

Fishery Management Report No. 05-69

**Report to the Alaska Board of Fisheries: Status of the
Allocation of Enhanced Fish, Southeast Region**

by

Flip Pryor

December 2005

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mid-eye-to-fork	MEF
gram	g	all commonly accepted		mid-eye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics	
meter	m	at	@	<i>all standard mathematical</i>	
milliliter	mL	compass directions:		<i>signs, symbols and</i>	
millimeter	mm	east	E	<i>abbreviations</i>	
		north	N	alternate hypothesis	H _A
Weights and measures (English)		south	S	base of natural logarithm	<i>e</i>
cubic feet per second	ft ³ /s	west	W	catch per unit effort	CPUE
foot	ft	copyright	©	coefficient of variation	CV
gallon	gal	corporate suffixes:		common test statistics	(F, t, χ^2 , etc.)
inch	in	Company	Co.	confidence interval	CI
mile	mi	Corporation	Corp.	correlation coefficient	
nautical mile	nmi	Incorporated	Inc.	(multiple)	R
ounce	oz	Limited	Ltd.	correlation coefficient	
pound	lb	District of Columbia	D.C.	(simple)	r
quart	qt	et alii (and others)	et al.	covariance	cov
yard	yd	et cetera (and so forth)	etc.	degree (angular)	°
		exempli gratia	e.g.	degrees of freedom	df
Time and temperature		(for example)		expected value	<i>E</i>
day	d	Federal Information	FIC	greater than	>
degrees Celsius	°C	Code		greater than or equal to	≥
degrees Fahrenheit	°F	id est (that is)	i.e.	harvest per unit effort	HPUE
degrees kelvin	K	latitude or longitude	lat. or long.	less than	<
hour	h	monetary symbols		less than or equal to	≤
minute	min	(U.S.)	\$, ¢	logarithm (natural)	ln
second	s	months (tables and		logarithm (base 10)	log
		figures): first three		logarithm (specify base)	log ₂ , etc.
Physics and chemistry		letters	Jan, ..., Dec	minute (angular)	'
all atomic symbols		registered trademark	®	not significant	NS
alternating current	AC	trademark	™	null hypothesis	H ₀
ampere	A	United States		percent	%
calorie	cal	(adjective)	U.S.	probability	P
direct current	DC	United States of		probability of a type I error	
hertz	Hz	America (noun)	USA	(rejection of the null	
horsepower	hp	U.S.C.	United States	hypothesis when true)	α
hydrogen ion activity	pH		Code	probability of a type II error	
(negative log of)		U.S. state	use two-letter	(acceptance of the null	
parts per million	ppm		abbreviations	hypothesis when false)	β
parts per thousand	ppt, ‰		(e.g., AK, WA)	second (angular)	"
volts	V			standard deviation	SD
watts	W			standard error	SE
				variance	
				population	Var
				sample	var

FISHERY MANAGEMENT REPORT NO. 05-69

**REPORT TO THE ALASKA BOARD OF FISHERIES: STATUS OF THE
ALLOCATION OF ENHANCED FISH, SOUTHEAST REGION**

by

Flip Pryor,

Alaska Department of Fish and Game and Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

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*Flip Pryor,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
P.O. Box 240020, Douglas, AK 99824, USA*

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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 enhanced fish among gillnet, seine, and troll fleets through 2004. Guidelines indicate troll allocation needs adjustment, but is trending towards the target goal.

Key Words: enhancement, allocation, Regional Planning Team, Southeast Alaska, Southeast Allocation Task Force, Alaska Board of Fisheries, catch value, marine survival.

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 enhanced fish among gillnet, seine, and troll fleets through 2004. Alaska Board of Fisheries Finding #94-02-FB states that adjustments should be implemented only when a consistent discrepancy exists in the five-year average of enhancement contributions for three consecutive years. The allocation currently does not conform to the recommended guidelines. The five-year average seine harvest value moved into target range after nine consecutive years above range. The five-year average gillnet harvest value has come out of its target range for the first time in three years. The five-year average troll harvest value has been below its target range for ten consecutive years, making it the only gear group outside its target range for more than three consecutive years. The tools for making adjustments to the distribution of the harvest, in order to achieve allocation percentage targets, are: 1) special harvest and/or terminal area management adjustments, 2) new enhanced salmon production, and 3) modification of enhancement project production, including remote releases (Guideline #13 in Finding #94-02-FB). Two factors outside of regulatory control, marine survival and price paid to fishers, have exerted substantial influence on the distribution of benefits from the enhancement program. In recent years the Joint Regional Planning Team has recommended to the commissioner that hatcheries continue to increase Chinook *Oncorhynchus tshawytscha*, coho *O. kisutch*, and chum *O. keta* salmon production, where possible. Overall increases in Chinook and coho salmon releases during the late 1990s and early 2000s have been a positive step, as well as proposed changes in harvest management to provide more troll access to Chinook, coho, and chum salmon. If future marine survivals and ex-vessel prices do not adversely override these actions, the value of the troll harvest will continue to increase.

BRIEF HISTORY OF THE ALLOCATION PLAN

In early 1991 the Alaska Board of Fisheries (BOF) asked the commercial fishers of Southeast Alaska, through the two Regional Aquaculture Associations, to develop a plan for the equitable sharing of the catch of enhanced salmon. The Southeast Allocation Task Force (SATF) was formed to draft a plan. The SATF consisted of voting members from the Northern Southeast Regional Aquaculture Association (NSRAA) and the Southern Southeast Regional Aquaculture Association (SSRAA), with equal representation from each association and from the three commercial gear groups. Non-voting members included ADF&G staff, regional aquaculture association staff, and a representative from Douglas Island Pink and Chum, Inc., a non-association hatchery corporation. The allocation plan was developed through a lengthy public process, and in 1994 the BOF approved the plan, which is now regulation 5 AAC 33.364. The Joint Northern Southeast and Southern Southeast Regional Planning Team (Joint RPT) reviews the status of the allocation of enhanced fish each spring and recommends production or harvest changes if necessary.

DESCRIPTION OF THE ALLOCATION PLAN

The Southeastern Alaska Area Enhanced Salmon Allocation Management Plan delineates percentage ranges of the commercial harvest catch value that should be realized by each commercial gear group. Recommended ranges are: seine, 44%–49%; hand and power troll, 27%–32%; and drift gillnet, 24%–29%. Catch value is computed from: 1) the number of enhanced fish harvested by each commercial gear group, based primarily on marking or tagging programs, reported by hatchery operators, and 2) average price per pound by gear type, computed by the Commercial Fisheries Entry Commission (CFEC). Allocation percentages are evaluated as five-year-moving averages. If a gear group is out of its allocation range for three-consecutive five-year averages, some adjustment in production or harvest may be implemented to bring a gear group back into its range.

The Alaska Board of Fisheries Finding #94-02-FB is associated with the allocation regulation¹. It provides a more detailed explanation of the plan development process, and also the Report of the Southeast Alaska Allocation Task Force for Enhanced Salmon, which contains flexible guidelines for plan implementation.

MECHANISMS FOR CORRECTION

The tools for making adjustments to the distribution of the harvest, in order to achieve allocation percentage targets, are: 1) special harvest and or terminal area management adjustments, 2) new enhanced salmon production, and 3) modification of enhancement project production, including remote releases (Guideline #13 in Finding #94-02-FB). Special harvest area management adjustments can be used for short-term corrections. New production or modification of existing projects are remedies for the long term, and can be instigated by facilities requesting changes or by the Joint RPT making recommendations, through the commissioner of ADF&G, for changes in production.

THE STATUS OF ALLOCATION

The status of the allocation of enhanced fish through 2004 is shown in Figures 1 through 3. The most recent calculations include preliminary 2004 numbers². The five-year-average seine harvest value moved into target range after nine consecutive years of being above range. Although the single year value has been below target in 2002 thru 2004, the five-year average has dropped roughly 3% each of those years (Figure 1). The five-year average troll harvest value has been below its target range for ten consecutive years. While the single year value in 2003 and 2004 have been in the target range, the five-year average value increased by approximately 2% each of those years (Figure 2). The gillnet five year harvest value has come out of its target range for the first time since the 1996–2000 five-year average. The single year value has been above the target range in 2001 thru 2004, the five-year average value increased by approximately 2% each of those years (Figure 3).

The status of the allocation of enhanced fish through 2004 is shown in Figures 1 through 3. The most recent calculations include preliminary 2004 numbers. The five-year-average seine harvest value moved into target range after seven consecutive years of being above range. Although the single year value has been below target in 2002 thru 2004, the five-year average has dropped roughly 3% each of those years (Figure 1). The five-year average troll harvest value has been below its target range for

¹ Finding #94-02-FB is in "Private Nonprofit Salmon Hatcheries Statutes and Regulations," 2002 edition, compiled by ADF&G Division of Commercial Fisheries, Private Nonprofit Hatchery Program, P.O. Box 25526, Juneau, AK 99802-5526.

² Private Nonprofit (PNP) operators will finalize 2004 fish numbers with updates on the 2005 annual reports in January 2006.

eight consecutive years. While the single year value in 2003 and 2004 have been in the target range, the five-year average value increased by approximately 2% each of those years (Figure 2). The gillnet five year harvest value has come out of its target range for the first time since the 1996–2000 five-year average. The single year value has been above the target range in 2001 thru 2004, the five-year average value increased by approximately 2% each of those years (Figure 3).

FACTORS AFFECTING THE ALLOCATION OF ENHANCED FISH

It became apparent with the preliminary 1997 numbers that an imbalance in the allocation had developed. Early in 1998, the Joint RPT conducted an in-depth analysis of the factors that led to the imbalance in order to recommend the most effective changes. Alaska Department of Fish and Game (ADF&G) staff constructed a series of graphs showing trends in harvest, price per pound, marine survival, and hatchery releases for the species most important to the troll fleet (Chinook and coho salmon) and to the seine fleet (chum salmon). These graphs have been updated each year and appear as figures 4-9 at the back of this report. Trend lines on the graphs are three point polynomials.

COHO SALMON

Troll harvest and marine survival has continued to fluctuate around average since the 1980s for coho salmon (Figures 4 and 5). No clear, long-term trends are apparent. The 2004 statistic for price, \$1.14/pound, is up from the most recent ten-year average price of \$0.91/pound, but down when compared to the 1980s average of \$1.40/pound. Releases have shown a gradual but consistent increase; the 2004 release of 18.8 million coho salmon (brood year 2002) is an increase above the ten-year average of 15.1 million fish.

CHINOOK SALMON

Troll harvest of Chinook salmon has continued to rise since the low harvest rate of 1998 (10,654 fish). The 2004 harvest rate of 37,484 Chinook salmon is up from the previous ten-year average of 23,734 fish. Releases have shown a gradual but consistent increase; the 2004 release of 7.3 million Chinook salmon (brood year 2002) is an increase above the ten-year average of 6.4 million. Marine survivals have fluctuated around an average value of 1.9% since the 1978 brood year. The latest marine survival data from the 1998 brood year is 1.82%, up from the previous ten-year average of 1.56%. The 2004 Chinook salmon value of \$2.51/pound is up from the most recent ten-year average of \$1.75/pound (Figures 6 and 7).

CHUM SALMON

The seine harvest of chum salmon increased nearly 10-fold from 595,000 chum salmon in 1991 to nearly 6 million in 2000, but has decreased to an average annual harvest of 2.3 million fish since 2001 (Figure 8). The increase in harvest in the late 1990s more than compensated for a 40% decline in price over the same period, resulting in a high economic return to the seine fleet. Releases of enhanced chum salmon have started to increase since they leveled off in the mid-nineties. The 2004 release of 505 million chum salmon fry is up from the previous ten-year average of 385 million. Marine survivals have been trending downward to more normal levels resulting in the low abundance seen in 2001 thru 2004 (Figures 8 and 9).

The troll fleet has shown in recent years that it can be effective in targeting chum salmon. In 2001 for example the troll fleet increased its harvest of enhanced chum salmon, despite much lower adult returns and decreased chum catches in both the seine and gillnet fleets (Figure 10).

ACTIONS TAKEN BY THE REGIONAL PLANNING TEAM

It has become apparent during Joint RPT debate that the two most influential factors affecting allocation are marine survival and price per pound; mainly a reflection of world market conditions and are factors outside the control of the associations, ADF&G, and the Alaska Board of Fisheries. Reasonable action by the production facilities or harvest managers cannot significantly impact the effect marine survival and price per pound have had on allocation since the adoption of the allocation plan. No member of the Joint RPT has suggested that poor planning, or negligence of the production facilities to take into account the board's allocation guidelines, caused the present allocation imbalance³. The allocation plan and associated findings of the board do not require the board to make changes in access, or the Joint RPT to recommend changes in production, when an imbalance occurs.

The Joint RPT has, from the outset, taken their assignment of 'allocation plan oversight' seriously. Recent Joint RPT meetings have been a forum to discuss hatchery production changes, and possible modifications of the harvest of enhanced fish to address the allocation imbalance. The Joint RPT believes the intent of the allocation plan has always been to increase targeted production and/or harvest opportunity of the gear group below its allocation range using measures that do not significantly and directly penalize the historical harvest opportunities of the gear group that is above its target range. Because the allocation is relational, a percentage increase in troll value would mean a corresponding decrease in the other gear groups.

In recent years the Joint RPT has recommended to the commissioner that hatcheries continue to increase Chinook, coho, and chum salmon production, where possible. Overall increases in Chinook and coho salmon releases during the late 1990s and early 2000s have been a positive step, as well as proposed changes in harvest management to provide more troll access to Chinook, coho, and chum salmon. If future marine survivals and exvessel prices do not adversely override these actions, the value of the troll harvest will continue to increase.

The inherent risk of adjusting production to correct an imbalance is the lag time from egg takes to harvest, especially for Chinook and chum salmon. A decision to modify production numbers occurs four years before the majority of a brood year of fish returns for chum salmon and five years prior for Chinook 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. In the case of chum salmon, biologists and hatchery corporation staff believe the recent high marine survivals, which averaged 4.7% from 1993 to 1999, will return to the long-term average of 1.5% seen during the late 1980s and early 1990s. The brood year 2000 average marine survival was 2.3%.

The Joint RPT drafted and submitted two proposals that were passed by the Alaska Board of Fisheries during the 1999/2000 cycle that increased the opportunity for trollers to harvest enhanced Chinook, coho, and chum salmon. Of note in 2001 and 2002 cost recovery operations for Chinook and coho salmon by various hatchery operators experienced record high harvests. This is an indication that the increased troll harvest opportunities are not being fully utilized. Although the reasons for this are not completely clear at this time, the abundance of Chinook and low value of coho salmon (especially in inside waters) in 2002 certainly played a large role.

³ The role of the Joint RPT in making recommendations relative to allocation poses a unique situation for the three ADF&G representatives on the team. ADF&G staff provide technical input and participate in team discussions, but only the six industry representatives on the Joint RPT have voted on proposals or recommendations submitted to the Alaska Board of Fisheries.

FIGURES

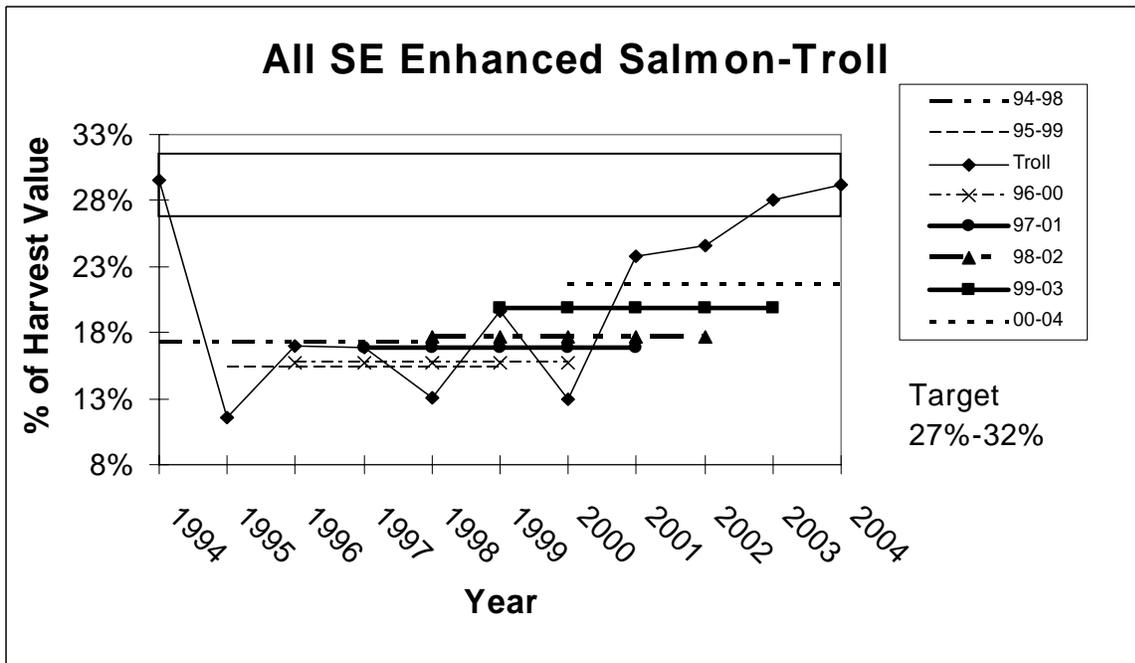


Figure 1.—Troll harvest of enhanced salmon, as a percent of enhanced harvest value.

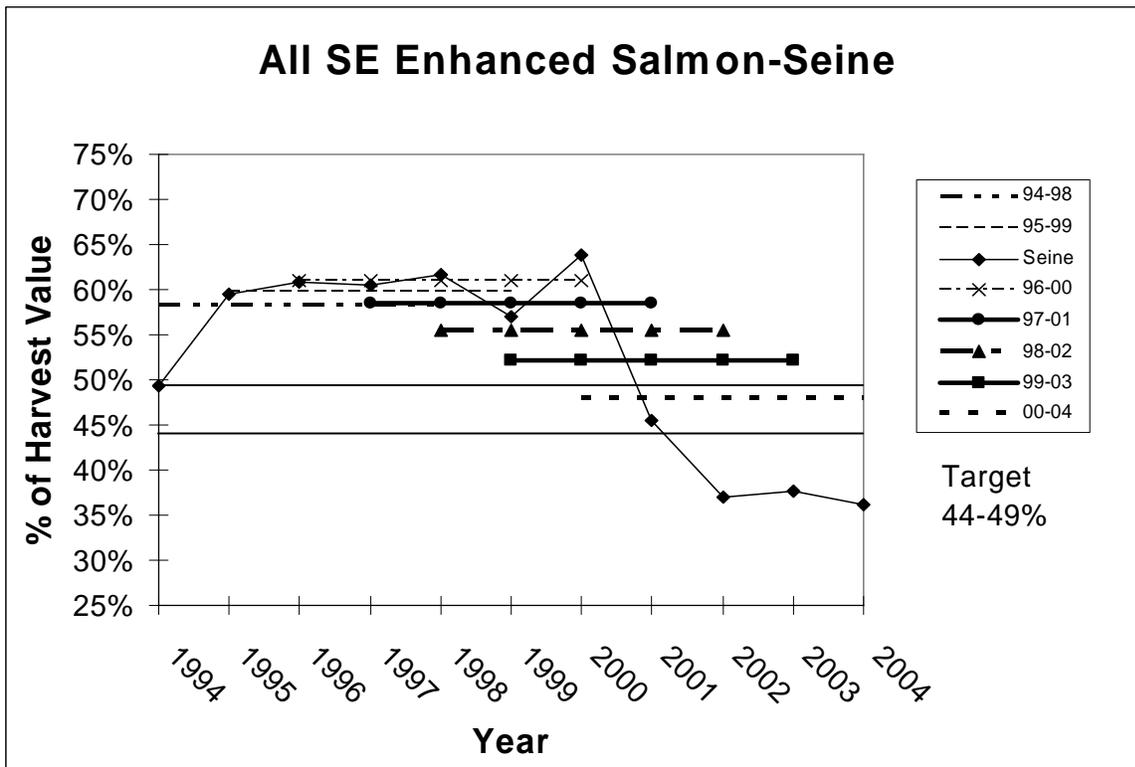


Figure 2.—Seine harvest of enhanced salmon, as a percent of enhanced harvest value.

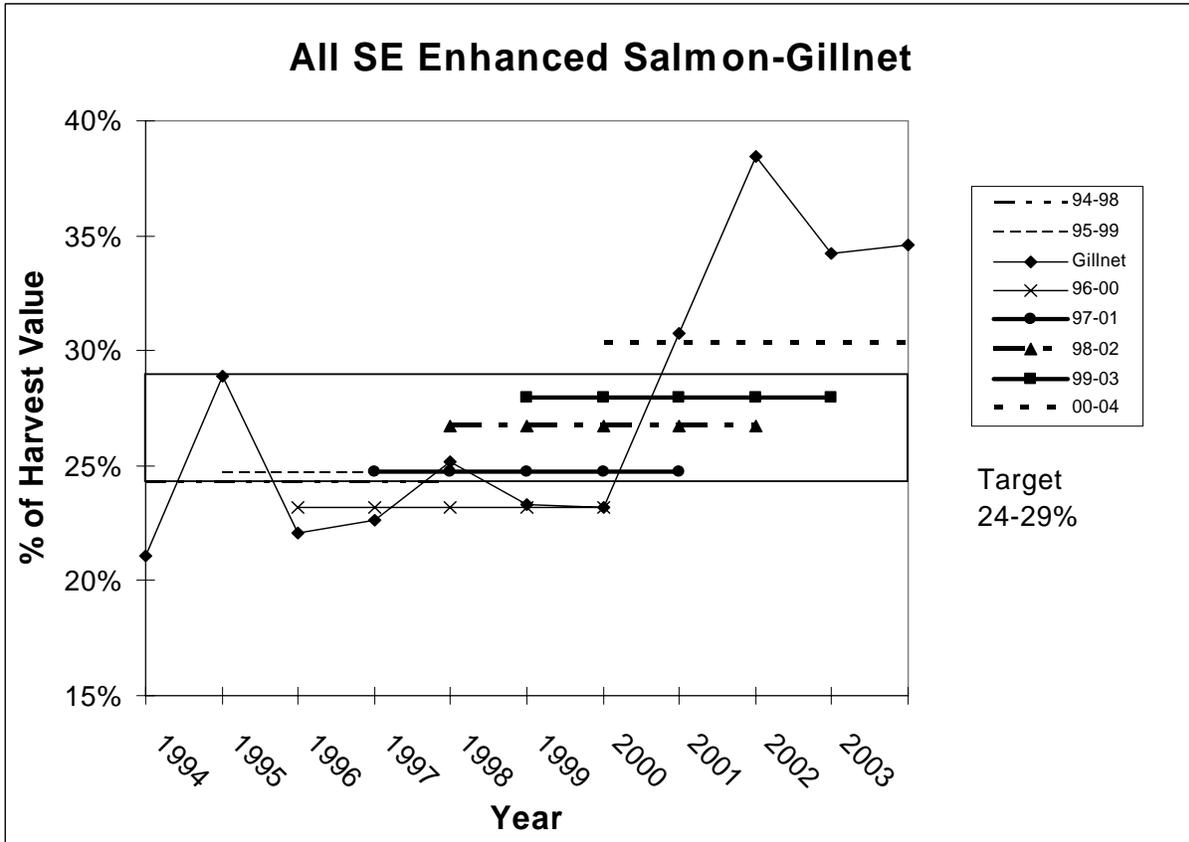


Figure 3.—Gillnet harvest of enhanced salmon, as a percent of enhanced harvest value.

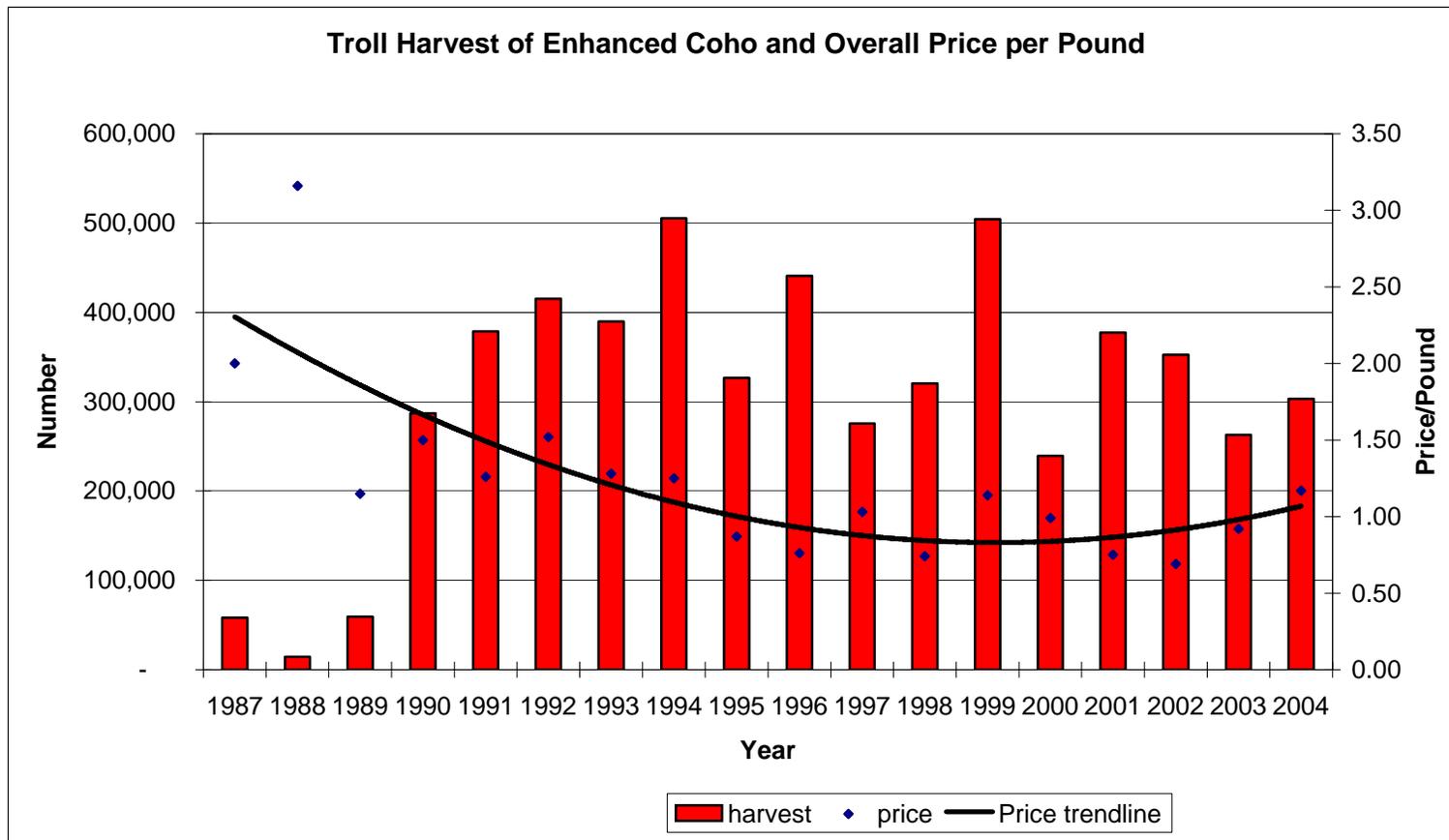


Figure 4.—Troll harvest of enhanced coho salmon and overall price per pound.

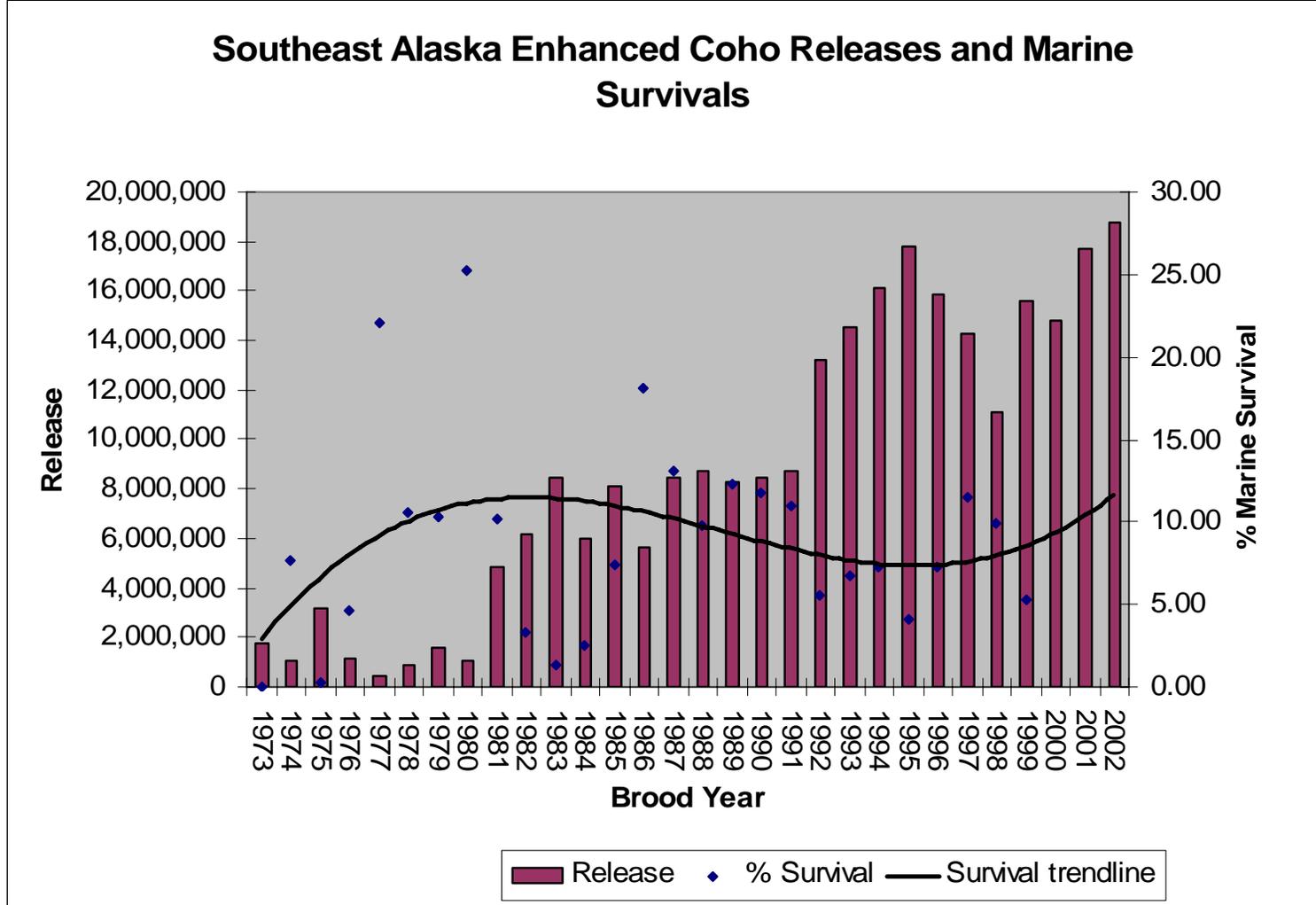


Figure 5.—Enhanced coho salmon marine survival and hatchery releases.

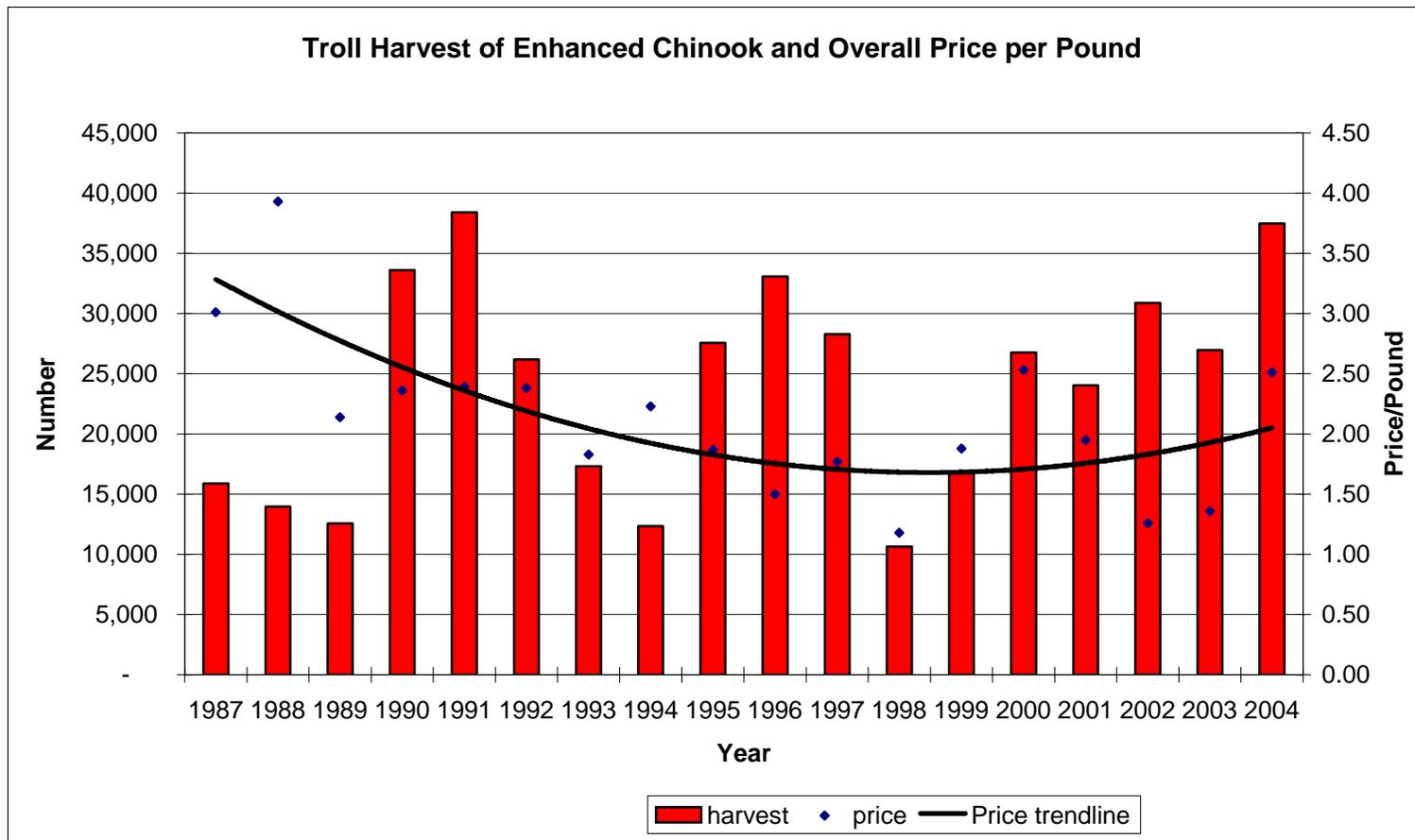


Figure 6.—Troll harvest of enhanced Chinook salmon and overall price per pound.

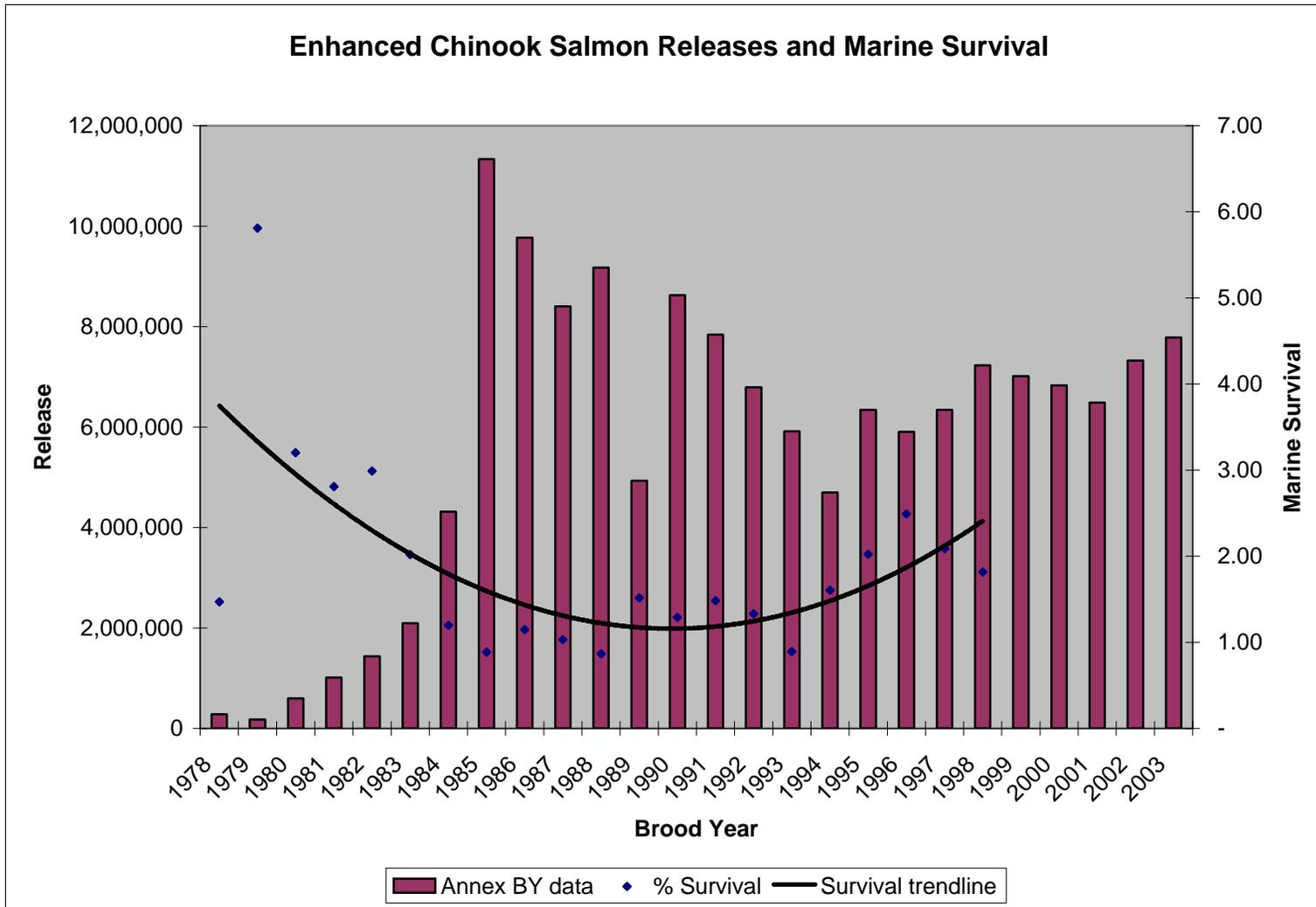


Figure 7.—Enhanced Chinook salmon marine survival and hatchery releases.

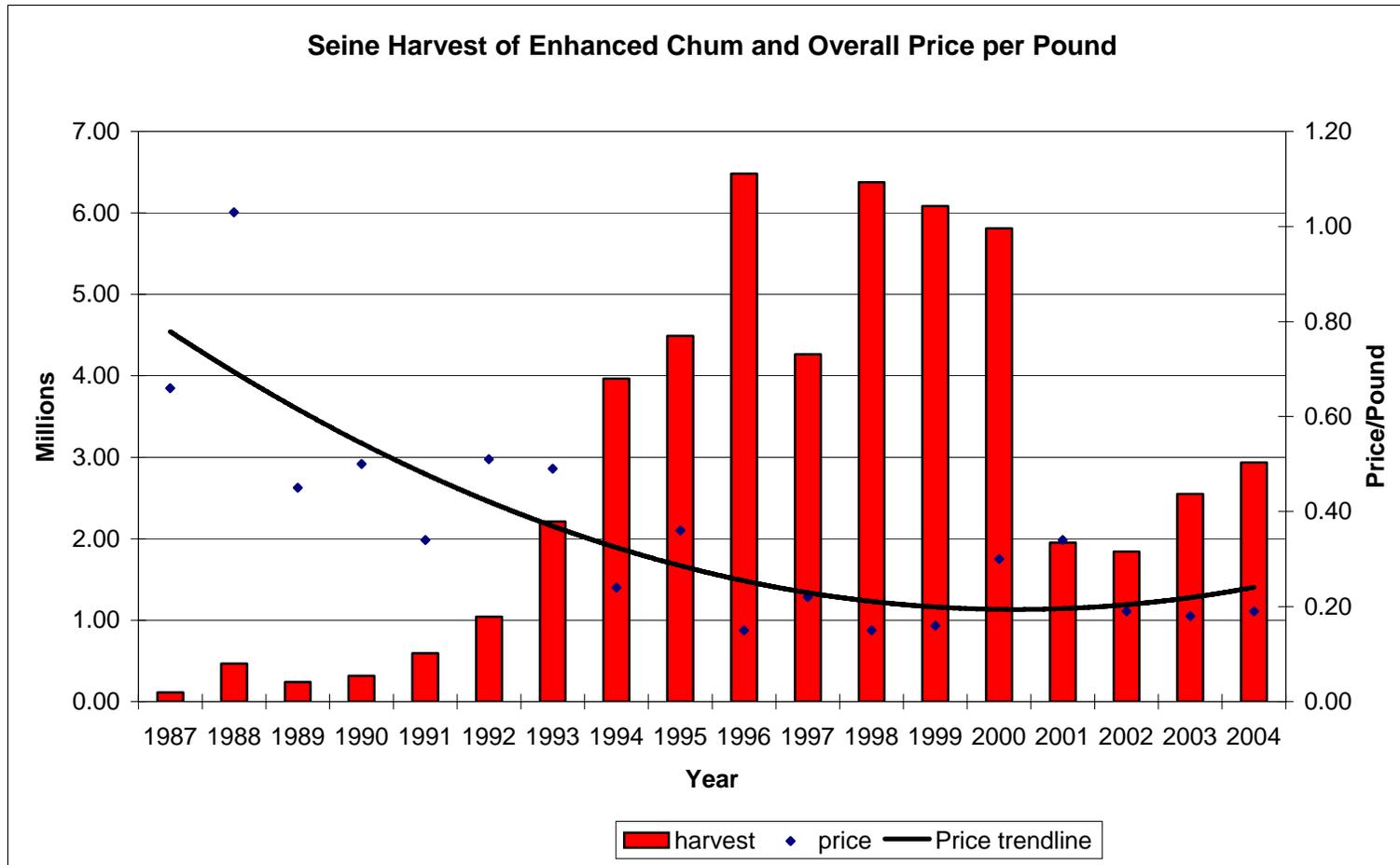


Figure 8.—Seine harvest of enhanced chum salmon and overall price per pound.

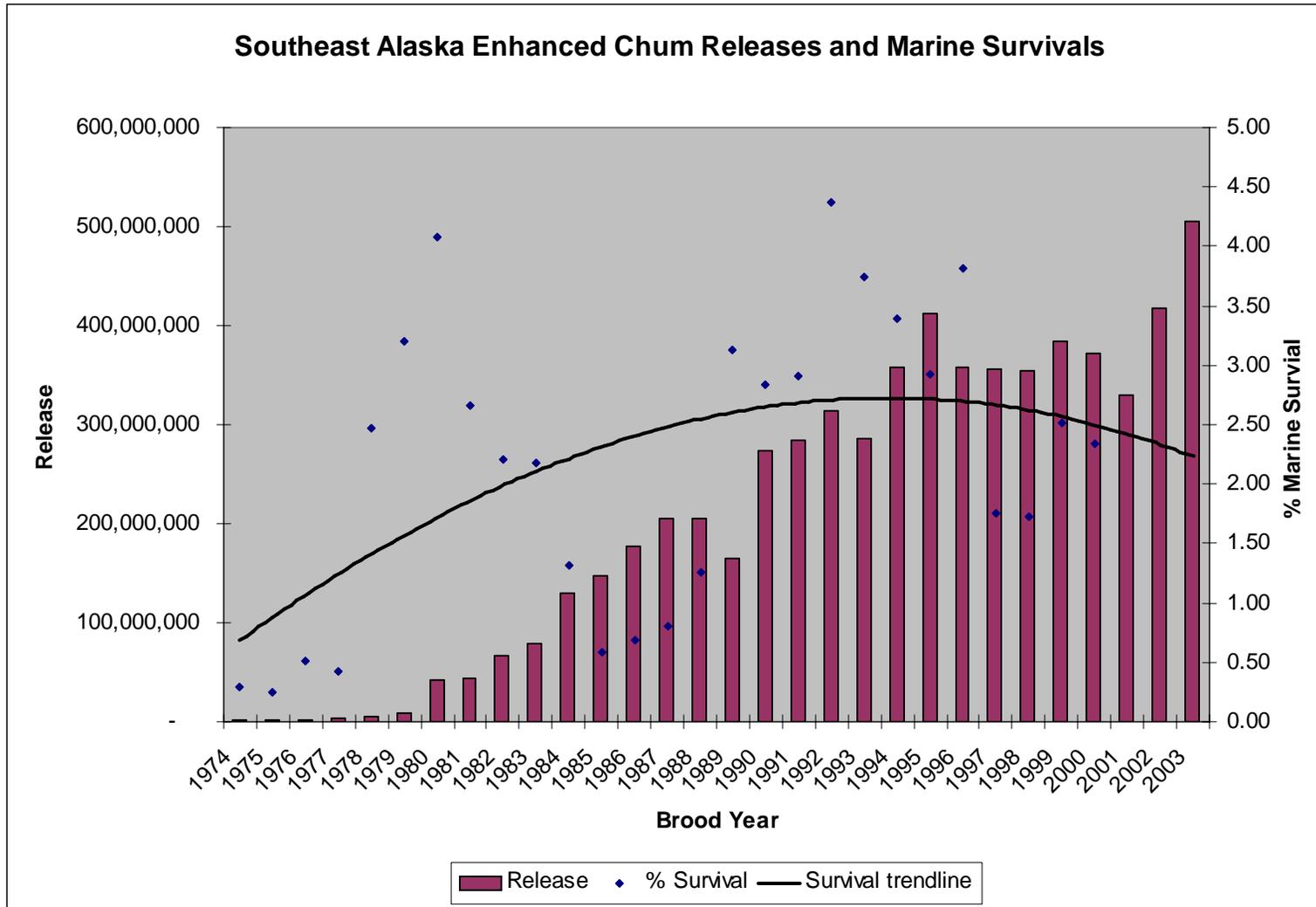


Figure 9.—Enhanced chum salmon marine survival and hatchery releases.

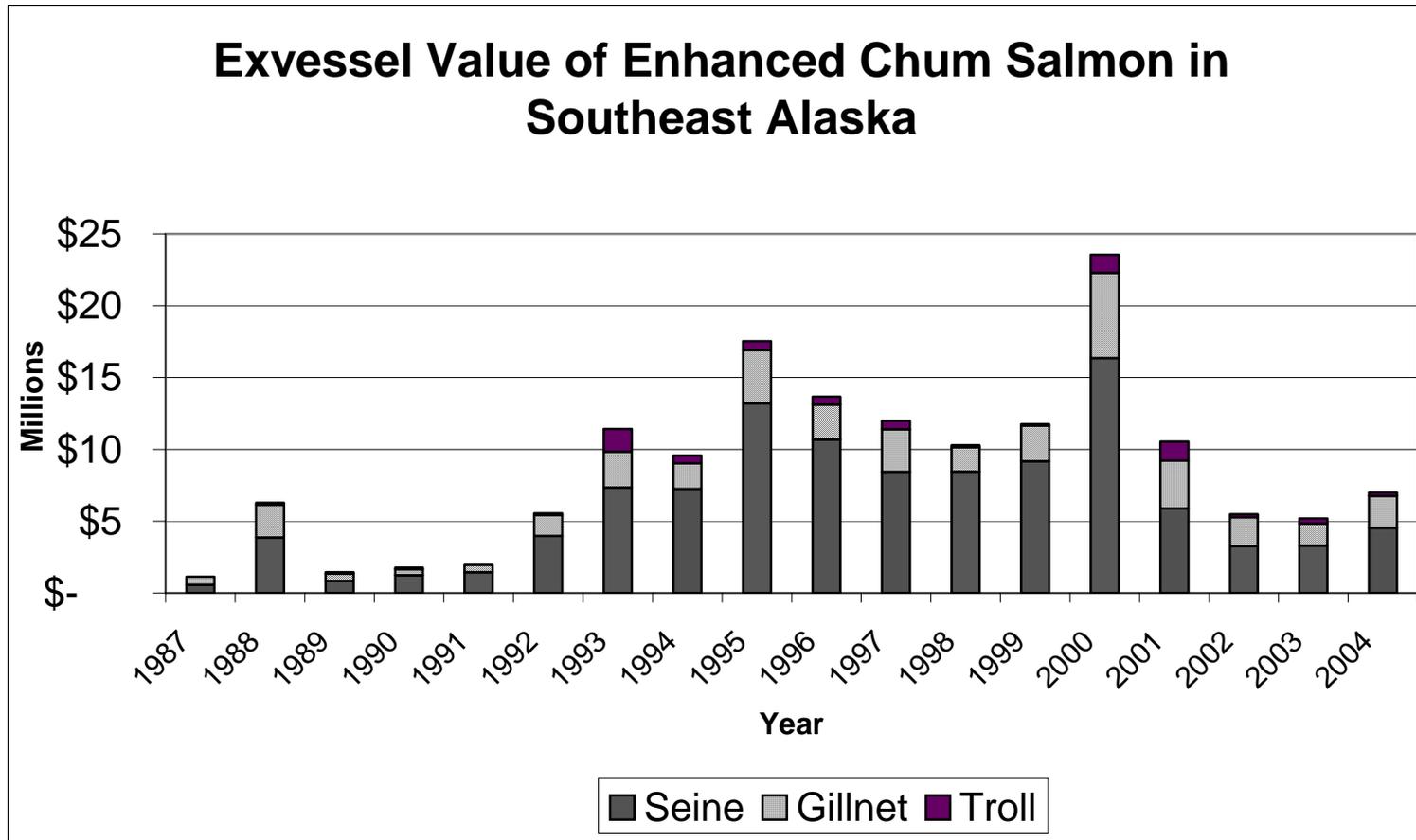


Figure 10.—Exvessel value of enhanced chum salmon in the Southeast Region.