

REGIONAL INFORMATION REPORT NO. 5FJ94-10



**Contribution of Enhanced Fish to Commercial Common Property
Harvests in Alaska, 1979-1993**

by

Marianne McKean McNair

Steven G. McGee

April 1994

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TABLE OF CONTENTS

LIST OF FIGURES	i
LIST OF TABLES	ii
INTRODUCTION	1
METHODOLOGY	1
RESULTS AND DISCUSSION	2
LITERATURE CITED	3
TABLES	5

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Proportion of enhanced salmon in total Alaska common property harvests	2
2	Species composition of enhanced fish caught in common property harvests.	3

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Common property commercial harvest of enhanced fish, 1979	5
2	Common property commercial harvest of enhanced fish, 1980	6
3	Common property commercial harvest of enhanced fish, 1981	7
4	Common property commercial harvest of enhanced fish, 1982	8
5	Common property commercial harvest of enhanced fish, 1983	9
6	Common property commercial harvest of enhanced fish, 1984	10
7	Common property commercial harvest of enhanced fish, 1985	11
8	Common property commercial harvest of enhanced fish, 1986	12
9	Common property commercial harvest of enhanced fish, 1987	13
10	Common property commercial harvest of enhanced fish, 1988	14
11	Common property commercial harvest of enhanced fish, 1989	15
12	Common property commercial harvest of enhanced fish, 1990	16
13	Common property commercial harvest of enhanced fish, 1991	17
14	Common property commercial harvest of enhanced fish, 1992	18
15	Common property commercial harvest of enhanced fish, 1993	19

INTRODUCTION

The Alaska state hatchery program was created in 1971, when the Alaska State Legislature created the Fisheries Rehabilitation, Enhancement and Development Division. In 1974, legislation was passed that allowed the formation of private nonprofit (PNP) aquaculture corporations. By 1993 the Alaska salmon enhancement program had grown to 38 salmon hatcheries, as well as numerous lake enrichment and fish rehabilitation projects. One of the most common questions asked about this enhancement program is whether it has been successful. There are many ways of evaluating success, and this report examines the hatchery program between 1979-1993 on the basis of the contribution of enhanced fish to common-property commercial fisheries. The tables presented here have been circulated for several years, and the data in them have been used in a variety of different ways. This report is intended to formalize these tables in order to minimize the chances for misinterpretation and to provide updated copies of the tables in a citable fashion.

METHODOLOGY

The following definitions apply to data used in this report:

Total commercial harvest: Commercial harvest includes all fish reported on fish ticket sales to processors. This includes fish caught by all commercial gear types, which includes cost-recovery harvested fish. This is the same as the caption "Total Commercial" on the tables.

Cost-recovery harvest: Cost-recovery harvest refers to the fish harvested by private nonprofit hatcheries to specifically recover operating and capital costs of the hatchery. These harvests occur in designated hatchery special harvest areas. This is the same as the caption "Cost Recovery" on the tables.

Commercial common property harvest: Commercial common property harvest refers to fish taken by traditional competitive commercial fisheries (e.g. troll, gillnet, etc.), but does not include fish commercially harvested for other purposes, such as hatchery cost recovery. This is the same as the caption "Common prop total" on the tables.

Enhanced common property harvest: Enhanced common property harvest refers only to fish caught in common property fisheries that are from either fish hatcheries or fishery enhancement projects, such as lake fertilization projects. For the purposes of this report, this covers the enhanced portion of the commercial common property harvest. This is the same as the caption "Enhanced" on the tables.

For the purposes of this report, harvest and catch are the same.

Commercial fish harvest information was obtained from Rigby et al. (1991), and from updates of that data (H. Savikko, Alaska Department of Fish and Game, Juneau, personal communication). Cost-recovery, and enhanced harvest data came originally from individual PNP annual reports, and summarized data published in the FRED program annual reports (McMullen and Kissel 1979, 1980, 1981; McMullen et al. 1982, 1983; Hansen 1985, 1986, 1987; Holland 1988, 1989, 1990; McKean 1991, Holland and McNair 1992; McNair and Holland 1993, 1994).

Cost-recovery harvest has been subtracted from the total commercial harvest to derive a commercial common property harvest total. The percentage of enhanced fish in the commercial common property harvest was then determined as follows:

$$\% \text{ enhanced fish in commercial common property} = \frac{\text{Enhanced commercial common property harvest}}{(\text{Total commercial harvest} - \text{Cost-recovery harvest})}$$

Although not included in the tables, it is also possible to determine from the data the portion of enhanced fish in the total commercial harvest. To do this, simply add cost-recovery harvest to the enhanced common property harvest to determine the enhanced commercial harvest, and divide by the total commercial harvest as follows:

$$\% \text{ enhanced fish in total commercial fishery} = \frac{(\text{Enhanced commercial common property harvest} + \text{Cost-recovery harvest})}{\text{Total commercial harvest}}$$

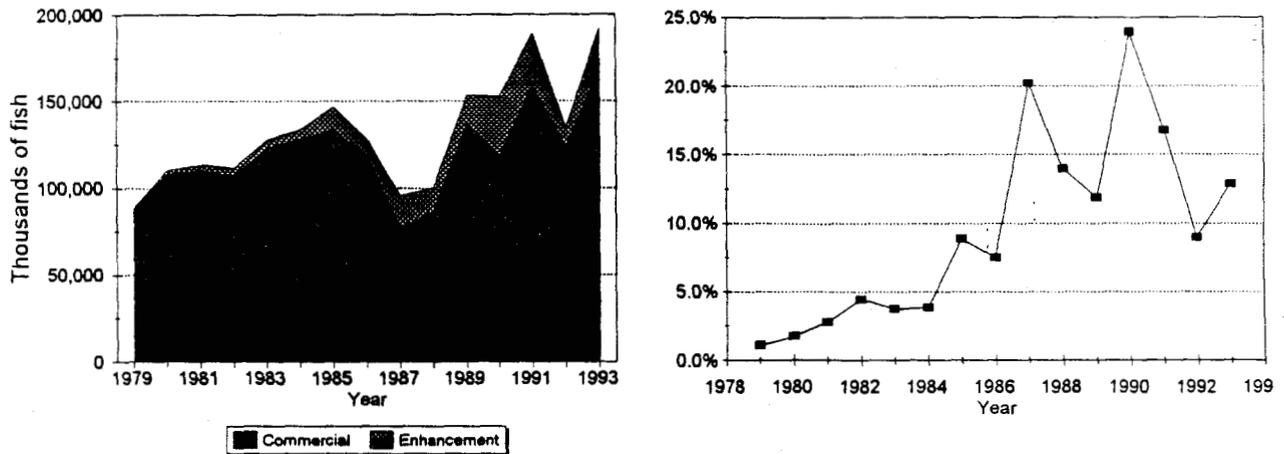


Figure 1. Proportion of enhanced fish in the total Alaska common-property salmon harvest.

RESULTS AND DISCUSSION

The Alaska salmon enhancement program has had a substantial impact on commercial common property harvests. In 1979, enhanced fish contributed 2% of the total commercial common property harvest (Figure 1; Table 1); by 1993 the percentage had grown to 13% and at times

had represented as much as 23% of the entire harvest. Pink salmon account for the majority of the enhanced fish harvested, representing 92% (Figure 2) of the enhanced fish caught in 1979 and 65% of those caught in 1993.

In the period covered by these tables, many events have occurred to the Alaska salmon enhancement program and, thus, to the resultant data on the commercial harvest of enhanced fish. Changes, such as the onset of the private-non-profit hatchery program, the Exxon Valdez oil spill, solutions to dealing with infectious hematopoietic necrosis virus in sockeye salmon, and the transfer of state hatcheries to the private sector, have changed the complexion of the program. In the face of current low salmon prices, state government budgetary cut-backs, and stiff competition with farmed salmon in world markets, Alaska's salmon enhancement program will continue to evolve.

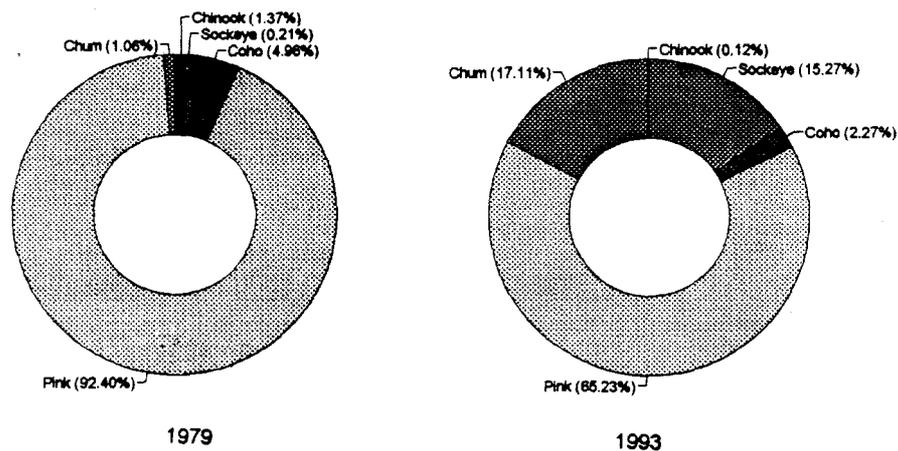


Figure 2. Species composition of enhanced fish caught in common property salmon harvests.

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Table 1. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1979.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1979	Southeast	Total Commercial	366	1,073	1,283	10,976	887	14,591
		-Cost Recovery				30		30
		Total Common Prop	366	1,073	1,283	10,946	887	14,561
		Enhanced	12	0	40	26	10	88
	% Enhanced	3.2%	0.0%	3.1%	0.2%	1.2%	0.6%	
	Prince William Sound	Total Commercial	19	369	314	15,637	349	16,692
		-Cost Recovery				224		224
		Total Common Prop	19	369	314	15,413	349	16,468
		Enhanced	0	0	2	275	0	277
	% Enhanced	0.0%	0.0%	0.5%	1.8%	0.0%	1.7%	
	Cook Inlet	Total Commercial	14	988	287	3,049	873	5,214
		Enhanced	2	2	7	369	0	380
		% Enhanced	11.6%	0.2%	2.5%	12.1%	0.0%	7.3%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	21	4,819	707	20,297	1,093	26,948
		Enhanced	0	0	0	235	0	235
		% Enhanced	0.0%	0.0%	0.0%	1.2%	0.0%	0.9%
	Bristol Bay	Total Commercial	212	21,428	294	3	906	22,846
		Enhanced	0	0	0	0	0	0
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	190	39	352	164	1,712	2,463
Enhanced		0	0	0	0	0	0	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
1979	Total	Total Commercial	822	28,716	3,237	50,126	5,820	88,754
		-Cost Recovery	0	0	0	253	0	253
	Total Common Prop	822	28,716	3,237	49,873	5,820	88,501	
	Enhanced	13	2	49	905	10	979	
	% Enhanced	1.6%	0.0%	1.5%	1.8%	0.2%	1.1%	

Table 2. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1980.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1980	Southeast	Total Commercial	321	1,119	1,136	14,477	1,650	18,708
		-Cost Recovery				3		3
		Total Common Prop	321	1,119	1,136	14,475	1,650	18,706
		Enhanced	28	0	10	1	17	57
	% Enhanced	8.8%	0.0%	0.9%	0.0%	1.0%	0.3%	
	Prince William Sound	Total Commercial	8	207	335	14,160	482	15,196
		-Cost Recovery				347	0	347
		Total Common Prop	8	207	335	13,813	482	14,849
		Enhanced	0	0	5	1,164	3	1,171
	% Enhanced	0.0%	0.0%	1.3%	8.4%	0.6%	7.9%	
	Cook Inlet	Total Commercial	14	1,643	285	2,676	463	5,082
		Enhanced	1	27	8	315	0	351
		% Enhanced	6.1%	1.6%	2.8%	11.8%	0.0%	6.9%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	22	6,529	659	29,142	3,384	39,745
		Enhanced	0	0	0	359	0	359
		% Enhanced	0.0%	0.0%	0.0%	1.2%	0.0%	0.9%
	Bristol Bay	Total Commercial	95	23,761	348	2,563	1,301	28,070
		Enhanced	0	2	0	0	0	2
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	207	42	364	257	2,326	3,203
Enhanced		0	0	0	0	0	0	
% Enhanced		0.0%	0	0	0	0	0	
1980	Total	Total Commercial	667	33,301	3,127	63,275	9,606	110,004
		-Cost Recovery	0	0	0	349	0	349
		Total Common Prop	667	33,301	3,127	62,926	9,606	109,655
		Enhanced	29	28	22	1,840	20	1,940
		% Enhanced	4.4%	0.1%	0.7%	2.9%	0.2%	1.8%

Table 3. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1981.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries- private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	Southeast	Total Commercial	270	1,077	1,406	18,966	848	22,575
		-Cost Recovery			6	131		137
		Total Common Prop	270	1,077	1,400	18,835	848	22,438
		Enhanced	2	0	42	18	1	63
	% Enhanced	0.7%	0.0%	3.0%	0.1%	0.1%	0.3%	
	Prince William Sound	Total Commercial	20	783	396	20,556	1,887	23,648
		-Cost Recovery				707	6	713
		Total Common Prop	20	783	396	19,849	1,881	22,935
		Enhanced	0	0	0	1,406	12	1,418
	% Enhanced	0.0%	0.0%	0.0%	7.1%	0.7%	6.2%	
	Cook Inlet	Total Commercial	13	1,549	495	3,406	1,169	6,634
		Enhanced	0	51	2	963	0	1,017
		% Enhanced	0.8%	3.3%	0.4%	28.3%	0.0%	15.3%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	32	7,217	516	16,844	4,405	29,023
		Enhanced	0	0	0	663	0	663
		% Enhanced	0.0%	0.0%	0.0%	3.9%	0.0%	2.3%
	Bristol Bay	Total Commercial	237	25,603	376	7	1,504	27,728
		Enhanced	0	1	0	0	0	1
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	244	106	332	229	2,801	3,717
		Enhanced	0	0	0	0	0	0
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
1981	Total	Total Commercial	816	36,335	3,521	60,008	12,614	113,325
		-Cost Recovery	0	0	6	838	6	850
		Total Common Prop	816	36,335	3,515	59,170	12,608	112,475
		Enhanced	2	52	44	3,051	13	3,161
		% Enhanced	0.2%	0.1%	1.2%	5.2%	0.1%	2.8%

Table 4. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1982.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1982	Southeast	Total Commercial	276	1,488	2,043	24,189	1,328	29,329
		-Cost Recovery			2	4	0	6
		Total Common Prop	276	1,488	2,041	24,185	1,328	29,323
		Enhanced	1	0	79	13	92	184
	% Enhanced	0.2%	0.0%	3.9%	0.1%	6.9%	0.6%	
	Prince William Sound	Total Commercial	47	2,239	629	20,402	1,335	24,656
		-Cost Recovery				1,355	0	1,355
		Total Common Prop	47	2,239	629	19,047	1,335	23,301
		Enhanced	0	0	0	4,321	1	4,323
	% Enhanced	0.0%	0.0%	0.0%	22.7%	0.1%	18.6%	
	Cook Inlet	Total Commercial	21	3,391	840	1,342	1,632	7,228
		Enhanced	0	27	5	181	7	220
		% Enhanced	1.4%	0.8%	0.6%	13.5%	0.5%	3.0%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	45	6,507	1,141	17,155	4,261	29,117
		Enhanced	0	0	0	190	0	190
		% Enhanced	0.0%	0.0%	0.0%	1.1%	0.0%	0.7%
	Bristol Bay	Total Commercial	253	15,104	619	1,492	921	18,391
		Enhanced	0	0	0	0	0	0
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	206	96	697	242	1,606	2,851
Enhanced		0	0	0	0	0	0	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
1982 Total	Total Commercial	848	28,825	5,969	64,822	11,083	111,572	
	-Cost Recovery	0	0	2	1,359	0	1,361	
	Total Common Prop	848	28,825	5,967	63,463	11,083	110,211	
	Enhanced	1	27	83	4,706	101	4,917	
	% Enhanced	0.1%	0.1%	1.4%	7.4%	0.9%	4.5%	

Table 5. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1983.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1983	Southeast	Total Commercial	275	1,555	1,931	37,523	1,167	42,459
		-Cost Recovery			7	130	35	172
		Total Common Prop	275	1,555	1,924	37,393	1,132	42,287
		Enhanced	1	0	73	52	165	291
	% Enhanced	0.4%	0.0%	3.8%	0.1%	14.5%	0.7%	
	Prince William Sound	Total Commercial	52	759	338	13,980	1,044	16,178
		-Cost Recovery				684	0	684
		Total Common Prop	52	759	338	13,296	1,044	15,494
		Enhanced	0	8	0	3,702	13	3,722
	% Enhanced	0.0%	1.0%	0.0%	27.8%	1.2%	24.0%	
	Cook Inlet	Total Commercial	21	5,237	527	997	1,307	8,091
		Enhanced	1	151	0	577	0	730
		% Enhanced	4.3%	2.9%	0.0%	57.9%	0.0%	9.0%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	63	7,706	420	7,756	3,306	19,260
		Enhanced	0	0	0	130	0	130
% Enhanced		0.0%	0.0%	0.0%	1.7%	0.0%	0.7%	
Bristol Bay	Total Commercial	198	37,372	128	0	1,632	39,331	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	196	89	261	76	1,754	2,379	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
1983 Total	Total Commercial	805	52,718	3,605	60,332	10,210	127,698	
	-Cost Recovery	0	0	7	813	35	856	
	Total Common Prop	805	52,718	3,598	59,519	10,175	126,842	
	Enhanced	2	159	73	4,461	178	4,873	
	% Enhanced	0.3%	0.3%	2.0%	7.5%	1.7%	3.8%	

Table 6. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1984.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1984	Southeast	Total Commercial	257	1,212	1,842	24,630	4,089	32,035
		-Cost Recovery	1		22	165	431	620
		Total Common Prop	256	1,212	1,820	24,465	3,658	31,415
		Enhanced	6	0	113	74	989	1,182
	% Enhanced	2.5%	0.0%	6.2%	0.3%	27.0%	3.8%	
	Prince William Sound	Total Commercial	38	1,251	578	21,569	1,245	24,689
		-Cost Recovery				387	5	392
		Total Common Prop	38	1,251	578	21,182	1,240	24,297
		Enhanced	0	15	0	3,026	78	3,119
	% Enhanced	0.0%	1.2%	0.0%	14.3%	6.3%	12.8%	
	Cook Inlet	Total Commercial	10	2,377	466	1,318	776	4,949
		Enhanced	0	238	4	230	1	473
		% Enhanced	2.2%	10.0%	0.9%	17.5%	0.1%	9.6%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	39	8,729	849	25,213	3,194	38,033
		Enhanced	0	2	0	336	0	338
		% Enhanced	0.0%	0.0%	0.0%	1.3%	0.0%	0.9%
	Bristol Bay	Total Commercial	104	24,693	590	3,364	2,022	30,775
		Enhanced	0	0	0	0	0	0
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	201	81	978	141	1,750	3,156
Enhanced		0	0	0	0	1	1	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	
1984 Total	Total Commercial	649	38,343	5,303	76,235	13,076	133,637	
	-Cost Recovery	1	0	22	552	436	1,012	
	Total Common Prop	648	38,343	5,281	75,683	12,640	132,625	
	Enhanced	7	255	117	3,665	1,069	5,113	
	% Enhanced	1.0%	0.7%	2.2%	4.8%	8.5%	3.9%	

Table 7. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1985.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1985	Southeast	Total Commercial	240	1,861	2,562	51,959	3,272	59,899
		-Cost Recovery	2		30	479	120	630
		Total Common Prop	238	1,861	2,532	51,480	3,152	59,269
		Enhanced	17	0	195	442	778	1,432
		% Enhanced	7.1%	0.0%	7.7%	0.9%	24.7%	2.4%
	Prince William Sound	Total Commercial	43	1,428	1,022	25,129	1,286	28,912
		-Cost Recovery				1,220	4	1,223
		Total Common Prop	43	1,428	1,022	23,909	1,282	27,689
		Enhanced	0	33	0	6,848	60	6,942
		% Enhanced	0.0%	2.3%	0.0%	28.6%	4.7%	25.1%
	Cook Inlet	Total Commercial	25	4,315	658	1,317	799	7,116
		Enhanced	0	446	1	464	2	912
		% Enhanced	1.2%	10.3%	0.1%	35.2%	0.2%	12.8%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	34	7,505	823	11,928	2,480	22,779
		Enhanced	0	2	12	3,448	120	3,582
		% Enhanced	0.0%	0.0%	1.5%	28.9%	4.8%	15.7%
	Bristol Bay	Total Commercial	121	24,218	163	0	1,068	25,572
		Enhanced	0	0	0	0	0	0
		% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Arctic/Yukon/Kuskokwim	Total Commercial	236	121	460	3	1,640	2,465
Enhanced		0	0	0	0	2	3	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	
1985 Total	Total Commercial	699	39,448	5,688	90,336	10,545	146,743	
	-Cost Recovery	2	0	30	1,699	123	1,853	
	Total Common Prop	697	39,448	5,658	88,637	10,422	144,890	
	Enhanced	17	481	208	11,202	963	12,871	
	% Enhanced	2.5%	1.2%	3.7%	12.6%	9.2%	8.9%	

Table 8. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1986.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	Southeast	Total Commercial	259	1,432	3,353	45,575	3,297	53,921
		-Cost Recovery	2		70	45	155	273
		Total Common Prop	257	1,432	3,283	45,530	3,142	53,648
		Enhanced	17	19	325	407	997	1,765
		% Enhanced	6.8%	1.3%	9.9%	0.9%	31.7%	3.3%
	Prince William Sound	Total Commercial	41	1,287	425	11,390	1,699	14,847
		-Cost Recovery			2	903	24	930
		Total Common Prop	41	1,287	423	10,487	1,675	13,917
		Enhanced	0	40	5	5,889	175	6,109
		% Enhanced	0.0%	3.1%	1.2%	56.2%	10.4%	43.9%
	Cook Inlet	Total Commercial	40	4,974	762	2,710	1,199	9,687
		-Cost Recovery			0	0	9	10
		Total Common Prop	40	4,974	762	2,710	1,190	9,677
		Enhanced	0	707	6	380	15	1,108
	% Enhanced	0.9%	14.2%	0.8%	14.0%	1.3%	11.5%	
Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	24	8,465	711	16,403	3,330	28,934	
	Enhanced	0	30	2	398	70	500	
	% Enhanced	0.3%	0.4%	0.2%	2.4%	2.1%	1.7%	
Bristol Bay	Total Commercial	93	15,889	177	394	1,131	17,684	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	150	142	818	56	1,615	2,786	
	Enhanced	0	0	0	0	4	4	
	% Enhanced	0.1%	0.0%	0.0%	0.0%	0.2%	0.1%	
1986 Total	Total Commercial	607	32,189	6,246	76,528	12,271	127,859	
	-Cost Recovery	2	0	73	949	189	1,212	
	Total Common Prop	605	32,189	6,173	75,579	12,082	126,647	
	Enhanced	18	795	338	7,074	1,261	9,487	
	% Enhanced	3.0%	2.5%	5.5%	9.4%	10.4%	7.5%	

Table 9. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1987.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1987	Southeast	Total Commercial	261	1,362	1,589	10,035	2,556	15,804
		-Cost Recovery	2		49	978	483	1,513
		Total Common Prop	259	1,362	1,540	9,057	2,073	14,291
		Enhanced	28	36	132	467	811	1,474
	% Enhanced	11.0%	2.6%	8.6%	5.2%	39.1%	10.3%	
	Prince William Sound	Total Commercial	42	1,738	176	29,231	1,920	33,105
		-Cost Recovery			7	2,647	2	2,656
		Total Common Prop	42	1,738	169	26,584	1,918	30,449
		Enhanced	0	61	23	14,783	126	14,993
	% Enhanced	0.2%	3.5%	13.8%	55.6%	6.6%	49.2%	
	Cook Inlet	Total Commercial	41	9,749	466	311	506	11,072
		-Cost Recovery			1		3	5
		Total Common Prop	41	9,749	465	311	503	11,067
		Enhanced	1	758	18	85	8	869
	% Enhanced	1.6%	7.8%	3.9%	27.2%	1.7%	7.9%	
	Kodiak/ AK Peninsula	Total Commercial	31	6,287	741	6,550	2,091	15,699
		Enhanced	0	18	5	1,082	4	1,109
		% Enhanced	0.0%	0.3%	0.6%	16.5%	0.2%	7.1%
	Bristol Bay	Total Commercial	76	16,048	70	0	1,510	17,704
		Enhanced	0	0	0	0	0	0
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	207	170	503	2	1,255	2,137	
	Enhanced	0	0	0	0	6	6	
	% Enhanced	0.0%	0.0%	0.1%	0.0%	0.4%	0.3%	
1987	Total	Total Commercial	658	35,354	3,545	46,129	9,838	95,521
		-Cost Recovery	2	0	58	3,625	488	4,173
	Total Common Prop	656	35,354	3,487	42,504	9,350	91,348	
	Enhanced	29	872	179	16,417	955	18,451	
	% Enhanced	4.5%	2.5%	5.1%	38.6%	10.2%	20.2%	

Table 10. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1988.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1988	Southeast	Total Commercial	264	1,460	1,042	11,202	3,535	17,504
		-Cost Recovery	9		4	74	425	511
		Total Common Prop	255	1,460	1,038	11,128	3,110	16,993
		Enhanced	33	20	49	119	973	1,194
		% Enhanced	12.8%	1.4%	4.7%	1.1%	31.3%	7.0%
	Prince William Sound	Total Commercial	32	768	479	11,737	1,841	14,855
		-Cost Recovery			7	1,635	43	1,686
		Total Common Prop	32	768	472	10,102	1,798	13,169
		Enhanced	0	70	59	8,949	482	9,560
		% Enhanced	0.7%	9.1%	12.5%	88.6%	26.8%	72.6%
	Cook Inlet	Total Commercial	31	7,124	567	1,391	1,028	10,141
		-Cost Recovery			2		2	3
		Adj Comm total	31	7,124	565	1,391	1,026	10,138
		Enhanced	1	888	21	836	7	1,753
		% Enhanced	4.7%	12.5%	3.7%	60.1%	0.7%	17.3%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	57	6,409	1,413	24,892	3,940	36,713
		-Cost Recovery				298		298
		Total Common Prop	57	6,409	1,413	24,594	3,940	36,415
		Enhanced	0	247	25	675	151	1,099
		% Enhanced	0.1%	3.9%	1.8%	2.7%	3.8%	3.0%
	Bristol Bay	Total Commercial	45	14,010	187	922	1,475	16,639
Enhanced		0	0	0	0	0	0	
% Enhanced		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	179	151	728	114	3,117	4,288	
	Enhanced	0	0	1	0	27	28	
	% Enhanced	0.2%	0.0%	0.1%	0.0%	0.9%	0.7%	
1988	Total	Total Commercial	608	29,922	4,416	50,258	14,936	100,140
		-Cost Recovery	9	0	13	2,008	470	2,499
		Total Common Prop	599	29,922	4,403	48,250	14,466	97,641
		Enhanced	35	1,226	156	10,579	1,640	13,635
		% Enhanced	5.8%	4.1%	3.5%	21.9%	11.3%	14.0%

Table 11. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1989.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1989	Southeast	Total Commercial	288	2,115	2,133	59,317	1,935	65,788
		-Cost Recovery	18		13	223	155	409
		Total Common Prop	270	2,115	2,120	59,094	1,780	65,379
		Enhanced	21	37	78	881	487	1,503
		% Enhanced	7.9%	1.7%	3.7%	1.5%	27.3%	2.3%
	Prince William Sound	Total Commercial	32	1,175	425	21,886	1,002	24,520
		-Cost Recovery			72	7,806	27	7,905
		Total Common Prop	32	1,175	353	14,080	975	16,615
		Enhanced	0	127	131	12,368	200	12,826
		% Enhanced	1.1%	10.8%	37.0%	87.8%	20.5%	77.2%
	Cook Inlet	Total Commercial	27	5,070	279	1,359	135	6,870
		-Cost Recovery		40	4		2	46
		Total Common Prop	27	5,030	275	1,359	133	6,824
		Enhanced	2	389	26	877	3	1,297
		% Enhanced	6.0%	7.7%	9.6%	64.5%	2.1%	19.0%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	21	6,840	741	13,952	1,173	22,726
		-Cost Recovery				6,492		6,492
		Total Common Prop	21	6,840	741	7,460	1,173	16,234
		Enhanced		800				800
		% Enhanced	0.0%	11.7%	0.0%	0.0%	0.0%	4.9%
Bristol Bay	Total Commercial	40	29,292	240	0	577	30,149	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	175	83	684	1	2,330	3,272	
	Enhanced	0	0	0	0	16	16	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%	
1989	Total	Total Commercial	583	44,575	4,500	96,516	7,152	153,325
		-Cost Recovery	18	40	89	14,521	184	14,852
	Total Common Prop	565	44,535	4,411	81,995	6,968	138,473	
	Enhanced	23	1,352	235	14,126	705	16,442	
	% Enhanced	4.1%	3.0%	5.3%	17.2%	10.1%	11.9%	

Table 12. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1990.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	Southeast	Total Commercial	332	2,136	2,664	31,185	1,884	38,201
		-Cost Recovery	22	0	117	988	337	1,465
		Total Common Prop	310	2,136	2,546	30,196	1,547	36,736
		Enhanced	38	110	344	499	408	1,399
		% Enhanced	12.3%	5.2%	13.5%	1.7%	26.4%	3.8%
	Prince William Sound	Total Commercial	22	912	524	44,165	967	46,591
		-Cost Recovery			17	8,858	32	8,907
		Total Common Prop	22	912	507	35,307	936	37,684
		Enhanced	0	150	201	28,195	612	29,158
		% Enhanced	1.1%	16.4%	39.7%	79.9%	65.3%	77.4%
	Cook Inlet	Total Commercial	18	3,807	503	986	358	6,870
		-Cost Recovery		9	6		1	16
		Total Common Prop	18	3,799	497	986	357	6,853
		Enhanced	2	404	9	167	48	630
		% Enhanced	8.5%	10.6%	1.8%	17.0%	13.4%	9.2%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	54	12,093	875	10,124	2,177	25,323
		-Cost Recovery						0
		Total Common Prop	54	12,093	875	10,124	2,177	25,323
		Enhanced		2,291	7	592	4	2,895
		% Enhanced	0.0%	18.9%	0.8%	5.9%	0.2%	11.4%
Bristol Bay	Total Commercial	33	33,165	100	517	1,008	34,822	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	189	205	532	17	1,136	2,078	
	Enhanced	0	0	0	0	5	5	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.4%	0.2%	
1990 Total	Total Commercial	647	52,317	5,199	86,994	7,531	152,687	
	-Cost Recovery	22	9	141	9,846	370	10,388	
	Total Common Prop	625	52,308	5,058	77,148	7,161	142,299	
	Enhanced	40	2,955	562	29,454	1,077	34,087	
	% Enhanced	6.4%	5.6%	11.1%	38.2%	15.0%	24.0%	

Table 13. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1991.

		Alaska Department of Fish and Game - CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1991	Southeast	Total Commercial	327	2,058	2,347	61,515	2,949	69,196
		-Cost Recovery	21	1	313	1,150	388	1,873
		Total Common Prop	306	2,057	2,034	60,366	2,561	67,323
		Enhanced	42	99	581	1,092	877	2,691
		% Enhanced	13.7%	4.8%	28.5%	1.8%	34.2%	4.0%
	Prince William Sound	Total Commercial	35	1,735	632	37,295	352	40,049
		-Cost Recovery			53	10,326	13	10,392
		Total Common Prop	35	1,735	579	26,969	339	29,657
		Enhanced	0	708	76	20,896	238	21,918
		% Enhanced	0.5%	40.8%	13.1%	77.5%	70.0%	73.9%
	Cook Inlet	Total Commercial	15	2,511	445	829	280	4,080
		-Cost Recovery		4	6		3	13
		Total Common Prop	15	2,507	439	829	277	4,067
		Enhanced	1	514	3	200	23	741
		% Enhanced	5.5%	20.5%	0.7%	24.1%	8.4%	18.2%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	44	12,759	1,041	28,434	3,057	45,335
		-Cost Recovery						0
		Total Common Prop	44	12,759	1,041	28,434	3,057	45,335
		Enhanced		2,871	10	1,407	32	4,319
		% Enhanced	0.0%	22.5%	0.9%	4.9%	1.0%	9.5%
Bristol Bay	Total Commercial	36	26,233	118	0	1,273	27,660	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	156	202	729	1	1,688	2,776	
	Enhanced	0	0	0	0	20	20	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	1.2%	0.7%	
1991 Total	Total Commercial	613	45,498	5,312	128,074	9,599	189,096	
	-Cost Recovery	21	5	373	11,475	404	12,278	
	Total Common Prop	592	45,493	4,939	116,599	9,195	176,818	
	Enhanced	43	4,191	669	23,596	1,190	29,688	
	% Enhanced	7.2%	9.2%	13.6%	20.2%	12.9%	16.8%	

Table 14. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1992.

Alaska Department of Fish and Game- CFMD Division		13-Apr-94						
<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>								
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1992	Southeast	Total Commercial	232	2,633	2,879	34,694	4,566	45,004
		-Cost Recovery	17	3	265	2,671	690	3,645
		Total Common Prop	215	2,630	2,614	32,023	3,876	41,359
		Enhanced	34	196	617	1,309	1,459	3,614
		% Enhanced	15.6%	7.5%	23.6%	4.1%	37.6%	8.7%
	Prince William Sound	Total Commercial	41	1,772	620	8,637	334	11,404
		-Cost Recovery	1	159	73	3,063	51	3,346
		Total Common Prop	40	1,613	547	5,574	283	8,058
		Enhanced	0	485	123	4,416	214	5,239
		% Enhanced	1.1%	30.1%	22.5%	79.2%	75.4%	65.0%
	Cook Inlet	Total Commercial	19	9,072	459	858	370	10,778
		-Cost Recovery		9	1	276	1	287
		Total Common Prop	19	9,063	458	582	369	10,491
		Enhanced	2	492	6	98	3	601
		% Enhanced	11.9%	5.4%	1.3%	16.8%	0.8%	5.7%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	54	12,417	1,167	14,890	2,606	31,134
		-Cost Recovery						0
		Total Common Prop	54	12,417	1,167	14,890	2,606	31,134
		Enhanced		1,079	10	824	4	1,917
		% Enhanced	0.0%	8.7%	0.9%	5.5%	0.1%	6.2%
Bristol Bay	Total Commercial	69	31,967	191	494	885	33,606	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	193	197	857	104	1,263	2,614	
	Enhanced	0	0	0	0	40	40	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	3.2%	1.5%	
1992 Total	Total Commercial	608	58,058	6,173	59,677	10,024	134,540	
	-Cost Recovery	18	171	339	6,009	741	7,278	
	Total Common Prop	590	57,887	5,834	53,668	9,283	127,262	
	Enhanced	36	2,253	756	6,647	1,719	11,410	
	% Enhanced	6.1%	3.9%	13.0%	12.4%	18.5%	9.0%	

Table 15. Common property commercial harvest of enhanced salmon in Alaska, in thousands of fish, 1993.

		Alaska Department of Fish and Game- CFMD Division					13-Apr-94	
		<i>data represents state enhancement projects and hatcheries+ private nonprofit hatcheries</i>						
Year	Area	Harvest	Chinook	Sockeye	Coho	Pink	Chum	Total
1993	Southeast	Total Commercial	275	3,176	3,433	57,249	7,229	71,362
		-Cost Recovery	22	3	116	300	1,231	1,671
		Total Common Prop	253	3,173	3,317	56,949	5,998	69,691
		Enhanced	27	358	480	662	3,440	4,967
		% Enhanced	10.8%	11.3%	14.5%	1.2%	57.4%	7.1%
	Prince William Sound	Total Commercial	32	1,851	446	5,761	1,186	9,276
		-Cost Recovery	1	116	4	2,027	539	2,687
		Total Common Prop	31	1,735	442	3,734	647	6,589
		Enhanced	1	326	36	2,386	611	3,359
		% Enhanced	2.0%	18.8%	8.1%	63.9%	94.4%	51.0%
	Cook Inlet	Total Commercial	21	4,960	311	970	126	6,388
		-Cost Recovery	1	38	9	409	12	469
		Total Common Prop	20	4,922	302	561	114	5,919
		Enhanced	2	460	14	228	26	730
		% Enhanced	8.6%	9.3%	4.6%	40.7%	22.7%	12.3%
	Kodiak/ Chignik/ Aleut AK Peninsula	Total Commercial	99	13,554	810	45,237	1,839	61,539
		-Cost Recovery						0
		Total Common Prop	99	13,554	810	45,237	1,839	61,539
		Enhanced		2,529	16	12,416	35	14,996
		% Enhanced	0.0%	18.7%	2.0%	27.4%	1.9%	24.4%
Bristol Bay	Total Commercial	85	40,843	72	1	724	41,725	
	Enhanced	0	0	0	0	0	0	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Arctic/Yukon/Kuskokwim	Total Commercial	130	167	730	158	317	1,502	
	Enhanced	0	0	0	0	5	5	
	% Enhanced	0.0%	0.0%	0.0%	0.0%	1.6%	0.3%	
1993 Total	Total Commercial	642	64,551	5,802	109,376	11,421	191,792	
	-Cost Recovery	25	156	128	2,736	1,782	4,827	
	Total Common Prop	617	64,395	5,674	106,640	9,639	186,965	
	Enhanced	30	3,672	546	15,693	4,117	24,057	
	% Enhanced	4.8%	5.7%	9.6%	14.7%	42.7%	12.9%	

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