,359	56,810
2002	86	2,750	1,576	28,443	11,814	44,639
2003	89	3,695	1,102	55,072	12,765	72,721
2004	119	2,670	834	28,309	10,058	41,990
2005	73	1,972	1,022	64,950	6,655	74,673
2006	55	2,136	1,032	24,774	14,544	42,540
2007	84	2,033	809	62,678	11,474	77,078
2008	97	1,510	1,123	42,076	12,821	57,627
2009	83	1,534	813	27,484	11,766	41,680
2010	74	2,061	917	72,485	11,854	87,390
2011	101	2,673	1,073	29,877	10,256	43,980
2012	72	2,304	678	26,699	14,109	43,863
2013	96	1,801	1,518	88,943	14,227	106,585
2014	66	2,294	1,772	47,235	6,882	58,249
2015	77	2,320	936	77,896	11,327	92,557
2016	44	1,758	536	11,527	9,914	23,780
Total	2,131	62,702	28,572	1,180,874	285,901	1,560,142

Source: ADF&G PNP hatchery database.

Table 32.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Southeast Alaska fisheries enhancement projects, 1977–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977			0	108,173		108,173
1978				0	2,214	2,214
1979	445		0	33,555	1,514	35,514
1980	4,388		0	500	5,627	10,515
1981	1,504		47,823	139,000	3,286	191,613
1982	3,352		82,458	16,568	64,874	167,252
1983	1,175		78,918	163,494	196,523	440,110
1984	5,234		134,482	235,694	1,465,670	1,841,080
1985	10,039		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
Total	2,104,867	6,282,633	21,610,749	48,179,885	215,713,040	293,891,174

Source: ADF&G PNP hatchery database.

Table 33.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Prince William Sound fisheries enhancement projects, 1977–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1977		183		17,545		17,728
1978		720		114,188		114,908
1979		900		498,748		499,648
1980		350		1,405,528	2,930	1,408,808
1981		3,600		2,138,544	36,686	2,178,830
1982		3,600		5,679,161	1,569	5,684,330
1983		6,600		4,385,455	13,108	4,405,163
1984		5,318		4,037,386	82,991	4,125,695
1985		31,955	0	8,067,647	64,137	8,163,739
1986		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		440,326	80,249	37,968,264	2,617,072	41,105,911
2000		490,077	478,633	33,040,270	4,690,867	38,699,847
2001		972,582	175,083	28,466,847	2,499,721	32,114,233
2002		1,163,539	36,232	18,771,143	6,111,569	26,082,483
2003		1,571,592	76,843	46,935,174	3,351,054	51,934,663
2004		694,501	46,578	20,422,252	1,745,266	22,908,597
2005		517,890	227,644	47,620,680	1,919,070	50,285,284
2006		1,183,213	340,551	19,835,604	2,034,278	23,393,646
2007		1,234,571	166,107	53,461,389	3,559,558	58,421,625
2008		856,523	297,900	39,783,382	4,743,408	45,681,213
2009		949,481	39,260	17,225,812	2,977,790	21,192,343
2010		1,510,501	37,989	68,047,457	4,069,152	73,665,099
2011		1,757,043	206,733	26,362,128	1,650,418	29,976,322
2012		1,622,566	11,074	23,390,393	3,396,596	28,420,629
2013		1,041,824	258,104	74,616,332	3,640,837	79,557,097
2014		1,494,284	180,742	40,921,607	1,102,613	43,699,246
2015		1,660,967	74,728	70,375,473	2,138,730	74,249,898
2016		1,030,867	8,653	9,930,534	2,924,763	13,894,817
Total	9,022	26,192,784	4,153,905	956,499,492	65,464,763	1,052,319,966

Table 34.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Cook Inlet fisheries enhancement projects, in thousands of fish, 1978–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1978	42	0	0	0		42
1979	0	299,858	0	0		299,858
1980	0	638,058	102	0		638,160
1981		358,726	1,034	963,350		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		2,238,102
2000	0	310,815	5,370	1,052,285		1,368,470
2001	0	724,095	7,133	530,265		1,261,493
2002	57	840,439	9,032	1,051,320		1,900,848
2003	772	1,204,972	5,849	619,079		1,830,672
2004	2,008	1,142,202	7,631	2,460,712		3,612,553
2005	626	999,050	1,536	2,143,317		3,144,529
2006	639	460,023	600	251,781		713,043
2007	467	402,332	48	112,801		515,648
2008	0	223,062	350	0		223,412
2009	30	201,778	0			201,808
2010	0	148,478	0			148,478
2011	0	254,223	0			254,223
2012	0	138,961	0			138,961
2013	0	118,069	0	66,581		184,650
2014	0	209,311	0	25,430		234,741
2015	0	209,789	0	2,166,733		2,376,522
2016	0	218,624	0	84,002		302,626
Total	9,652	16,634,143	175,183	25,984,429	378,029	43,182,066

Table 35.–Summary of commercial harvest (including cost recovery) of hatchery-produced salmon from Kodiak fisheries enhancement projects, in thousands of fish, 1981–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981				663,414		663,414
1982				190,300		190,300
1983				130,000		130,000
1984				335,600		335,600
1985			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		800,000	0	6,492,489	0	7,292,489
1990		800,000	5,000	539,483	4,100	1,348,583
1991		1,111,200	9,709	1,397,600	361,719	2,880,228
1992		278,800	740	852,295	3,532	1,135,367
1993		699,042	16,016	12,278,700	34,525	13,028,283
1994		881,518	46,784	2,054,663	5,007	2,987,972
1995		172,040	50,235	4,513,653	215,311	4,951,239
1996		510,379	56,850	974,400	14,200	1,555,829
1997		408,959	108,940	1,211,128	11,021	1,740,048
1998		684,331	149,833	6,272,000	38,000	7,144,164
1999		839,506	115,900	4,057,000	140,900	5,153,306
2000		460,098	133,238	3,659,698	303,783	4,556,817
2001		411,527	151,732	13,272,127	216,625	14,052,011
2002		625,581	209,259	6,696,774	88,724	7,620,338
2003		799,382	135,049	6,587,893	466,205	7,988,529
2004		277,331	138,136	3,962,421	239,610	4,617,498
2005		215,236	151,729	13,603,742	91,814	14,062,521
2006		114,902	168,205	4,158,109	177,548	4,618,764
2007		207,924	125,781	7,884,867	220,726	8,439,298
2008		316,430	120,366	2,118,392	93,025	2,648,213
2009		246,067	154,562	8,939,565	100,999	9,441,193
2010		310,589	113,675	3,238,678	191,284	3,854,226
2011		491,670	70,335	2,174,871	320,532	3,057,408
2012		323,637	48,353	2,968,070	218,740	3,558,800
2013		462,097	52,732	11,759,018	97,380	12,371,227
2014		374,571	230,590	5,776,060	45,582	6,426,803
2015		303,403	39,340	4,826,278	43,410	5,212,431
2016		231,109	11,810	1,153,503	69,812	1,466,234
Total	250	13,592,866	2,631,099	150,197,652	4,160,341	170,582,208

Table 36.–Actively operated Alaska hatcheries contact information, 2016.

[a]	Agency	Address	City, State, Zip	Office phone	Hatchery	Hatchery Manager	Director	Email
Southern Southeast								
R	SSRAA	14 Borch Street	Ketchikan, AK 99901	(907) 225-9605			Dave Landis	davidl@ssraa.org
				(907) 254-1242	Burnett Inlet	Jon Thorington		burnettinlet@starband.net
				(907) 650-7077	Crystal Lake[b]	Loren Thompson		loren.crystallake@gmail.com
				(907) 225-8790	Neets Bay	Steve Hilton		neetsbay@ssraa.org
				(907) 225-2635	Whitman Lake	Jay Creasy		whitman@kpunet.net
				(907) 225-9606	Deer Mountain	Matt Allen		deermountain@ssraa.org
				(907)-247-8790	Neck Lake Project	Ron Parsley, Jr.		necklake@ssraa.org
				(907) 755-2231	Klawock River[b]	Jeff Lundberg	Jeff Lundberg	jlundberg@hughes.net
					Port Saint Nicholas	Jeff Lundberg	Jeff Lundberg	jlundberg@hughes.net
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			Steve Reifenstuhl	steve_reifenstuhl@nsraa.org
				(907) 725-0995	Hidden Falls[b]	Jon Pearce		jon_pearce@nsraa.org
				(907) 738-1438	Medvejie Creek	Adam Olson		adam_olson@nsraa.org
				(907) 747-5863	Sawmill Creek	Rebecca Olson		rebecca_olson@nsraa.org
N	AKI	PO Box 21990	Juneau, AK 99802	(907) 586-3443			Ian Fisk	aki@ak.net
				(907) 568-2228	Port Armstrong	Ben Contag		portarmstrong@starband.net
N	DIPAC	2697 Channel Dr.	Juneau, AK 99801	(907) 463-5114			Eric Prestegard	Eric_prestegard@dipac.net
				(907) 463-5114	Macaulay Salmon	Charlie Currit		charlie_currit@dipac.net
				(907) 463-5115	Snettisham[b]	Kevin Steck		kevin_steck@dipac.net
N	SSSC	834 Lincoln St	Sitka, AK 99835	(907) 747-8878	Sheldon Jackson	Angie Bowers	Lisa Busch	lbusch@sitkascience.org abowers@sitkascience.org
F	NMFS	17109 Lena Point Loop Rd	Juneau, AK 99801	(907) 789-6047	Little Port Walter[d]	John Eiler	Andrew Gray	john.eiler@noaa.gov andrew.gray@noaa.gov
Prince William Sound								
R	PWSAC	PO Box 1110	Cordova, AK 99574	(907) 424-7511			Dave Reggiani	dave.pwsac@ak.net
					AF Koernig	Chris Kelley		afk.pwsac@ak.net
					Cannery Creek[b]	Jon Palmer		cch.pwsac@ak.net
					Gulkana[b]	Gary Martinek		gkh.cvinternet@ak.net
					Main Bay[b]	Jason Myhrer		mbh.pwsac@ak.net
					W Noerenberg	Klint Hischke		wnh.pwsac@ak.net

-continued-

Table 36.–Page 2 of 2.

[a]	Agency	Address	City, State, Zip	Office phone	Hatchery	Hatchery Manager	Director	Email
Prince William Sound (cont.)								
N	VFDA	PO Box 125	Valdez, AK 99686	(907) 835-4874			Mike Wells	vfdamike@valdezfisheries.com
				(907) 835-1329	Solomon Gulch	Rob Unger		sghatchery@cvinternet.net
Cook Inlet								
R	CIAA	40610 Kalifornsky Beach Rd	Kenai, AK 99611	(907) 283-5761			Gary Fandrei	gfandrei@ciaanet.org
				(907) 288-3688	Trail Lakes[b]	Tom Prochazka		tprochazka_tlh@ciaanet.org
				(866) 309-0640	Tutka Bay Lagoon[b]	Wendy Perry		wperry_tblh@ciaanet.org
				(907) 283-5761	Port Graham	Peter Thompson		pthompson_pgh@ciaanet.org
Kodiak								
R	KRAA	104 Center Street Suite 205	Kodiak, AK 99615	(907) 486-6555			Tina Fairbanks	kraa.fairbanks@gci.net kraa@gci.net
				(907) 743-0617	Kitoi Bay[b]	Randy Mason		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	Andrea Tesch		andrea.tesch@alaska.gov
	1150 Wilbur Street		Fairbanks, AK 99701	(907) 451-2661	Ruth Burnett	Gary George		gary.george@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.

Table 37.–Active Alaska hatcheries, 2016.

[a]	Agency	Corporate name	Hatchery	PNP Permit #	PNP permit issued	Species permitted	Web Site
Southern Southeast							
R	SSRAA	Southern Southeast Regional Aquaculture Assoc.	Burnett Inlet	40	9/30/1997	sockeye, coho, chum	www.ssraa.org
			Crystal Lake[a]			Chinook, coho	
			Neets Bay	19	6/17/1983	chum, coho, Chinook	
			Whitman Lake	8	3/9/1978	chum, coho, Chinook	
			Klawock River[b]	38	2/19/1996	coho, sockeye, steelhead	
			Port Saint Nicholas	43	6/25/2004	Chinook, chum	
F	MIC	Tamgas Creek Hatchery	Tamgas Creek[c]			chum, coho, Chinook, sockeye	
Northern Southeast							
R	NSRAA	Northern Southeast Regional Aquaculture Assoc.	Hidden Falls[b]	28	6/22/1988	chum, Chinook, coho	www.nsraa.org
			Medvejie Creek	16	8/17/1981	chum, coho, Chinook, pink	
			Sawmill Creek	44	3/11/2007	Coho, chum	
N	AKI	Armstrong-Keta, Inc.	Port Armstrong	13	2/23/1981	pink, chum, Chinook, coho	www.armstrongketa.org
N	DIPAC	Douglas Island Pink and Chum, Inc.	Macaulay	25	6/3/1987	chum, pink, coho, Chinook	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	www.sitkasoundsciencecenter.org
F	NMFS	National Marine Fisheries Service	Little Port Walter[d]	NA		Chinook	www.afsc.noaa.gov/ABL/MSI/msi_lpw.htm
Prince William Sound							
R	PWSAC	Prince William Sound Aquaculture Association	AF Koernig	2	9/29/1975	pink, chum	www.pwsac@ak.net
			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, Incorporated	Solomon Gulch	15	6/26/1981	pink, coho, Chinook	

-continued-

Table 37.–Page 2 of 2.

[a]	Agency	Corporate name	Hatchery	PNP Permit #	PNP permit issued	Species permitted	Web Site
Cook Inlet							
R	CIAA	Cook Inlet Aquaculture Association	Trail Lakes[b]	27	6/22/1988	sockeye, coho, Chinook	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[c]	NA		char, grayling, rainbow trout, Chinook, coho	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	www.kraakodiak.org
Arctic-Yukon-Kuskokwim							
S	ADF&G	Alaska Department of Fish and Game	Ruth Burnett	NA		char, grayling, rainbow trout, Chinook, coho	www.adfg.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.

Table 38.–Permitted capacity of Alaska private nonprofit hatcheries, in millions of eggs, 2016.

Region/Area	Corp.	Hatchery	Chinook	Sockeye	Coho	Pink	Chum	Other	Total
Southeast									
Southern Southeast	SSRAA	Burnett Inlet		2.70	4.50		66.00		73.20
		Crystal Lake[a]	4.00		0.25				4.25
		Neets Bay	2.00		5.00		102.70		109.70
		Whitman Lake	2.10		7.00		44.30		53.40
	KTHC	Deer Mountain[b]	0.13		0.38			0.05	0.56
		Klawock River		5.00	5.00			0.05	10.05
		Port Saint Nicholas	0.77				8.0		8.77
	Southern Southeast Total		9.00	7.70	22.13		198.00	0.10	259.93
Northern Southeast	NSRAA	Haines projects[b]		2.00			4.80		6.80
		Hidden Falls	3.80		7.70		101.00[c]		112.50
		Medvejie Creek	5.20		3.30	0.30	77.00		85.80
		Sawmill Creek			4.33		30.00		34.33
	AKI	Port Armstrong[d]	2.00		5.00	105.00	60.00		172.00
	DIPAC	Macaulay	1.25		1.50		125.00	0.025	127.78
		Snettisham		33.50					33.50
	KNFC	Gunnuk Creek[b]			0.50	20.00	65.00		85.50
	SSSC	Sheldon Jackson			0.25	3.00	12.00		15.25
	Northern Southeast Total		12.25	35.50	22.73	178.30	444.80	0.025	673.46
Southeast Totals			16.65	43.20	44.86	178.30	636.80	0.125	933.39
Southcentral	Prince William Sound								
	PWSAC	Armin F. Koernig				162.00	34.00		196.00
		Cannery Creek				187.00			187.00
		Gulkana		36.75					36.75
		Main Bay		12.40					12.40
		Wally Noerenberg	4.00		4.00	148.00	131.00		287.00
	VFDA	Solomon Gulch	0.30		2.00	230.00			232.30
	Prince William Sound Totals		4.30	49.15	6.00	727.00	165.00		951.45
	Cook Inlet								
	CIAA	Eklutna[b]		18.00	0.16				18.16
		Trail Lakes	4.00	30.00	6.00				40.00
		Tutka Bay		0.66		125.00			125.66
		Port Graham				129.00			125.00
	Cook Inlet Totals		4.00	48.66	6.16	250.00			308.82
Southcentral Totals			8.30	97.81	12.16	977.00	165.00		1,260.27
Kodiak/Westward	Kodiak								
	KRAA	Kitoi Bay		0.85	2.30	215.00	36.00		254.15
		Pillar Creek	0.45	20.00	0.50			0.092	21.04
Kodiak/Westward Totals			0.45	20.85	2.80	215.00	36.00	0.092	275.19
Statewide Total			30.00	161.86	59.67	1,320.30	837.80	0.19	2,468.85

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

[b] Inactive

[c] A conditional additional capacity of 55 million chum salmon eggs can also be produced at Hidden Falls Hatchery to continue the Gunnuk Creek Hatchery releases at Southeast Cove. The conditional capacity cannot be in addition to the Gunnuk Creek Hatchery capacity. Gunnuk Creek Hatchery is not currently operational.

[d] 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.

Table 39.–Alaska salmon fisheries enhancement program timeline of events.

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-

Table 39.–Page 2 of 4.

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	Aquatic Farm Act signed; statute passes allowing contracting of hatchery operations			
	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 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	
	Fisheries Rehabilitation, Enhancement and Development Division merged with the Commercial Fisheries Division to form the Commercial Fisheries Management and Development Division			

-continued-

Table 39.–Page 3 of 4.

Year	Event	No. of state operated hatcheries	No. of PNP owned or operated hatcheries	No. of federal hatcheries
	3 state hatcheries transferred from Commercial Fisheries Management and Development to Sport Fish Division (Broodstock			
1993	Development Center, Elmendorf, and Ft. Richardson)	11	32	3
	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		
	1 PNP hatchery permit rescinded and new permit issued to new			
1995	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	
	1 PNP hatchery permit issued [Pillar Creek (#41), already operating			
1998	under contract]			
	1 state hatchery contracted to private sector [Crystal Lake Hatchery			
2000	(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-

Table 39.–Page 4 of 4.

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 & a new permit issued to new operator at Port Graham (#33, new #46)		31	
2014	1 state hatchery closed (Fort Richardson)	2	31	
2015	1 PNP Hatchery, Sheep Creek in Juneau, permit was voluntarily rescinded.	2	30	3

Notes: Six PNP hatchery facilities are permitted but currently inactive: Deer Mountain Hatchery (Ketchikan), Gunnuk Creek Hatchery (Kake), Perry Island Hatchery (Prince William Sound), Bell Island Hatchery (southern Southeast Alaska), Eklutna Hatchery (Eklutna), and Haines Projects Hatchery (Haines).

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 1 hatchery facility at Metlakatla is a tribal hatchery.