

**Fishery Management Report No. 14-60**

---

---

**2014 Report to the Alaska Board of Fisheries on the  
Status of the Allocation of Hatchery-Produced Salmon  
in the Southeast Alaska Region**

by

**Flip Pryor**

December 2014

---

---

Alaska Department of Fish and Game

Divisions of Sport Fish and 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, and Special Publications. 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.

<b>Weights and measures (metric)</b>		<b>General</b>	<b>Mathematics, statistics</b>
centimeter	cm	Alaska Administrative Code	<i>all standard mathematical signs, symbols and abbreviations</i>
deciliter	dL	all commonly accepted abbreviations	alternate hypothesis $H_A$
gram	g		base of natural logarithm $e$
hectare	ha		catch per unit effort CPUE
kilogram	kg	all commonly accepted professional titles	coefficient of variation CV
kilometer	km		common test statistics (F, t, $\chi^2$ , etc.)
liter	L	at	confidence interval CI
meter	m	compass directions:	correlation coefficient (multiple) R
milliliter	mL	east E	correlation coefficient (simple) r
millimeter	mm	north N	covariance cov
		south S	degree (angular) °
		west W	degrees of freedom df
		copyright ©	expected value $E$
<b>Weights and measures (English)</b>		corporate suffixes:	greater than >
cubic feet per second	ft <sup>3</sup> /s	Company Co.	greater than or equal to ≥
foot	ft	Corporation Corp.	harvest per unit effort HPUE
gallon	gal	Incorporated Inc.	less than <
inch	in	Limited Ltd.	less than or equal to ≤
mile	mi	District of Columbia D.C.	logarithm (natural) ln
nautical mile	nmi	et alii (and others) et al.	logarithm (base 10) log
ounce	oz	et cetera (and so forth) etc.	logarithm (specify base) log <sub>2</sub> etc.
pound	lb	exempli gratia (for example) e.g.	minute (angular) ' "
quart	qt	Federal Information Code FIC	not significant NS
yard	yd	id est (that is) i.e.	null hypothesis $H_0$
		latitude or longitude lat. or long.	percent %
		monetary symbols (U.S.) \$, ¢	probability P
<b>Time and temperature</b>		months (tables and figures): first three letters Jan, ..., Dec	probability of a type I error (rejection of the null hypothesis when true) $\alpha$
day	d	registered trademark ®	probability of a type II error (acceptance of the null hypothesis when false) $\beta$
degrees Celsius	°C	trademark ™	second (angular) "
degrees Fahrenheit	°F	United States (adjective) U.S.	standard deviation SD
degrees kelvin	K	United States of America (noun) USA	standard error SE
hour	h	U.S.C. United States Code	variance
minute	min	U.S. state	population Var
second	s		sample var
<b>Physics and chemistry</b>			
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		

***FISHERY MANAGEMENT REPORT NO. 14-60***

**2014 REPORT TO THE ALASKA BOARD OF FISHERIES ON THE  
STATUS OF THE ALLOCATION OF HATCHERY-PRODUCED SALMON  
IN THE SOUTHEAST ALASKA REGION**

by  
Flip Pryor  
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game  
Division of Sport Fish, Research and Technical Services  
333 Raspberry Road, Anchorage, Alaska, 99518-1565

December 2014

The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: <http://www.adfg.alaska.gov/sf/publications/>. This publication has undergone regional peer review.

*Flip Pryor,  
Alaska Department of Fish and Game, Division of Commercial Fisheries,  
802 3<sup>rd</sup> Street, Douglas, Alaska, USA*

*This document should be cited as:*

*Pryor, Flip. 2014. 2014 Report to the Alaska Board of Fisheries on the status of the allocation of hatchery-produced salmon in the Southeast Alaska Region. Alaska Department of Fish and Game, Fishery Management Report No. 14-60, Anchorage.*

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

**If you believe you have been discriminated against in any program, activity, or facility please write:**

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

**The department's ADA Coordinator can be reached via phone at the following numbers:**

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648,

(Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

**For information on alternative formats and questions on this publication, please contact:**

ADF&G Division of Sport Fish, Research and Technical Services, 333 Raspberry Road, Anchorage AK 99518 (907) 267-2375

# TABLE OF CONTENTS

	<b>Page</b>
LIST OF FIGURES.....	ii
LIST OF APPENDICES.....	ii
ABSTRACT.....	1
INTRODUCTION.....	1
BRIEF HISTORY OF THE ALLOCATION PLAN .....	1
DESTRPTION OF THE ALLOCATION PLAN .....	1
MECHANISM FOR CORRECTION .....	2
THE STATUS OF ALLOCATION .....	2
FACTORS AFFECTING THE ALLOCATION OF HATCHERY-PRODUCED SALMON .....	2
Hatchery Production and Limitations.....	3
Price.....	4
Chum Salmon.....	4
Coho Salmon.....	5
King Salmon .....	5
Sockeye Salmon .....	6
Pink Salmon .....	6
Actions Taken by the Regional Planning Team.....	6
FIGURES.....	9
APPENDIX A.....	25
APPENDIX B .....	27

## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
1. Value of Southeast Alaska hatchery-produced salmon in 5-year-rolling averages.....	10
2. Value of hatchery-produced salmon in Southeast Alaska. ....	11
3. Value of hatchery-produced salmon by gear group.....	12
4. Percentage of total Southeast Alaska hatchery-produced salmon value by species.....	13
5. Hatchery-produced chum salmon value by gear group. ....	14
6. Seine harvest of hatchery-produced chum salmon and price per pound, 1985-2013.....	15
7. Gillnet harvest of hatchery-produced chum salmon and price per pound, 1985-2013.....	16
8. Hatchery-produced chum salmon releases and marine survivals from NSRAA, SSRAA, and DIPAC. ....	17
9. Hatchery-produced coho salmon value by gear group. ....	18
10. Troll harvest of hatchery-produced coho salmon and price per pound, 1985-2013.....	19
11. Southeast Alaska hatchery-produced coho salmon releases and marine survivals. ....	20
12. Hatchery-produced king salmon value by gear group.....	21
13. Troll harvest of hatchery-produced king salmon and price per pound, 1985-2013. ....	22
14. Hatchery-produced king salmon releases and marine survivals from NSRAA, SSRAA, and DIPAC.....	23

## LIST OF APPENDICES

<b>Appendix</b>	<b>Page</b>
Appendix A1.–5 AAC 33.364 <i>Southeastern Alaska Area Enhanced Salmon Allocation Management Plan</i> .....	26
Appendix B1.–ALASKA BOARD OF FISHERIES, Finding #94-148-FB (Previously finding #94-02-FB) <i>Southeastern Alaska Area Enhanced Salmon Allocation Management Plan (5 AAC 33.364)</i> .....	28

## **ABSTRACT**

This report summarizes the development and implementation of the *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* [5 AAC 33.364], and the status of the allocation of hatchery-produced fish among the three commercial gear groups in the Southeast Region: drift gillnet, purse seine, and troll through 2013.

Key words: Hatchery-produced salmon, allocation, gillnet, seine, troll, chum salmon, king salmon, coho salmon, Alaska Board of Fisheries, Regional Planning Team, Southeast Alaska.

## **INTRODUCTION**

This report summarizes the development and implementation of the *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* [5 AAC 33.364], and the status of the allocation of hatchery-produced salmon among the 3 commercial gear groups (drift gillnet, seine, and troll) in the Southeast Region through 2013. At the present time the allocation of hatchery-produced salmon does not conform to the established guidelines. The value of hatchery-produced salmon harvested by the drift gillnet fishery is above their target allocation range, and the values of hatchery-produced salmon harvested by the purse seine and troll fisheries are below their target allocation ranges. Two factors outside of regulatory control, marine survival and price paid to fishermen, have exerted substantial influence on the distribution of benefits from the enhancement program.

## **BRIEF HISTORY OF THE ALLOCATION PLAN**

In early 1991 the Alaska Board of Fisheries (board) asked the commercial fishermen of Southeast Alaska, through the 2 Regional Aquaculture Associations, to develop a plan for the equitable sharing of the catch of hatchery-produced salmon. The Southeast Allocation Task Force (SATF) was formed to draft a plan. The SATF consisted of 6 voting members with 3 members from Northern Southeast Regional Aquaculture Association (NSRAA) and 3 members from Southern Southeast Regional Aquaculture Association (SSRAA), with equal representation from each of the 3 commercial gear groups. Non-voting members included Alaska Department of Fish and Game (department) staff, regional aquaculture association staff, and a non-regional aquaculture association staff representative from Douglas Island Pink and Chum, Incorporated (DIPAC). The allocation plan was developed through a lengthy public process, and in 1994 the board approved the plan, which is now *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* (AppendixA1). As set forth in board finding #94-148-FB (AppendixB1), and adopted as *Southeast Alaska* [5 AAC 40.345], the Joint Northern Southeast and Southern Southeast Regional Planning Team (Joint RPT) reviews the allocation of hatchery-produced salmon each spring and makes recommendations to the commissioner on production changes. The Joint RPT also makes recommendations to the board concerning fisheries adjustments within special harvest areas that would help move harvest values closer to target ranges laid out in the *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan*.

## **DESCRIPTION OF THE ALLOCATION PLAN**

The *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* delineates percentage ranges of the commercial harvest value that should be realized by each commercial gear group. Established ranges are: seine, 44%–49%; hand and power troll, 27%–32%; and drift gillnet, 24%–29%. Harvest value is derived from: 1) the number of hatchery-produced fish

harvested by each commercial gear group based primarily on marking or tagging programs reported by hatchery operators, 2) average price per pound by gear type computed by the Commercial Fisheries Entry Commission (CFEC), and 3) average weights calculated by CFEC and published in the annual department report to the board (*Commercial, Personal Use, and Subsistence Salmon Fisheries: Reports to the Alaska Board of Fisheries*) with the exception of the SSRAA chum salmon report, which is provided by the operator. Allocation percentages are evaluated as 5-year rolling averages. If a gear group is out of its allocation range for 3 consecutive 5-year averages, some adjustment in production or harvest may be implemented to bring a gear group back into its range.

The board finding #94-148-FB is associated with the allocation management plan. It provides a detailed explanation of the plan development process, includes the *Report of the Southeast Alaska Allocation Task Force for Enhanced Salmon*, and contains flexible guidelines for plan implementation.

## **MECHANISM FOR CORRECTION**

The tools for making adjustments to the distribution of the harvest in order to achieve allocation percentage targets are: 1) special harvest area and/or terminal harvest area management adjustments, 2) new hatchery production, and 3) modification of existing hatchery production, including remote releases (Guideline #13 in Finding #94-148-FB). Special harvest area management adjustments are used for short-term corrections. New production or modification of existing production are long-term remedies, and can be initiated by hatchery organizations requesting permit changes or by the Joint RPT making recommendations to the commissioner.

## **THE STATUS OF ALLOCATION**

The status of the allocation of hatchery-produced salmon through 2013 is shown in Figure 1. The data used in this report include finalized data from 1985 to 2012 and preliminary 2013 data. PNP operators will finalize 2013 fish numbers with updates in their 2014 annual reports. Finalized 2013 allocation values and preliminary 2014 allocation values will not be available until they are presented to the Joint RPT in April 2015. The 5-year rolling averages for all 3 gear groups have been out of their target ranges for more than 3 consecutive years. The 5-year average seine harvest value has been below the target range since 2005. The 5-year average troll harvest value has been below the target range since 1995 and the 5-year average gillnet harvest value has been above the target range since 2004.

## **FACTORS AFFECTING THE ALLOCATION OF HATCHERY-PRODUCED SALMON**

The allocation of hatchery-produced salmon between the 3 gear groups is relative to the total value ( $A+B+C=100\%$ ). An increase of value percentage in one gear group will mean a corresponding decrease in one or both of the other 2 gear groups (if A increases, then  $B+C$  must decrease by the same amount). For this reason, it is possible for a gear group to lose allocation percentage even if the value of hatchery-produced salmon caught by that group increases year after year. This is possible if the value of 1 or both of the other 2 groups is increasing at a faster rate (if  $A+B$  increases, then C must decrease by the same amount).

The overall value of hatchery-produced salmon in Southeast Alaska has been on an upward trend since 2002, with all 3 gear groups benefitting (Figures 2 and 3). Chum salmon continue to be the

dominant contributor to the value of hatchery-produced salmon in Southeast Alaska (Figure 4). Details of how all species affect the overall value of hatchery-produced salmon can be found later in this report.

The Joint RPT has been annually reviewing the allocation of hatchery-produced salmon since the allocation plan was adopted in 1994. The Joint RPT annually makes a recommendation concerning hatchery-produced salmon to the commissioner and has also made recommendations to the board. Additional detail of the Joint RPT can be found in the *Action Taken by the Regional Planning Team* section below.

A department report has been written on the status of allocation of hatchery-produced salmon to update the board every 3-year cycle since the allocation plan was adopted in 1994. This report monitors trends in harvest, price per pound, marine survival, and hatchery releases for the species most important to the troll fleet (king and coho salmon) and to the net fleets (chum salmon). A series of graphs appear in the *Figures* section of this report to visually display trends in the data since 1985. Trend lines on the graphs are 3-point polynomials. All data for these tables are from the department statewide hatchery database, with the exception of marine survival for king and chum salmon which return over multiple years. The best available data for survival by brood year was provided by NSRAA, SSRAA, and DIPAC. Complete return data for brood year 2007 king salmon and brood year 2008 chum salmon is available using harvest data through 2013.

## **HATCHERY PRODUCTION AND LIMITATIONS**

Southeast Alaska hatcheries have production limitations in the form of freshwater availability and the physical footprint needed for freshwater rearing. Large numbers of salmon eggs can be incubated in hatchery buildings and reared to the fry stage using a relatively small amount of water and physical space. Freshwater rearing, usually in round ponds or raceways, uses significantly more water and requires a large amount of flat space. Pink and chum salmon can be ponded as fry straight out of the hatchery building into saltwater net pens and reared to the smolt stage (2 to 4 grams) in just a few months. The short rearing time and small release size keep costs down. This explains why large numbers of pink and chum salmon can be raised relatively cheaply (pennies per smolt). King, coho, and sockeye salmon require a full year of freshwater rearing in relatively high flow raceways before they can be moved to saltwater net pens and be reared to their smolt stage (20 to 30 grams). The limitation of rearing space, the larger size at release, and the high cost associated with a full year of feeding explains why much smaller numbers of these species can be raised and at a much higher cost (dollars per smolt). Southeast hatcheries are very close to maximum production of king and coho salmon without major upgrades to infrastructure or building new hatcheries. Some increases in production may come from experimental rearing practices such as zero-check rearing programs which utilize water temperature manipulation, photoperiod manipulation, and manipulation of diet to trigger smolting in just a few months. Several hatcheries in Southeast have experimented with zero-check king salmon programs; however, success of these programs has been limited.

The inherent risk of adjusting production to correct an imbalance is the lag times from egg take to harvest. This is especially true for king and chum salmon due to their longer life cycle. A decision to modify production numbers in a given brood year requires 4 years for the majority of fish to return for chum salmon, and 5 years for king salmon. In the worst-case scenario, a decision to *increase* production results in little or no increased harvest value, if survivals and

prices decline. A decision to *decrease* production could result in a magnified drop in harvest value, if survivals and prices decline.

## **PRICE**

Prices in this report come from CFEC. On an annual basis, CFEC calculates estimates of salmon exvessel prices using the department's Commercial Operator's Annual Reports (COAR) and fish tickets. The Joint RPT submits a query to CFEC requesting preliminary price data for the Southeast area by species and gear group at the end of each calendar year. Final prices are determined the following year. The seine and gillnet prices are for whole fish. All troll prices are for gutted, head-on, except chum salmon prices which are for whole fish.

## **CHUM SALMON**

Chum salmon are the dominant contributor to the overall value of hatchery-produced salmon, making up 77% of the value over the last 10 years. The 2 net gear groups receive the majority of hatchery-produced chum salmon value (Figure 5). In 2012, both of the net fleets caught a record high value of hatchery-produced chum salmon. In 2013, the troll fleet caught a record high value of hatchery-produced chum salmon. The large decrease in overall value in 2013 was caused by a decrease in value of hatchery-produced chum salmon, driven by lower price and lower average weight compared to the previous record year.

The most recent 10-year average value of seine caught hatchery-produced chum salmon is \$13.6 million. In 2012, the seine fleet harvested 4.2 million hatchery-produced chum salmon which had a record setting value of over \$34 million. That harvest was only the eighth largest harvest in numbers of hatchery-produced salmon since the allocation plan was adopted in 1994, but it was coupled with the second highest price (Figure 6). Also in 2012, the average Southeast seine harvested chum salmon was 9 pounds, which is significantly larger than the previous 10-year average of 8.3 pounds. In 2013, the seine fleet harvested 4.5 million hatchery-produced chum salmon worth \$18 million. The reduction in value is due to a decrease in price from \$0.86 in 2012 to \$0.52 in 2013 and a significant decrease in weight to 7.8 pounds. Another example of price and weight affecting the seine fleet value of hatchery-produced chum salmon is seen in the harvest of larger than average fish during the late 1990s that compensated for prices under \$0.30, and resulted in a high economic return.

The most recent 10-year average value of gillnet caught hatchery-produced chum salmon is \$12.1 million. The 10-year average includes eight of the top 10 harvests of hatchery-produced chum salmon on record (Figure 7). Gillnet prices have been upwardly trending reaching a peak price of \$0.89 in 2011, but dropped sharply in 2013 to \$0.60. Like the seine fleet, the gillnet fleet benefits significantly from larger fish. In 2012, the average Southeast gillnet harvested chum salmon was 9.4 pounds, which is significantly larger than the previous 10-year average of 8.7 pounds. In 2013, the average weight dropped to 8.0 pounds.

The troll fleet has shown that it can be effective at targeting chum salmon. The most recent 10-year average value of troll caught hatchery-produced chum salmon is just under \$2 million. This includes a record value of \$5 million in 2013 and over \$4 million in each of the 2 previous years. In both 2011 and 2012, the value of troll caught hatchery-produced chum salmon was the highest value of all troll caught hatchery-produced species. Since 2009, the value of troll caught hatchery-produced chum salmon has exceeded the value of troll caught hatchery-produced king salmon. Targeting hatchery-produced chum salmon has led to a significant increase in troll value

but will not necessarily lead to an increase in troll allocation percentage. For example in 2013, the troll fleet caught a record setting 936,000 hatchery-produced chum salmon worth an estimated \$5 million. While this is a significant amount of value, in that same year a portion of the seine fleet harvested approximately the same number of hatchery-produced chum salmon in four 6-hour openings in the Amalga Harbor Special Harvest Area alone. The 2013 troll harvest value of \$5 million was only 13% of the total value of hatchery-produced chum salmon in a year where the value of chum salmon made up 73% of the overall total hatchery-produced salmon value.

The 2013 release of 503 million chum salmon fry is up from the previous 10-year average of 416 million (Figure 8). Chum salmon production had been fairly flat since 2004, but increases in production have occurred as a way to address the allocation imbalance.

Marine survivals are beginning to trend upward but are nowhere near some of the high survival rates seen in the early 1990s. Recent trends in marine survival of chum salmon have had an impact on allocation. High survival rates of DIPAC-produced fish in Lynn Canal have benefited the gillnet fleet, while an overall drop in survival rates at Hidden Falls Hatchery have negatively affected the seine fleet.

## **COHO SALMON**

Coho salmon are the second largest contributor to the value of hatchery-produced salmon making up 11% of the value over the last 10 years. The troll fleet receives the majority of value from hatchery-produced coho salmon (Figure 9). The troll fleet not only catches the majority of these fish but they also receive a higher price per pound (gutted, head-on price) than the net fleets receive (whole fish price). In 2013, the troll caught price of coho salmon was \$1.61/pound which is up from the most recent 10-year average price of \$1.54/pound. These prices are significantly higher than the 1994 to 2003 average troll caught price of \$0.88/pound, when low price offset increased harvests (Figure 10). The 2013 troll harvest of hatchery-produced coho salmon is over 680,000 fish, which is significantly above the most recent 10-year average of 266,000 fish. Releases of coho salmon have shown a consistent increase; the 2013 release of just over 22 million coho salmon is above the recent 10-year average of 18 million fish (Figure 11). Due to the life history of coho salmon, marine survivals for all Southeast can be calculated fairly easily. The 2013 marine survival rate of 6.7% is up from the previous 10-year average of 5.6%. Overall, increased releases have led to relatively flat harvest rates, with the exception of 2013 where the harvest rate increased dramatically. In 2013, the drop in hatchery-produced chum salmon value, coupled with an increase in hatchery-produced coho salmon value, allowed the troll fleet to increase their allocation percentage.

## **KING SALMON**

King salmon have contributed 7% of the value of hatchery-produced salmon over the last 10 years. The troll fleet receives the majority of value from hatchery-produced king salmon but the value to the net fleets is increasing (Figure 12). Increased restraints imposed by the Pacific Salmon Treaty have limited the amount of fishing time for the troll fleet, which reduces the troll catch and allows more fish to return to the terminal areas. Projects specifically designed to help the troll fleet may be working against the allocation imbalance by providing significant value to the seine and gillnet fleets in the terminal areas. These projects do raise the value of the troll harvest, but may not necessarily lead to an increase in the troll allocation percentage.

In 2013, the troll caught price of king salmon was \$5.71/pound which is up from the most recent 10-year average of \$4.08/pound (Figure 13). This 10-year average includes 3 price data points from the years between 1990 and 2005 when low prices offset increased harvest rates. The 2013 troll harvest of 21,000 hatchery-produced king salmon is below the previous 10-year average of 25,000 hatchery-produced king salmon, but the 2013 value of \$1.5 million is above the previous 10-year average \$1.4 million. The 2013 release of 7.5 million king salmon from all Southeast hatcheries is below the previous 10-year average of 8.4 million. Marine survivals, provided by the operators, are shown in Figure 14. The most recent 10-year average marine survival is 1.7%.

## **SOCKEYE SALMON**

Sockeye salmon have contributed 3% of the value of hatchery-produced salmon over the last 10 years. The only hatchery currently producing sockeye salmon is DIPAC's Snettisham Hatchery. Sockeye salmon production at SSRAA's Burnett Inlet Hatchery began to be phased out in 2009 and the last program was discontinued in 2012. The most recent 10-year average of total hatchery-produced sockeye salmon value is just over \$1.0 million. The gillnet fleet harvests the majority of these fish, with a recent 10-year average value of \$888,000. The seine fleet harvests the rest of the hatchery-produced sockeye salmon with a recent 10-year average of \$140,000.

## **PINK SALMON**

Pink salmon have contributed 2% of the value of hatchery-produced salmon over the last 10 years. The only hatchery currently producing pink salmon is the Armstrong-Keta Incorporated, Port Armstrong Hatchery. In 2014, the Kake Nonprofit Fisheries Corporation, Gunnuk Creek Hatchery closed, ending a pink salmon program with a 20 million egg operating capacity. In that same year, Port Armstrong Hatchery increased pink salmon capacity by 20 million eggs for a new release site in Port Herbert. The most recent 10-year average of total hatchery-produced pink salmon value is \$622,000. The seine fleet harvests almost all of these fish, with a recent 10-year average of \$606,000. Since 2010, a growing number of hatchery-produced pink salmon are being detected in the troll catch. Port Armstrong Hatchery has intensified their otolith sampling program which will increase the accuracy of hatchery-produced pink salmon harvest estimates.

## **ACTIONS TAKEN BY THE REGIONAL PLANNING TEAM**

Two of the most influential factors affecting allocation are marine survival and price per pound, which are factors outside the control of the associations, the department, and the board. The Joint RPT has never suggested that the present allocation imbalance is due to failure of the associations to follow board allocation guidelines.

Joint RPT meetings are a forum to discuss hatchery production changes and possible modifications of the harvest of hatchery produced fish to address the allocation imbalance<sup>1</sup>. The Joint RPT operates on an understanding of the intent of the allocation plan to attempt to increase targeted production and/or harvest opportunity for the gear group(s) that is below allocation range using measures that do not significantly and directly penalize the historical harvest opportunities of the gear group(s) that is above allocation range.

---

<sup>1</sup> The role of the Joint RPT in making recommendations relative to allocation poses a unique situation for the 3 department representatives on the team. Department staff provide technical input and participates in team discussions, but only the 6 industry representatives on the Joint RPT vote on recommendations or proposals submitted to the board.

The Joint RPT has recommended to the commissioner that hatcheries continue to increase production, if possible, to help the gear group that is below its target allocation range.

During the 1999/2000 board cycle, the Joint RPT submitted 2 proposals, which were adopted, intended to increase opportunity for the troll fleet to harvest hatchery-produced king, coho, and chum salmon. The first proposal eliminated the chum salmon cap during the spring king salmon fishery near Hidden Falls Hatchery. The second proposal allowed the department to extend the length of the weekly Snow Passage spring fishery based on hatchery-produced coho salmon harvest. While both of these proposals may have increased value to the troll fleet, neither project has had a significant impact on allocation percentages.

During the 2008/2009 board cycle, the Joint RPT submitted a proposal, which was adopted, to change from a 2:1 to a 1:1 ratio for gillnet and seine openings in the Deep Inlet Terminal Harvest Area for 2009, 2010, and 2011. Also during the 2008/2009 board cycle, the Joint RPT submitted the "Industry Consensus 12/9/08" letter as a Record Copy. The industry consensus letter was a recommendation from the industry members who were present at the fall 2008 RPT meeting, was unanimously approved by the Joint RPT, and included a list of both long-term suggestions (mostly increases in production) and short-term suggestions (mostly recommendations on board proposals) for how to address the allocation imbalances. The board accepted the industry consensus letter and followed the guidelines regarding enhanced salmon allocation proposals. The proposals adopted by the board had some impact on the allocation percentages, but not enough to solve the imbalance. The long-term solutions of increased production mentioned in the letter will not show increases in harvest until the 2014/2015 board cycle.

During the 2011/2012 board cycle, the Joint RPT submitted 2 proposals: a proposal to continue the 1:1 time ratio for gillnet and seine openings in the Deep Inlet THA through 2017, and a proposal to continue a 1:1 time ratio for gillnet and seine openings at the Anita Bay THA through 2017. The Joint RPT also submitted "Industry Consensus 12/8/11" which was written by industry representatives and unanimously supported by the Joint RPT at the December 8, 2011 RPT meeting in Sitka.



## **FIGURES**

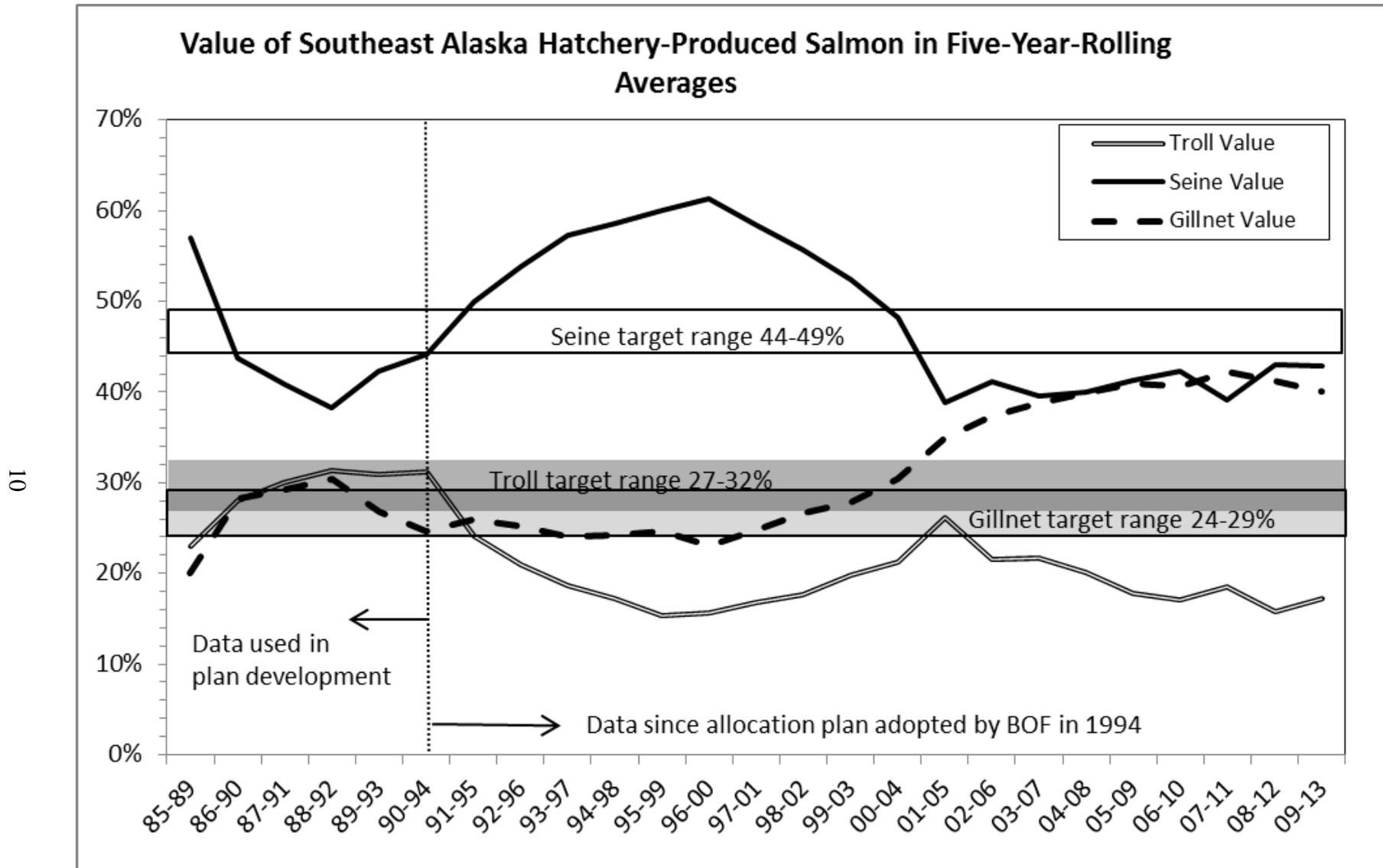


Figure 1.—Value of Southeast Alaska hatchery-produced salmon in 5-year-rolling averages.

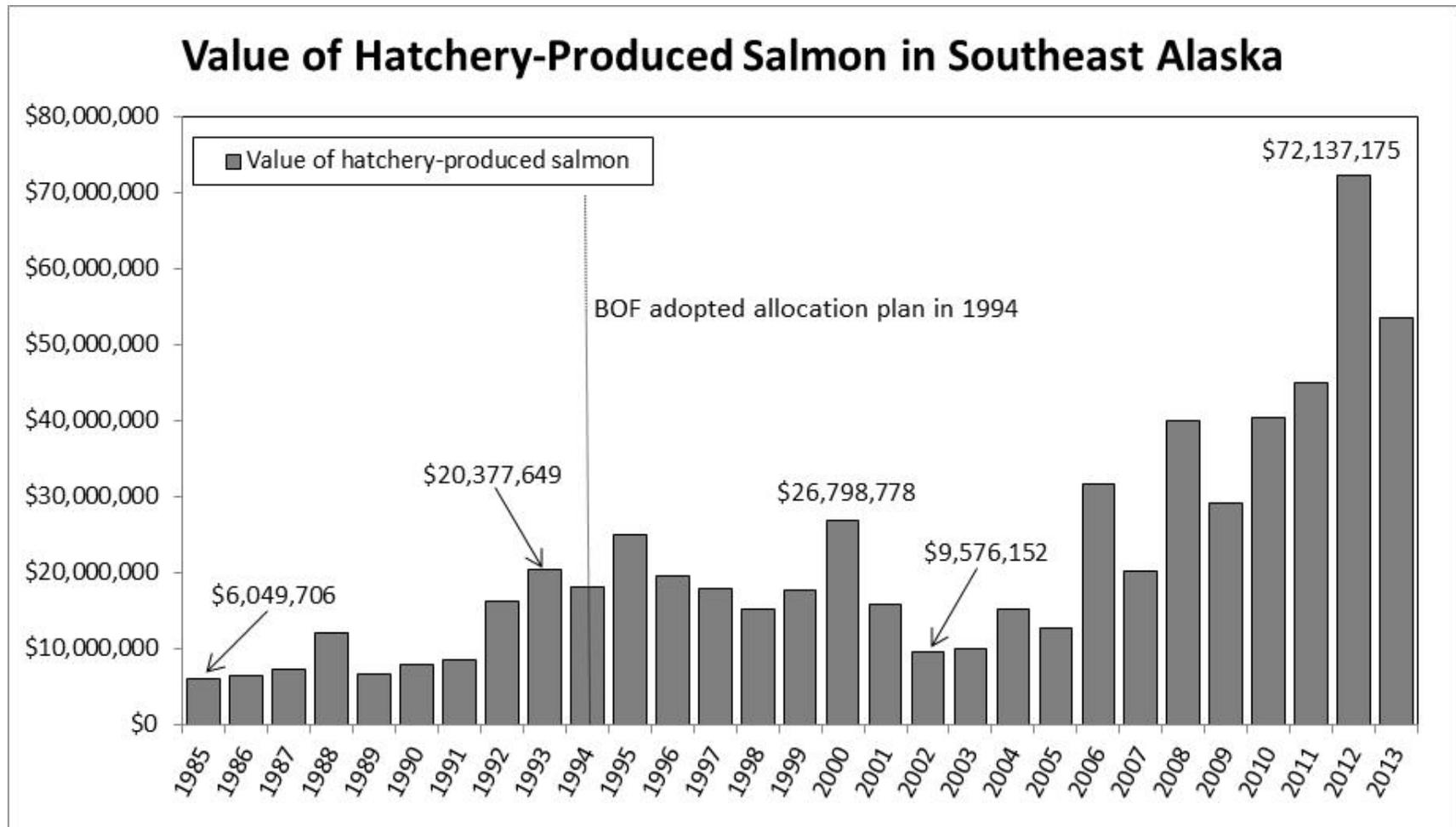


Figure 2.—Value of hatchery-produced salmon in Southeast Alaska.

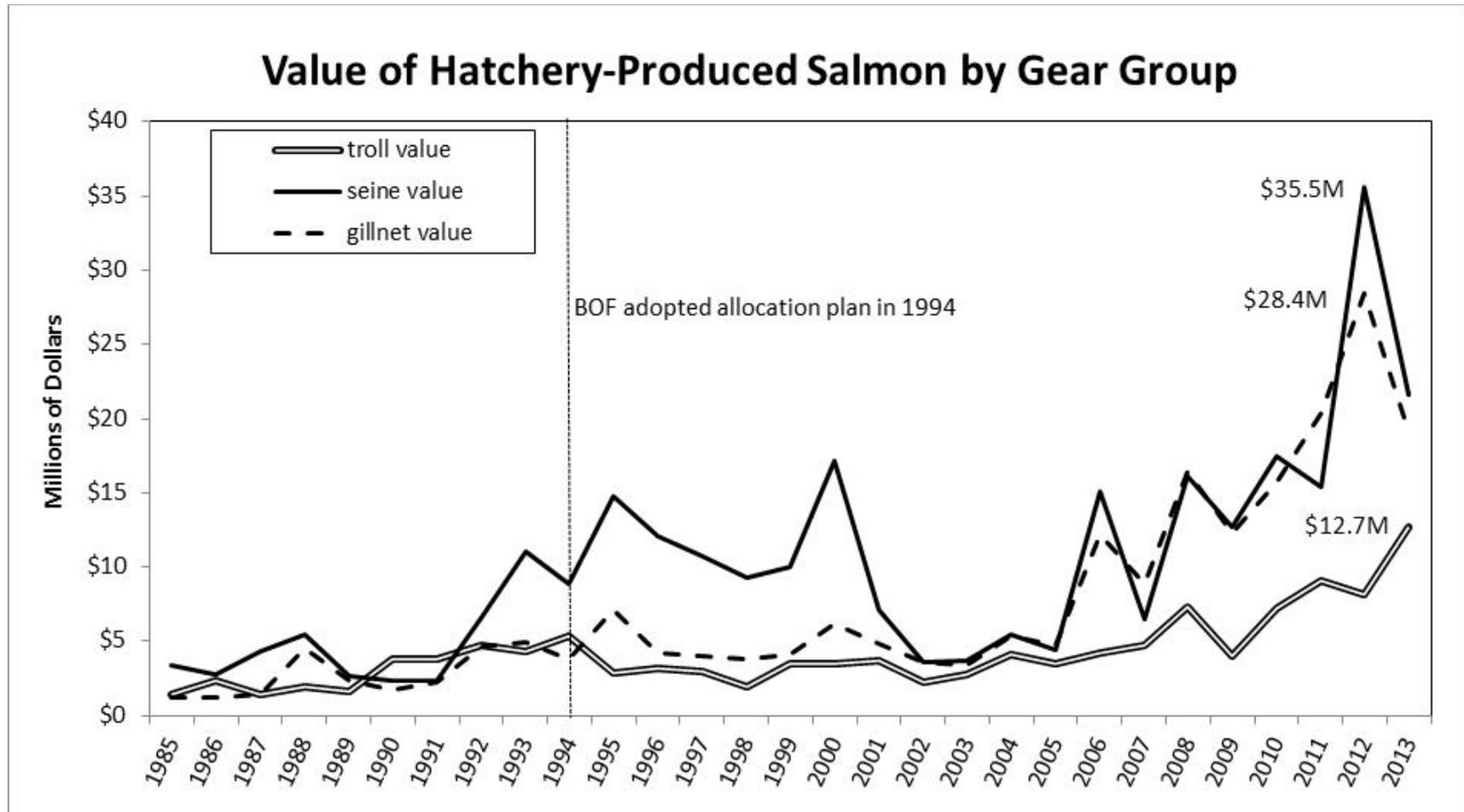


Figure 3.—Value of hatchery-produced salmon by gear group.

## Percentage of Total Southeast Alaska Hatchery-Produced Salmon Value by Species

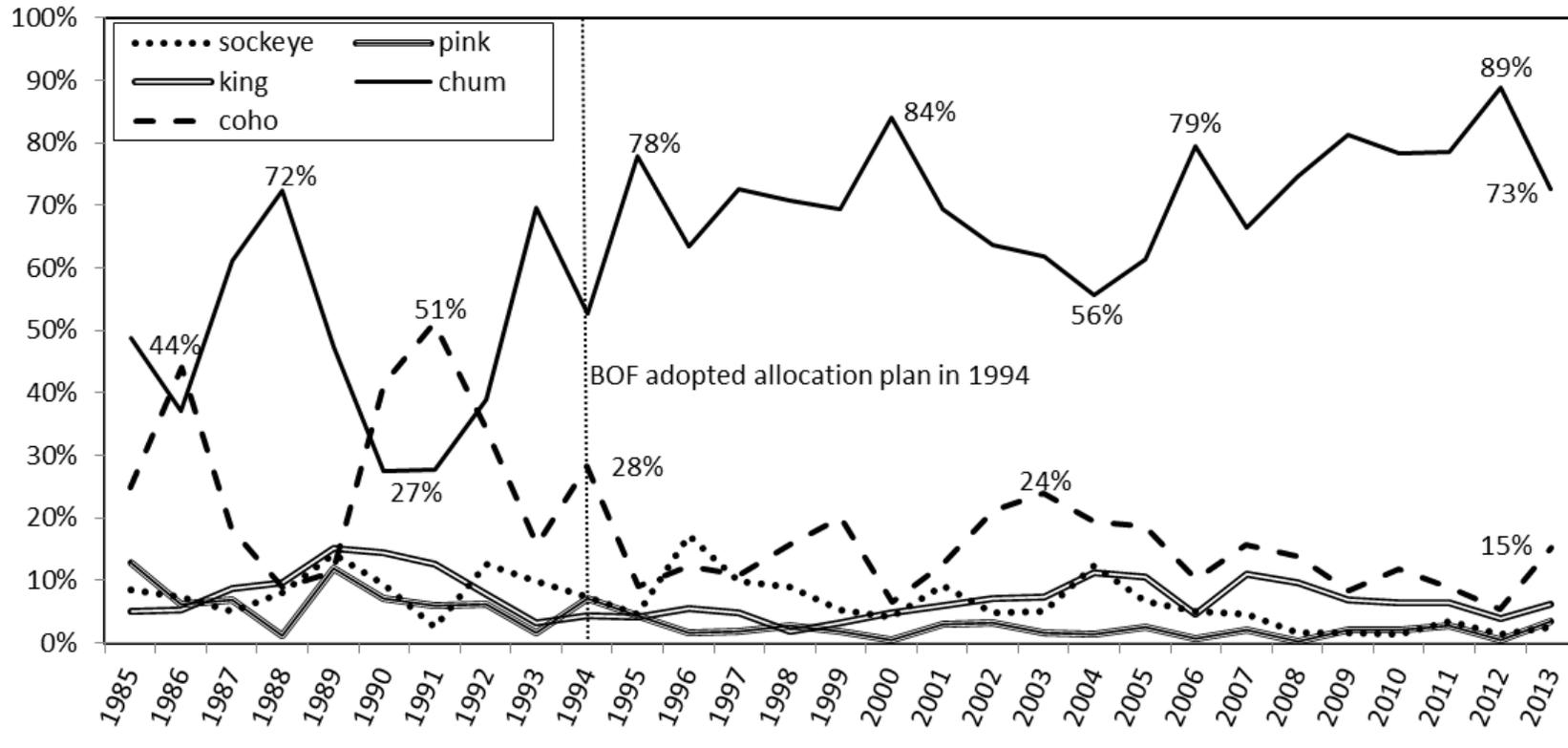


Figure 4.—Percentage of total Southeast Alaska hatchery-produced salmon value by species.

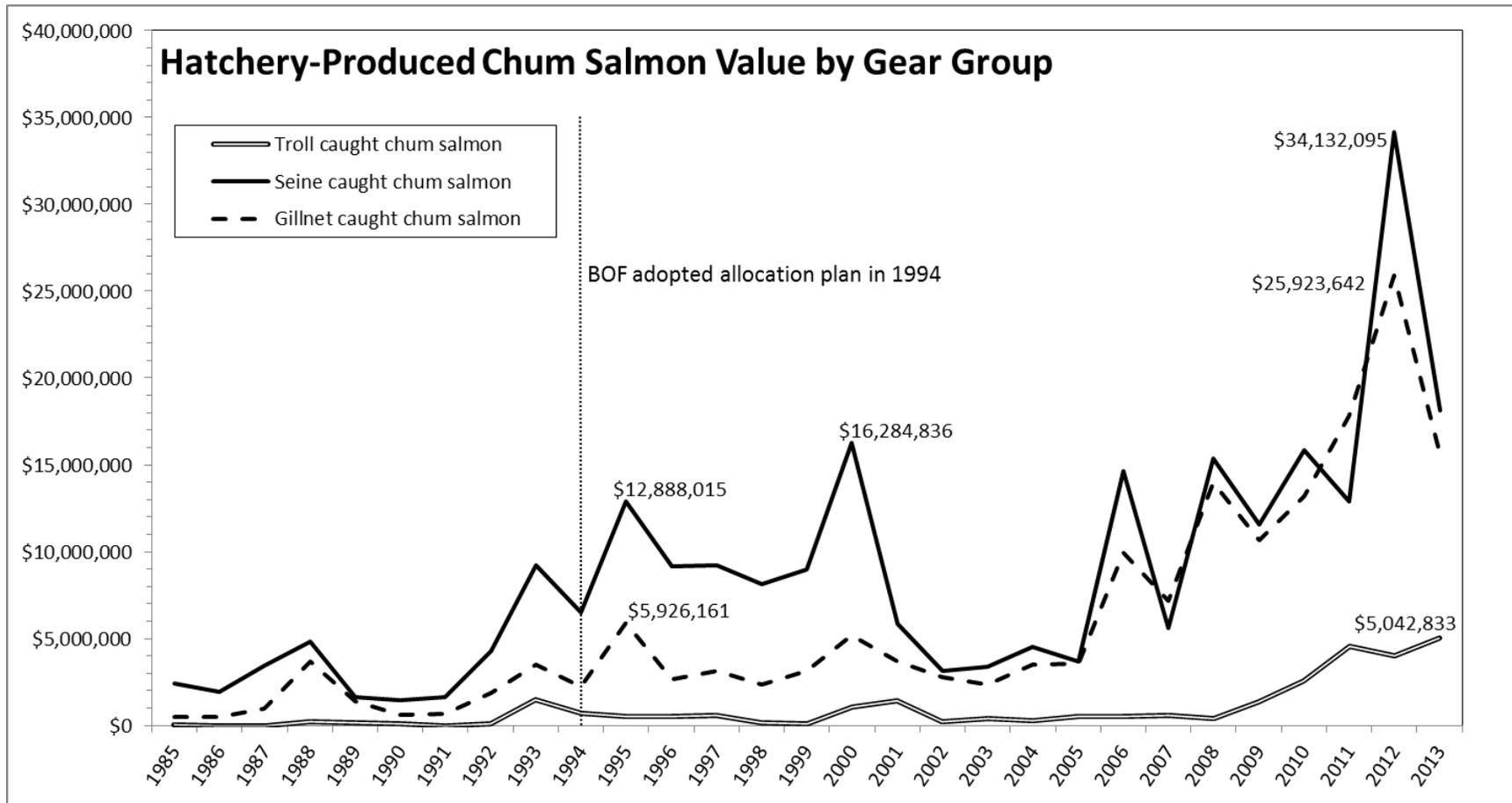


Figure 5.—Hatchery-produced chum salmon value by gear group.

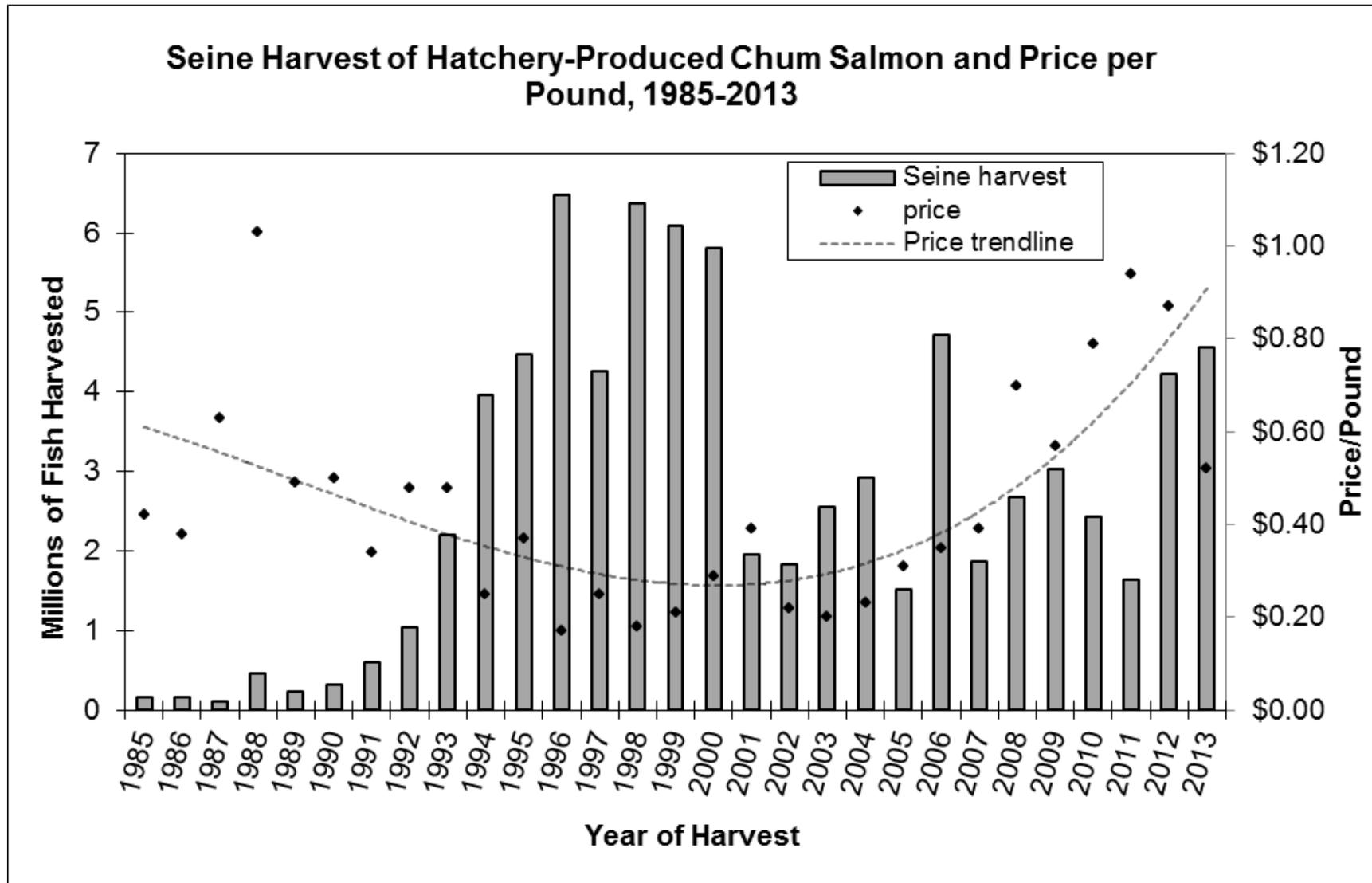


Figure 6.—Seine harvest of hatchery-produced chum salmon and price per pound, 1985–2013.

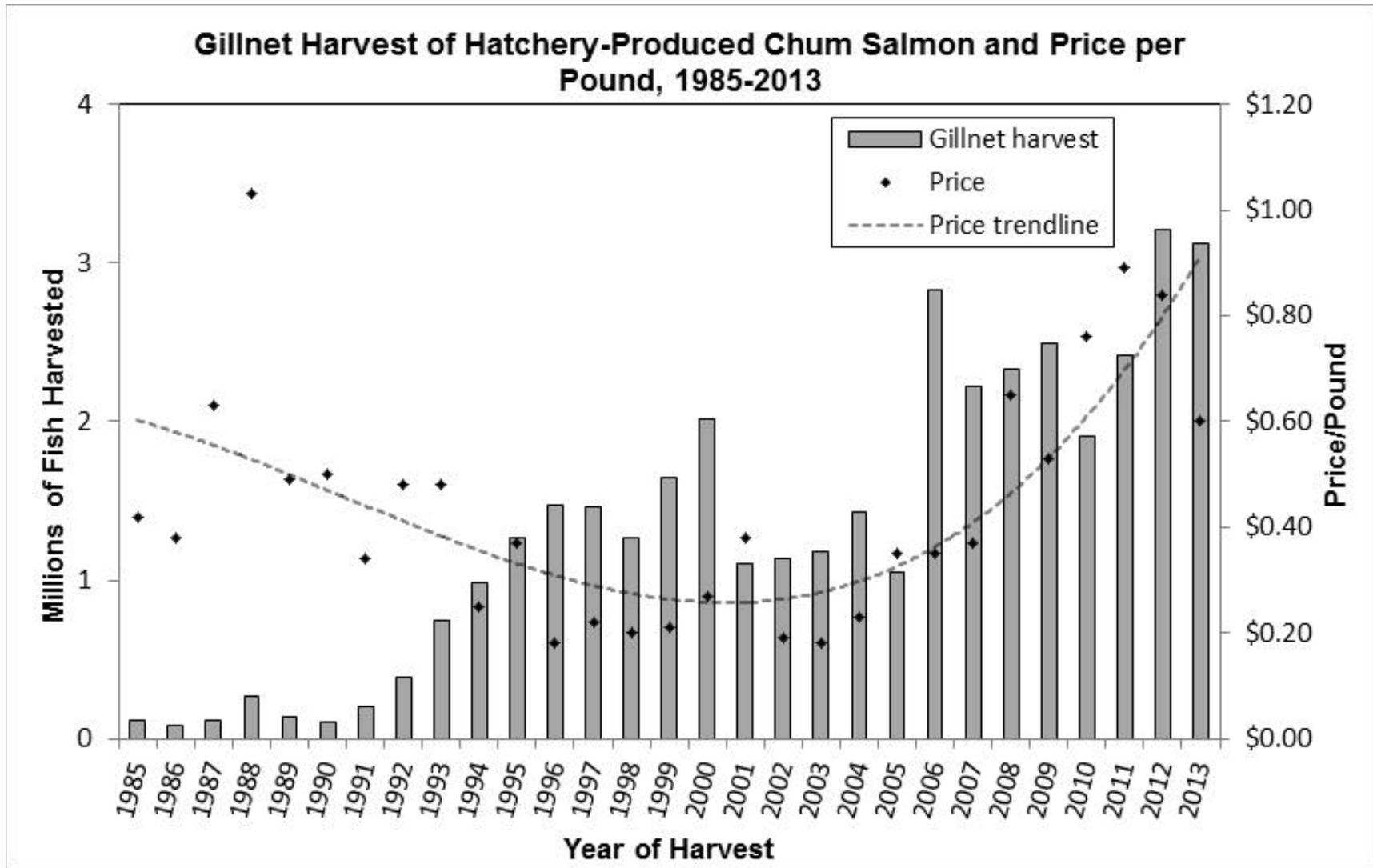


Figure 7.—Gillnet harvest of hatchery-produced chum salmon and price per pound, 1985–2013.

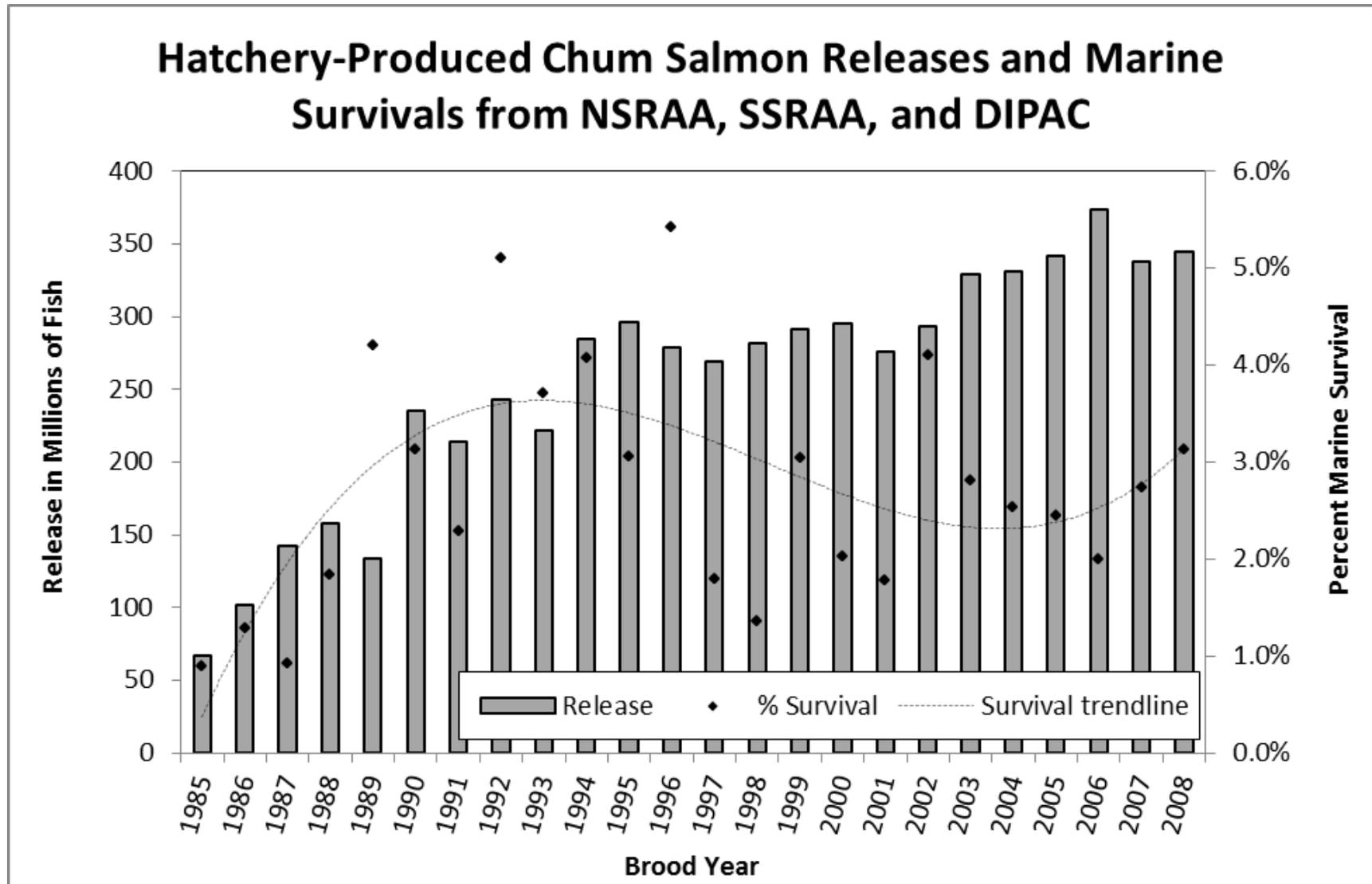


Figure 8.—Hatchery-produced chum salmon releases and marine survivals from NSRAA, SSRAA, and DIPAC.

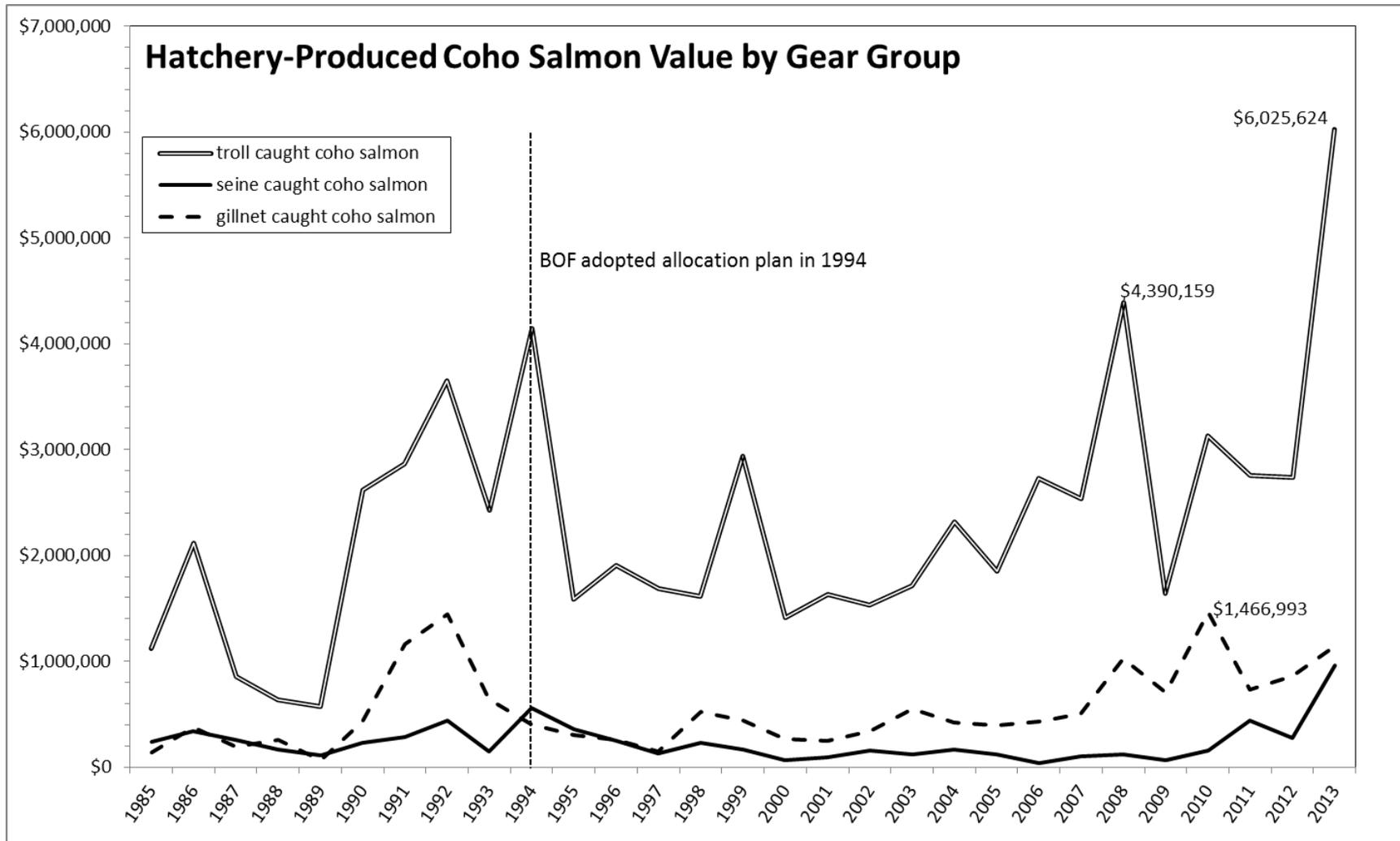


Figure 9.—Hatchery-produced coho salmon value by gear group.

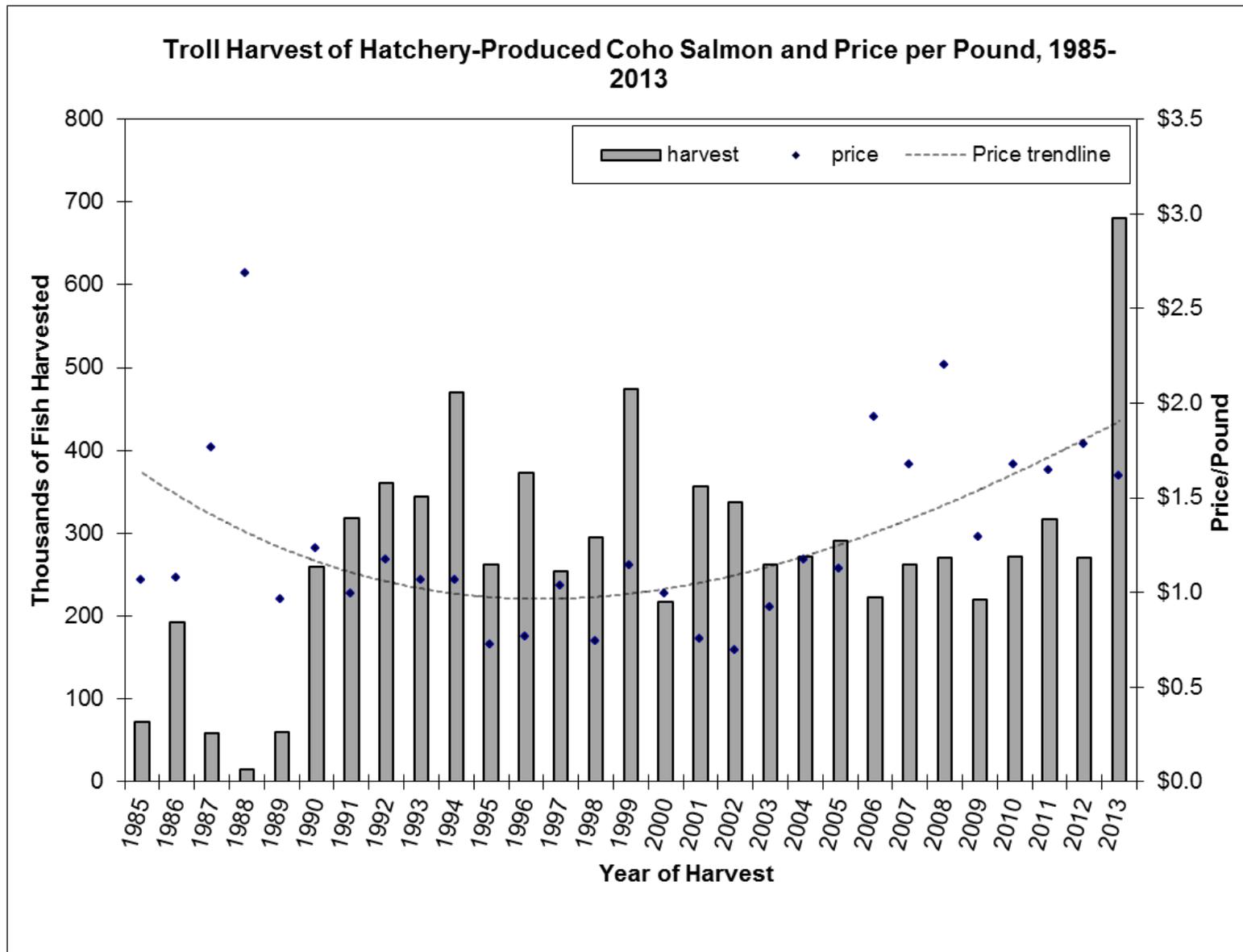


Figure 10.—Troll harvest of hatchery-produced coho salmon and price per pound, 1985–2013.

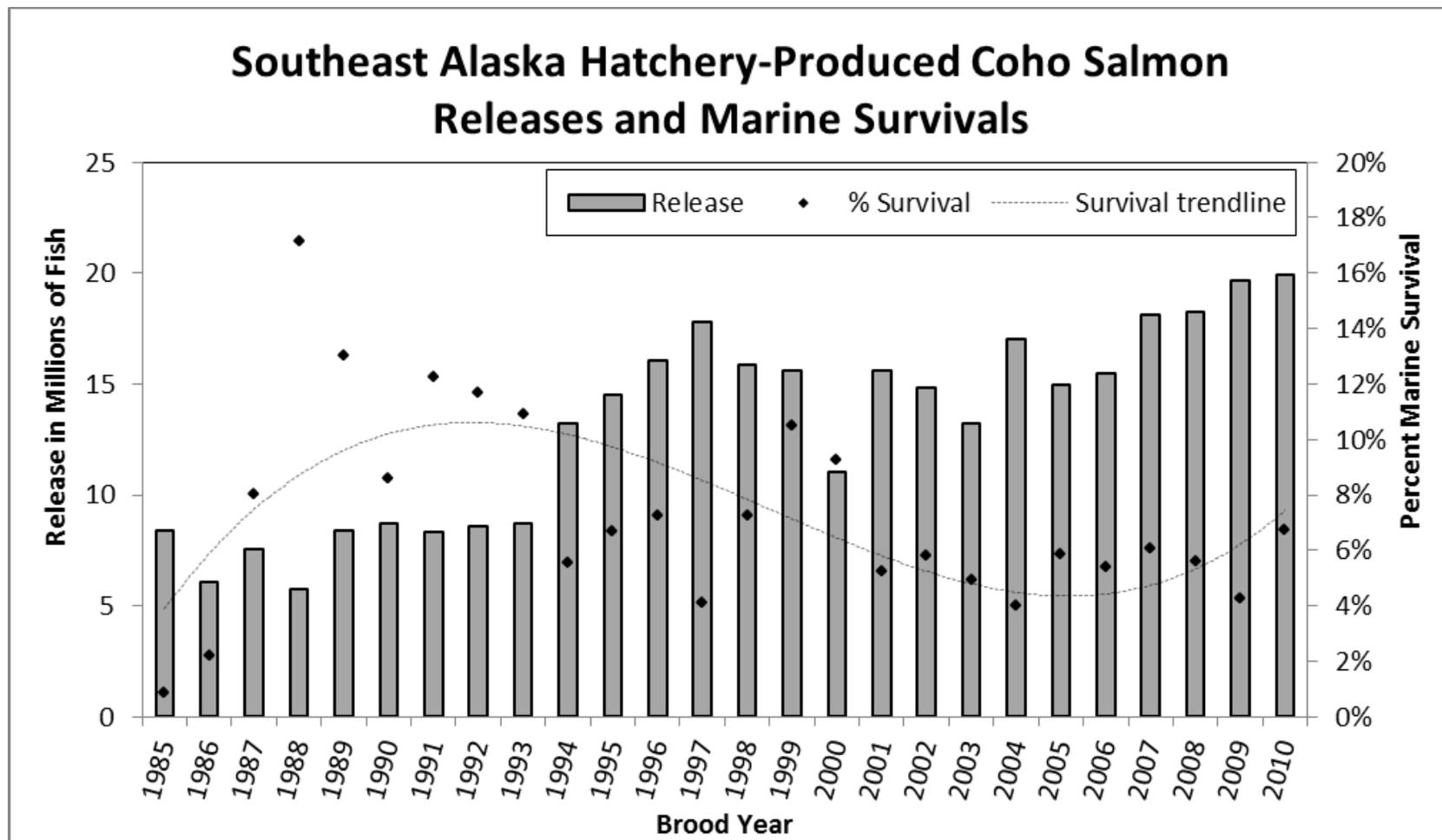


Figure 11.—Southeast Alaska hatchery-produced coho salmon releases and marine survivals.

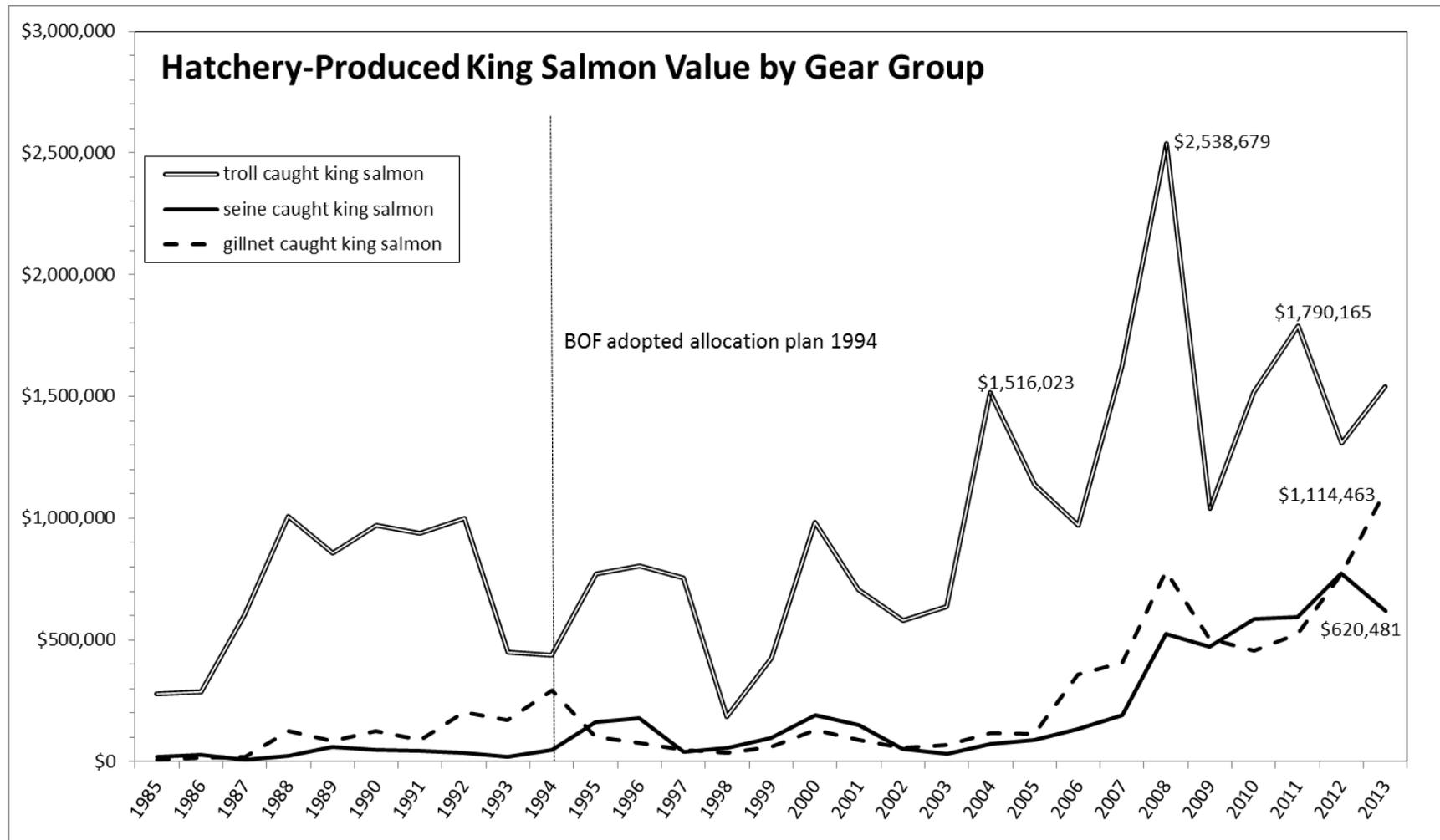


Figure 12.—Hatchery-produced king salmon value by gear group.

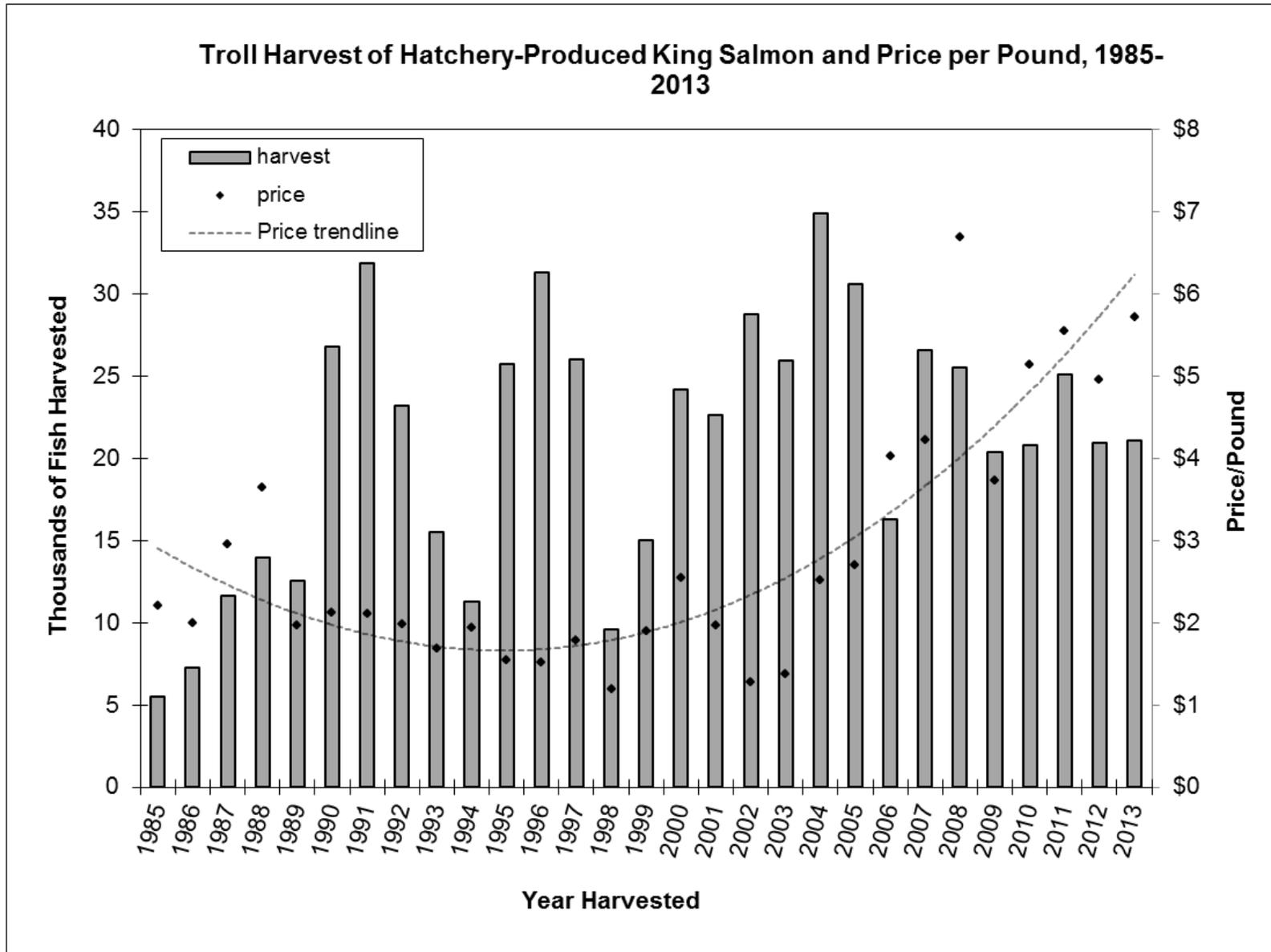


Figure 13.—Troll harvest of hatchery-produced king salmon and price per pound, 1985–2013.

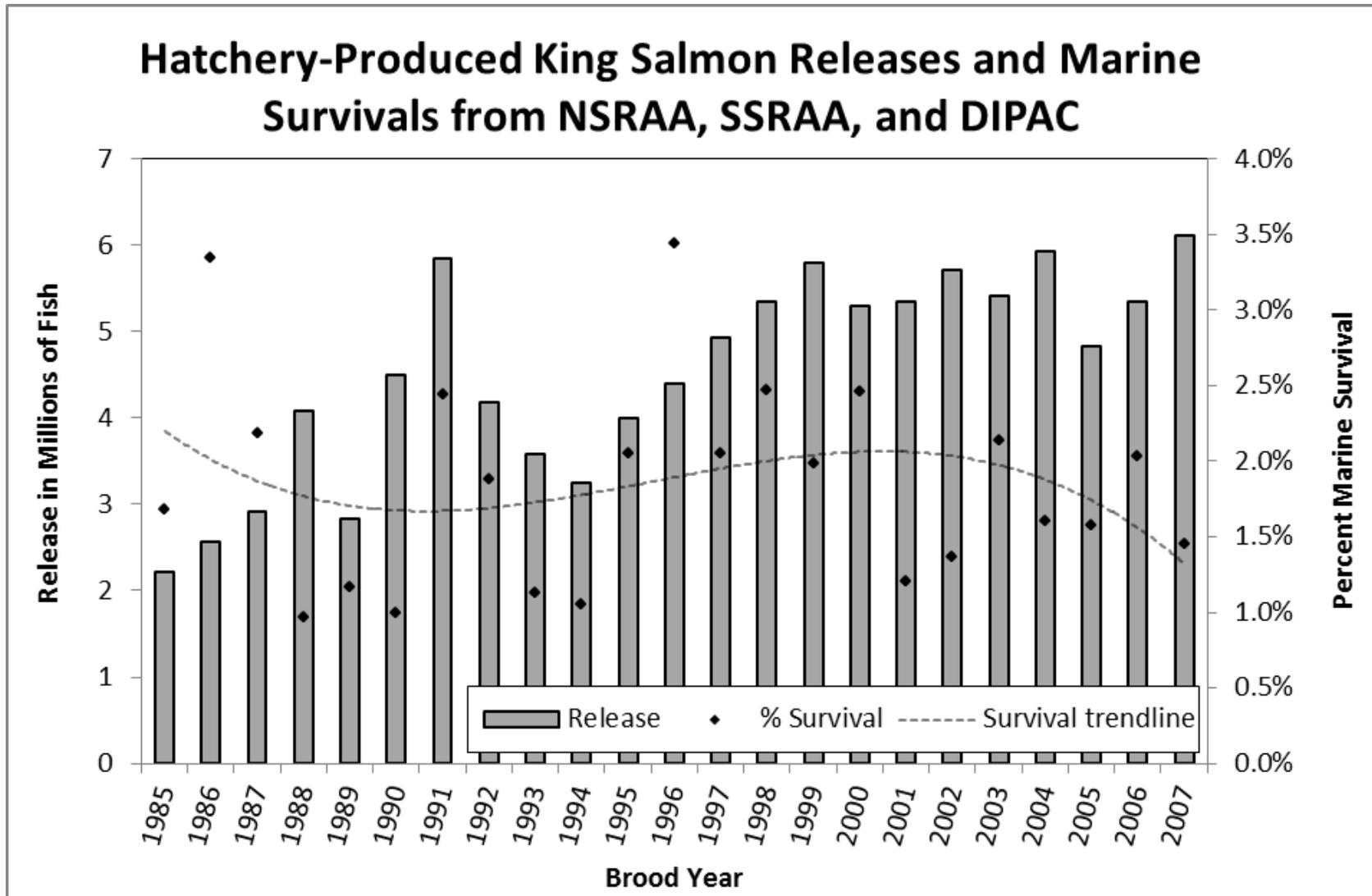


Figure 14.—Hatchery-produced king salmon releases and marine survivals from NSRAA, SSRAA, and DIPAC.



## **APPENDIX A**

(a) The purpose of the management plan contained in this section is to provide a fair and reasonable distribution of the harvest of salmon from enhancement projects among seine, troll, and drift gillnet commercial fisheries, and to reduce conflicts among these users, in the Southeastern Alaska Area. The Board of Fisheries establishes the following value allocations:

- (1) seine—44 percent to 49 percent;
- (2) hand and power troll—27 percent to 32 percent;
- (3) drift gillnet—24 percent to 29 percent.

(b) The department shall evaluate the annual harvest of salmon stocks from enhancement projects to determine whether the distribution of the value of enhanced salmon taken in the seine, troll, and drift gillnet fisheries in the Southeastern Alaska Area is consistent with the allocation established in (a) of this section. The evaluation of allocation percentages shall be based on five-year increments, beginning with 1985. The value of the enhanced salmon harvested each year shall be determined by the department based on data from the Commercial Fisheries Entry Commission.

(c) If the value of the harvest of enhanced salmon stocks by a gear group listed in (a) of this section is outside of its allocation percentages for three consecutive years, the board will, in its discretion, adjust fisheries within special harvest areas to bring the gear group within its allocation percentage.

(d) The department may not make inseason adjustments or changes in management in or out of the special harvest areas to achieve the allocation percentages established in (a) of this section.

(Eff. 5/29/94, Register 130)

Authority: AS 16.05.251 AS 16.05.730 AS 16.10.440

## **APPENDIX B**

**Background:** In March 1991 Mike Martin, Chairman of the Board of Fisheries, asked the Northern Southeast Regional Aquaculture Association (NSRAA) and the Southern Southeast Regional Aquaculture Association (SSRAA) to coordinate the development of the southeast wide allocation plan for all enhanced salmon.

The issue concerned the benefits of commercial fishermen received from the enhancement activities especially in relation to the amount of the 3% Salmon Enhancement Tax (SET) paid. The issue was different between the Regional Associations and could not be resolved. Numerous proposals have been submitted to the Board of Fisheries to resolve the issue but none were acted upon. Chairman Martin requested that the two Regional Associations consider an all Southeast Alaska Allocation Plan to include all enhancement activities: Fish and Game FRED division, Independent Non-profit Aquaculture corporations; and Regional Aquaculture Associations.

The Board of Directors of NSRAA and SSRAA agreed to accept the challenge. They formed a group that first met on March 29, 1991 in Ketchikan. The group called itself the Southeast Allocation Task Force (SATF). The SATF is composed of six voting members, three each from NSRAA and SSRAA, and each association provided one seiner, one troller, and one gillnetter for a total of two people from each gear type on SATF. All decisions were by consensus. No meeting was held without six voting members present.

There were two non-voting members on the SATF, one each from the FRED Division and a representative from the independent non-profit aquaculture corporations. DIPAC represented the independent seat. Also, each Regional Association provided one staff member. Pete Esquiro represented NSRAA and Don Amend represented SSRAA. The staff and non-voting members are resource people who provided technical input and comments when appropriate. The SATF also has had technical input from the NMFS at Auke Bay, the limited entry commission, and other people as needed.

All meetings were publicly held. Announcements were made southeast wide in newspapers and radios. Public attendance was minimal, but a few showed up at each meeting. These people were allowed to address the SATF as recognized by the chair. There were no appointed sport representative, but these interests were present at a few meetings. There were a total of five meetings.

The SATF developed the number of fish caught and this was reviewed by scientists at the Auke Bay Laboratory. The value of the fish was provided by the Limited Entry Commission. The data does not include enhancement activities by the National Marine Fisheries Service (NMFS), Metlakatla Indian Community (MIC) on Annette Island, or the U.S. Forest Service (USFS). The production at NMFS is small and experimental. Although the production by the MIC is significant and they also harvest Alaska Enhanced fish, this was not included because their harvest and production cannot be controlled by the State. The USFS conducts many habitat enhancement activities, but the numbers cannot be verified or evaluated. All of S.E. Alaska was included (Districts 1–15), but the Yakutat area was excluded.

-continued-

The base period for data analysis was 1985. Production prior to 1985 was not significant and most projects were just coming on line. The data was evaluated through 1990 and will be updated annually as it becomes available. Averages were based on this period when production was still increasing and changing. Estimates were made based upon all currently permitted capacity when at full production. Future production was based on planned increases in capacity, but not yet permitted or operational.

The development of the agreement was based on catches by power and hand trollers, purse seiners, and drift gillnetters. Set nets were not included and are not used in the areas analyzed. Sport, sport charter, subsistence, and personal use were not included. The agreement was based only upon those who pay the 3% SET. No allocation was suggested for these other groups. The belief was that they are restricted by bag limits and an allocation of enhanced fish is inappropriate.

The guidelines will be submitted to the Board of Fisheries and may be set in regulation, or developed into policy. The guidelines will be used by the Regional Planning Teams (RPTs) as one element in the evaluation of permit requests and proposed production changes. The Commissioner of Fish and Game will consider the guidelines when evaluating permits or establishing special harvest areas. The Commissioner of Commerce of Economic Development will consider them in determining salmon enhancement loans for changes in production. The Board of Fisheries will use it to make decisions concerning gear group disagreements that involve enhanced fish production. The guidelines are viewed as goals to achieve and remain flexible for changing conditions, such as management changes, treaty changes, gear changes, legislative changes, etc. It was not intended for Fish and Game management to use in managing the common property fishery, except in a very few special instances.

#### REPORT OF THE SOUTHEAST ALASKA ALLOCATION TASK FORCE (SATF) FOR ENHANCED SALMON.

Following are the fourteen (14) guiding principles which were developed along with rationale statements of each:

1). The primary goal of the Southeast Alaska salmon enhancement program is to provide additional fishing opportunities and revenue to traditional common property fisheries.

- (A) Performance Goals: Hatchery program plans and performance, over time, should provide a 70% contribution (after broodstock) to common property fisheries. Out of recognition for those hatcheries not receiving any salmon enhancement tax (SET) revenues, a 60% contribution (after broodstock) to common property fisheries is an acceptable goal. This goal should be expanded to 70% when these non-association hatcheries retire their existing debt obligation to the State of Alaska.

-continued-

- (B) Operators of hatcheries and other enhancement projects will use these performance goals in designing the annual management plans they submit to the joint Regional Planning Team (RPT) for review prior to approval by the Commissioner.
- (C) It is recommended that enhancement programs that achieve these performance goals be given priority from the Dept. of Commerce and Economic Development on the requests for funding from the Fisheries Enhancement Revolving Loan Fund.
- (D) Common property fisheries means those fisheries available to the people for common use.

**Rationale:** The enhancement programs are primarily for the benefit of the common property fishery and not for the benefit of private and state ownership. To assure the emphasis is on the common property fisheries, the 70% and 60% performance goals specified in 1A shall be used in evaluating projects. Although contributions to the common property fisheries will vary from year to year depending on run strength, survival rates and management, the long term benefit must be to the common property fisheries. No penalty for failures is suggested. However, hatchery proformas should include these production goals and, if not achieved over time, it is intended that management changes be made to assure these goals.

Broodstock are not included because they were viewed the same as escapement goals. Broodstock do not financially benefit anyone directly and are essential for continued production (see number 3).

2). Management of traditional “wildstock” fisheries are not to be restricted by cost recovery needs (economic escapement) of hatcheries.

**Rationale:** This concept is embodied in Alaska Statutes (AS 16.05.730). The SATF could not envision any circumstance where a wildstock fishery should be interrupted to assure a cost recovery harvest.

3). Restrictions on conduct of traditional “wildstock” fisheries to meet broodstock needs should be absolutely minimal and should be clearly documented by adequate production and harvest data. Protection of broodstock should only occur in close proximity to terminal areas. (Consistent with AS 16.05.730, and regulations 5 AAC 40.005 and 5 AAC 40.220).

**Rationale:** The SATF recognizes the importance of broodstock. However, broodstock alone should not drive a common property fishery. Protection of broodstock should only occur in close proximity to terminal areas and only when the wildstocks can be adequately harvested in another area. The need for protection of broodstock in any area must be documented by showing that broodstock goals are adversely affected and the area contains significant broodstock. However, it is not intended that an operator manipulate activities just to ask for broodstock protection. For example, by conducting cost recovery harvest without taking proper steps to assure broodstock collection.

-continued-

4). Enhancement projects should include tagging or marking that will allow determination of the amount of production harvested in the various fisheries.

**Rationale:** It is recommended that adequate tagging programs be required under the Commissioner’s authority (AS 16.10.400). Operator estimates are not adequate for estimating contribution to common property fisheries. Tagging or marking programs are essential; however, because the technology for marking fish is still evolving, no method is recommended. It is assumed that the most reliable and cost effective method will be used.

5). The State of Alaska should commit to an adequate mark recovery program for all enhanced salmon to provide harvest and production data.

**Rationale:** It is recommended that those responsible for enhancing fish should pay for the marking, but only the state has the resources to conduct the tag recovery program. The allocation agreement will not work unless the state commits to a mark recovery program. Also, there was evidence that the tag recovery program was not being conducted equally among the gear types or species harvested. For example, troll Chinook fisheries have been more intensively sampled, while the seine harvest has been sampled the least of the groups. The tag recovery program should be designed to provide an equal level of confidence in the contribution of enhanced salmon to each gear type.

6). Habitat enhancement and restoration projects where marking is not feasible will not be counted. Other field projects where marking is feasible and economically acceptable will be counted.

**Rationale:** Lake fry plants, stream bioenhancement, stream rehabilitation, and other enhancement strategies are frequently conducted with small numbers of fish in remote areas. It may not be practical or economically feasible to mark the fish. These enhancement and restoration projects are encouraged and it is recognized that they contribute to the common property fisheries, but they will not be counted in the allocation percentages. However, where feasible, marking should be conducted.

7). The allocation percentage goals will be used to provide a fixed target for production.

**Rationale:** Enhancement projects and production goals have frequently been established based on political expediency or the economic viability of the operator. However, whenever fish are released and the returning adults harvested, an allocation is made. The allocation can become disproportionate based on the number of fish and where they are released.

It is desirable that new production, or revised existing production contribute to achieving the allocation percentage goals established. This however, should not be the only criteria used to judge the desirability of new or revised production. If such new or revised production is “projected” to unbalance the distribution of enhanced salmon, and the change in production is otherwise considered desirable, the RPT will evaluate the overall enhancement program to determine what adjustments may be necessary to bring distribution of the harvest into compliance with the allocation percentage goals and make recommendations to the Commissioner.

-continued-

8). Allocation percentage goals will be long term.

**Rationale:** It is recognized that survival rates can vary considerably within and among enhancement projects throughout S.E. Alaska. Also, variations in the management of the common property fisheries influence the harvest rates. The allocation percentage goals are not expected to be attained each year, but should be attained over the long term. Any change in the production takes two to five years to impact a fishery. Therefore, allocation percentage goals should be based on a minimum of five year increments (see number 9).

9). Overall contribution of revenue from salmon enhancement projects should be evaluated using the most recent five year average. Adjustments should be implemented only after discrepancies are determined to exist in the five year average for three consecutive years.

**Rationale:** See number 8 above. The distribution of enhanced fish is expected to vary widely from year to year. A five year rolling average was used because it constitutes a production cycle and levels year to year variation. It is recognized that a single abnormal year can change the five-year average outside the range of the allocation percentage goals; therefore, the guidelines establish a three year period of consistent discrepancy before any change is made.

10). The joint RPT will evaluate current enhanced salmon production and the distribution of harvest revenues and update this on an annual basis.

- (A) Each facility should be evaluated after a minimum five years of operation to determine whether the 70% or 60% common property contribution, referred to in guiding principle 1A, is being achieved or to determine the realistic production and common property contribution for the facility.
- (B) The joint RPT will conduct an evaluation to determine when the allocation percentages are not being achieved and adjustments are necessary.
- (C) The joint RPT will recommend to the Commissioner adjustments to facilities' annual operating plans as necessary to accomplish the desired allocation goal.

**Rationale:** The SATF believes the joint RPT is the appropriate body to review the contribution data. The joint RPT is responsible for establishing and maintaining the comprehensive salmon plan, under the Commissioner's authority, and is responsible for recommending the permit changes for production to the Commissioner.

11). Achieving these allocation percentage goals should not result in any modifications, in time or area, to the traditional "wildstock" fisheries. Minor modification may be considered to allow experimental or test fisheries that would not adversely impact wildstocks.

**Rationale:** The SATF strongly believed that the common property fisheries for wildstocks should not be manipulated in order to achieve the allocation percentage goals. However, this is not intended to preclude experimental or test fisheries, special hatchery access fisheries, or the establishment of new special harvest areas in order to access enhanced fish. For example, this could include the June troll fisheries for Chinook, or late season openings, or other special openings used to target enhanced fish as long as wildstocks are not adversely impacted.

-continued-

It is recommended that the department allow targeted fisheries on enhanced stocks when they will not adversely impact sustained yield of wildstocks. The department should work closely with hatchery operators in establishing these fisheries, keeping in mind the 70% and 60% contribution goals. The harvest of enhanced salmon in a targeted wildstock fishery is considered incidental to the harvest of wild stocks.

12). There should be no inseason changes in management of enhanced salmon in or out of the special harvest areas to achieve the allocation percentage goals.

**Rationale:** These guidelines are established to reach long term allocation percentages. Inseason common property fisheries adjustments should not be considered to meet allocation goals. No adjustment of wildstock fisheries should be allowed in order to meet the allocation percentage goals.

13). When adjustments are deemed necessary to the distribution of the harvest to meet allocation percentage goals, the following tools should be used: (1) special harvest area management adjustments; (2) new Enhanced salmon production; and (3) modification of enhancement projects production, including remote releases. Hidden Falls shall remain a seine/troll terminal harvest area (Consistent with 5 AAC 33.374).

(A) The joint RPT will make appropriate recommendations through the Commissioner to facility(s) annual operating plan(s) to attain allocation goals.

(B) Facilities may request changes in operating plans to meet allocation requirements.

**Rationale:** New production and facility modifications to meet the allocation percentage goals are long term changes and will take five to ten years to have an impact. Changes in special harvest areas can be used in the short term to help modify any imbalances that occur.

For example, special harvest areas can be designated to only one gear group or the fishing time allowed to different gear groups could be adjusted. The effectiveness of this will also be contingent on the gear type and the targeted species. The SATF expects these adjustments will be reviewed by the joint RPT, and the joint RPT will make recommendations to the Commissioner as to the most appropriate action needed to achieve the allocation percentage goals. It is anticipated that short-term solutions such as special harvest area management adjustments will only be used until decisions concerning long-term adjustments can take effect. The allocation percentage goals will also be considered when reviewing permit alteration requests. If new production is not feasible or desirable, changes in remote releases can include new sites, change in species composition, change in the numbers of salmon released, or a combination of these.

(14). The allocative percentages will be:

Note: The following percentages refer to the total value (nominal dollars) of enhanced salmon. These percentages are not intended to apply to wildstock allocations.

Seine—44% to 49%

Troll—27% to 32%

Gillnet—24% to 29%