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THE FISHERIES OF THE PACIFIC COAST.

BY WILLIAM A. WILCOX,

Statistical Agent, United States Commission of Fish and Fisheries.

GENERAL REMARKS.

In the years 1888 and 1889 the writer conducted a personal canvass of the fisheries of the Pacific Coast of the United States. Detailed statistics of the fishing industry were obtained, and descriptive notes on the history, apparatus, and methods of the fisheries, the abundance of the economic products, the fishing-grounds, etc., were secured. A report¹ embodying the results of that inquiry was published in the Report of the United States Fish Commissioner for 1888 and extensively distributed among the persons engaged in the fishing industry of that region:

In 1892 the rapidly growing importance of the various fisheries of the Pacific States, as determined by the investigations in 1888 and 1889, appeared to warrant further attention, and, accordingly, in August of that year, the writer was again detailed for duty on that coast for the purpose of making another investigation of the commercial aspects of the fishing industry. The inquiries began on the Columbia River and were extended over the entire coasts of Washington, Oregon, and California, the canvass being completed in May, 1893. The accompanying report is based on the observations made and information gathered during that time. The detailed references to products, apparatus, methods, fishing-grounds, etc., in the previous report make unnecessary at this time any similar discussion. The text in the present paper is, therefore, intentionally brief, and is either explanatory of the statistics or is addressed to changes that have occurred in the industry since the last investigation.

The years intervening between the two investigations will be recalled as those of more or less depression in nearly all kinds of business. A period of great commercial activity was followed by a marked decline in most branches, and many of the young cities of the west coast that had been giving employment to thousands of laborers and mechanics found their growth for the time checked. A general depression in other lines of trade has often had a beneficial effect on the fisheries. For lack

¹ Report on the Fisheries of the Pacific Coast of the United States. 269 pages; 49 plates of fishes, apparatus, boats, vessels, fishing-grounds, etc.

of other regular employment, men of small means have turned to the fisheries and thus have not only found work, but have assisted in furnishing the masses with cheap and wholesome food at a time when this was specially needed. This was the case at a number of places in the Pacific States during the later years covered by this report.

The previous report on the fisheries of this region contained a number of suggestions for the improvement of the fisheries. Among these were the much-needed use of ice, the adoption of cold storage, and the better care of fish by fishermen and dealers. In most cases the desired reforms were as conspicuous for their absence in 1892 as in 1889. Fresh fish continue to be sent to the city markets as they come from the water, seldom being eviscerated; and only a small amount of ice, if any, is used on them during transportation. When the market fishermen adopt the custom, which is almost universal in the East, of dressing and icing their catch before shipment, an increased demand and better prices may be expected, to say nothing of the advantage which will come to the consumer through having more wholesome food.

As during the previous investigations, the inquiries of the Commission were much facilitated by the courtesy of railroad, steamboat, and express companies in permitting access to their records. The fishing and canning firms of the coast took great interest in the agent's inquiries, and often extended much assistance, in addition to allowing the examination of records. The thanks of the Commission are due to the fishing interests of the west coast and also to the members of the State fish commissions for courtesies extended.

The field work on the Sacramento, San Joaquin, and Eel rivers and Monterey and San Francisco bays was ably assisted by Mr. A. B. Alexander, of the United States Fish Commission steamer *Albatross*.

CONDENSED STATISTIC OF THE INDUSTRY.

The extent of the fisheries of the Pacific Coast in 1892 is shown in the following tables, the figures for California, Oregon, Washington, and Alaska being separately given.

In the matter of persons engaged in the industry, California leads in the item of vessel fishermen, Washington in shore or boat fishermen, and Oregon in shore employees, such as factory hands, although Alaska leads in the number of shoresmen when all its canneries are in operation.

The aggregate investment in the fisheries of Alaska is greater than elsewhere, owing to the relatively expensive canneries there located and the large amount of working capital required to operate them. California takes first rank in the number, value, and tonnage of vessels employed, and also in the number of seines and gill nets used, but the seines in Washington and the gill nets in Oregon have a greater value. Oregon follows California in the amount of the general investment, and has important pound-net and wheel interests which are lacking elsewhere except in Washington.

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Nearly half the value of the products of the fisheries of the coast represents the outcome of the fisheries of California. That State takes precedence in the catch of numerous market fishes, as well as cod, oysters, crabs, shrimp, fur seals, and whales. The salmon fishery is most valuable in Alaska, the yield of whose fisheries is second to those of California in value. Washington leads Oregon in the general importance of the fisheries, owing to the relatively important oyster fishery, which is insignificant in Oregon.

Persons employed in the fishing industry of the Pacific Coast of the United States in 1892.

How employed.	Alaska.	California.	Oregon.	Washington.	Total.
In vessel fisheries.....	331	1,825	117	376	2,649
In shore fisheries.....	1,029	2,968	2,705	3,082	9,775
(On shore).....	1,533	610	1,510	852	4,505
Total.....	2,884	5,403	4,332	4,310	16,029

Vessels, boats, apparatus, shore property, and cash capital employed in the fisheries of the Pacific Coast of the United States in 1892.

Items.	Alaska.		California.		Oregon.		Washington.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels.....	40	\$461,000	84	\$890,450	24	\$90,400	51	\$114,630
Tonnage.....	8,623		12,436.30		802.83		1,185.12	
Outfit.....		33,400		304,000		20,295		33,630
Boats.....	421	63,575	1,301	183,520	1,194	154,425	1,090	132,330
Apparatus:								
Seines.....	69	27,025	193	20,985	32	12,000	163	40,725
Gill nets and trammel nets.....	243	28,750	2,946	120,547	1,396	212,260	886	112,600
Pound nets and trap nets.....	10	13,200			247	173,400	157	124,700
Bag nets and paranzella nets.....			1,299	43,060				
Fyke nets and minor nets.....			40	080	50	250	30	600
Lines.....		4,050		15,954		10,520		5,830
Wheels.....					40	132,832	17	48,000
Tongs, hoes, etc.....				689		149		3,505
Other apparatus.....		509		13,341		2,050		6,217
Shore property.....		720,650		590,320		060,150		417,800
Cash capital.....		1,257,500		246,000		893,000		546,000
Total.....		2,609,050		2,526,746		2,272,351		1,594,567

SUMMARY.

Items.	No.	Value.	Items.	No.	Value.
Vessels.....	109	\$1,556,480	Apparatus—continued.		
Tonnage.....	14,510.48		Fyke nets and minor nets.....	129	\$1,830
Outfit.....		481,325	Lines.....		36,354
Boats.....	4,096	533,850	Wheels.....	57	181,852
Apparatus:			Tongs, hoes, etc.....		4,341
Seines.....	457	107,335	Other apparatus.....		22,108
Gill nets and trammel nets.....	5,471	474,157	Shore property.....		2,394,920
Pound nets and trap nets.....	420	311,300	Cash capital.....		2,852,500
Bag nets and paranzella nets.....	1,299	43,060	Total.....		9,002,314

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Products of the fisheries of the Pacific Coast of the United States in 1892.

Species.	Alaska.		California.		Oregon.		Washington.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies.....			150,175	\$1,502				
Barracuda.....			326,804	12,530				
Bonito.....			240,332	9,400				
Carp.....			65,662	2,191				
Cod.....	2,219,835	\$55,502	2,274,565	56,864			539,000	\$21,500
Cultus-cod.....			230,070	7,070	26,364	\$1,315	350,000	8,875
Flounders.....			4,225,885	64,180	10,000	400	184,560	3,191
Hallbut.....					18,870	1,787	1,410,500	20,140
Herring.....	18,700,000	32,900	4,480,887	55,796			617,112	6,817
Mackerel.....			350,309	14,150				
Perch.....			335,117	10,927			65,140	1,303
Rockfish.....			1,829,657	51,765	80,115	4,255	103,000	4,515
Salmon.....	42,251,500	1,219,973	4,862,408	179,931	25,536,701	781,000	21,684,211	551,546
Sardines.....			752,994	15,237				
Sea bass.....			257,712	9,795				
Shad.....			526,494	14,372	109,000	3,270	163,350	3,183
Smelt.....			1,919,894	53,469			321,728	6,158
Striped bass.....			56,209	6,488				
Sturgeon.....			718,017	21,854	2,513,490	28,001	513,023	5,757
Yellow-tail.....			354,434	13,682				
Other fish.....			2,257,410	47,360			55,000	4,656
Abalone meats and shells.....			404,547	9,351				
Octopus and squid.....			374,622	29,090				
Clams, hard.....			479,500	6,440				
Clams, soft.....			2,067,200	29,433	49,560	825	684,000	5,700
Oysters.....			15,098,700	698,257	147,000	3,062	9,895,440	147,895
Muscle.....			2,880,000	12,000				
Crabs.....			2,862,320	102,900	4,125	405	79,000	3,550
Crawfish.....					26,000	3,000		
Shrimp and prawn.....			5,313,345	241,817			2,000	500
Spiny lobster.....			303,275	8,486				
Terrapin and frogs.....			45,025	8,050			13,125	5,250
Half-seal and sea-lion pelts.....				2,267				
Fur-seal pelts.....		107,573		167,520		43,260		121,528
Sea-otter pelts.....		2,220		36,150		1,720		
Whale oil.....			1,574,843	62,123				
Whalebone.....			197,330	937,871				
Algae.....			28,325	1,133				
All other products.....			28,100	1,967			37,500	2,350
Total.....	63,151,335	1,418,228	57,938,466	3,022,991	28,521,165	872,405	36,757,287	931,568

SUMMARY.

Species.	Pounds.	Value.	Species.	Pounds.	Value.
Anchovies.....	150,175	\$1,502	Abalone meats and shells.....	404,547	\$9,351
Barracuda.....	326,804	12,530	Octopus and squid.....	374,622	29,090
Bonito.....	240,332	9,400	Clams, hard.....	479,500	6,440
Carp.....	65,662	2,191	Clams, soft.....	2,750,700	26,958
Cod.....	5,033,400	123,986	Oysters.....	25,141,140	849,314
Cultus-cod.....	615,974	15,260	Muscle.....	2,880,000	12,000
Flounders.....	4,420,445	97,771	Crabs.....	2,845,445	106,945
Hallbut.....	1,429,370	30,927	Crawfish.....	26,000	3,000
Herring.....	23,803,899	95,513	Shrimp and prawn.....	5,313,345	242,817
Mackerel.....	350,309	14,150	Spiny lobster.....	303,275	8,486
Perch.....	400,257	12,230	Terrapins and frogs.....	58,750	13,000
Rockfish.....	2,078,772	60,535	Half-seal and sea-lion pelts.....		2,267
Salmon.....	94,314,820	2,731,550	Fur-seal pelts.....		439,893
Sardines.....	752,994	15,237	Sea-otter pelts.....		40,090
Sea bass.....	257,712	8,795	Whale oil.....	1,574,843	62,123
Shad.....	738,844	20,825	Whalebone.....	197,330	937,871
Smelt.....	2,241,620	50,627	Algae.....	28,325	1,133
Striped bass.....	56,209	6,488	All other products.....	65,000	4,317
Sturgeon.....	3,775,130	55,612			
Yellow-tail.....	354,434	13,682			
Other fish.....	2,312,410	52,019			
			Total.....	186,268,193	6,245,192

RIES.

in 1892.

Washington.	
Pounds.	Value.
.....	
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.....	
538,000	\$21,560
359,000	6,875
184,500	3,101
4,410,500	20,140
017,112	6,817
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65,140	1,301
103,000	4,515
1,084,211	551,540
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105,350	3,183
321,720	6,158
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543,023	5,757
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55,000	4,650
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684,000	5,700
8,895,440	147,895
.....	
79,000	3,550
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2,000	500
13,125	5,250
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37,500	2,350
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4,757,287	931,568

Pounds.	Value.
04,547	\$9,351
74,022	20,039
79,500	6,449
50,700	26,958
41,140	849,314
80,000	12,000
45,445	106,945
20,000	3,000
15,345	242,317
03,275	8,486
58,750	13,900
.....	
.....	2,267
.....	439,803
.....	40,099
74,843	62,123
97,330	937,371
28,325	1,133
65,000	4,317
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Summary of the salmon-canning industry of the Pacific Coast of the United States in 1892.

States.	Per sons em- ployed.	No. of can- neries.	Value.	Cash capital.	Total invest- ment.	Salmon utilized.		Salmon canned.	
						Pounds.	Value.	Cases.	Value.
California....	222	6	\$35,000	\$10,000	\$135,000	1,071,612	\$32,568	15,884	\$75,690
Oregon.....	1,510	22	508,000	835,000	1,433,000	20,432,711	793,238	394,486	2,085,072
Washington....	851	13	303,750	520,000	820,750	16,449,570	424,208	238,758	1,163,590
Alaska.....	1,300	15	493,400	1,067,500	1,560,900	37,534,100	1,126,023	468,970	1,060,674
Total....	3,982	56	1,556,150	2,462,500	4,018,650	81,487,993	2,376,037	1,118,098	5,204,032

CALIFORNIA.

GENERAL IMPORTANCE AND EXTENT OF THE INDUSTRY.

The fisheries of California are more important and varied than those of any other west coast State, as determined by the products taken. Considering the entire country, the rank of California as a fishing State is sixth; in the value of its products it is surpassed only by Massachusetts, Maryland, New York, Virginia, and New Jersey. The growth of the industry of late years has been marked, and the near future will doubtless witness an advance in the relative position of California at the expense of several of the east coast States named. The possibilities for the development of the inshore and offshore market fisheries and of other branches are believed to be great.

The special products which give to California the important rank it now occupies are oysters, shrimp, crabs, whales, fur seals, and the general food-fishes of the coast; in the yield of all these it surpasses the other States of this region. The salmon catch, while large as compared with the other products of the State, is insignificant when the remainder of the region is considered. The State owes much of its prominence in this connection to the extensive offshore vessel fisheries carried on for whales, cod, fur seals, etc., a branch of the industry which is of very small extent elsewhere on this coast.

The extent of the fisheries of this State in 1889, 1890, 1891, and 1892 is shown in the following tables, which relate, respectively, to persons employed, capital invested, and products taken:

Persons employed in the fisheries of California.

Now engaged.	1889.	1890.	1891.	1892.
Vessel fisheries.....	1,147	1,412	1,569	1,825
Shore and boat fisheries.....	2,940	2,922	2,964	2,908
Canning industry and wholesale trade.....	597	547	576	610
Total.....	4,684	4,881	5,109	5,403

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Vessels, boats, apparatus, shore property, etc., employed in the fisheries of California

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels.....	57	\$228,000	63	\$715,309	74	\$784,900	84	\$890,450
Tonnage.....	8,608.85		10,261.80		10,582.15		12,436.30	
Outfit.....		271,382		328,907		358,059		304,000
Boats.....	1,351	179,336	1,364	180,500	1,307	184,123	1,391	183,530
Apparatus:								
Selues.....	187	21,520	188	21,105	192	21,110	193	20,980
Gill and trammel nets.....	2,680	117,845	2,675	114,700	2,701	117,427	2,940	120,540
Bag nets and paranezella nets.....	1,254	38,755	1,251	38,640	1,269	42,305	1,290	43,900
Fyke nets.....	49	980	49	980	49	980	49	980
Lines.....	11,030			13,238		14,230		15,050
Pots.....	183	256	196	273	200	274	201	280
Hoes, rakes, and fongs.....	681			679		683		680
Other apparatus.....	6,053			7,716		11,803		13,050
Shore property.....		450,800		400,027		537,528		506,320
Cash capital.....		344,500		303,000		248,000		240,000
Total.....		2,081,050		2,215,155		2,302,440		2,526,740

Products of the fisheries of California.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh.....	122,510	\$2,447	145,000	\$2,700	145,000	\$2,114	150,175	\$1,500
Atka mackerel, salted.....					94,800			
Barracuda, fresh.....	385,088		16,391	395,258	575,751		217,100	8,600
Barracuda, salted.....	117,626	4,427	115,840	4,054	119,042	4,249	109,614	3,800
Bonito, fresh.....	80,619	3,456	93,383	4,237	106,410	4,628	127,110	3,200
Bonito, salted.....	153,034	5,421	187,417	6,658	174,484	6,179	172,222	6,120
Carp, fresh.....	51,214	1,734	58,114	1,974	59,618	2,016	65,062	2,190
Cod, salted.....	1,463,424	36,587	1,782,679	44,507	2,047,911	51,393	2,274,565	56,860
Clupea-cod, fresh.....	131,044	4,736	107,758	6,283	213,618	7,639	230,670	7,070
Flounders, fresh.....	3,657,900	87,331	3,531,158	85,237	3,071,089	77,280	4,182,048	92,430
Flounders, salted.....	67,880	2,715	43,649	1,747	41,071	1,644	43,837	1,750
Herring, fresh.....	2,572,811	60,101	3,398,824	54,006	3,757,075	48,571	4,486,887	55,790
Kingfish, fresh.....	8,400	254	10,208	306	24,080	963	40,000	1,200
Mackerel, fresh.....	315,253	13,240	311,564	12,098	518,883	20,803	350,300	14,150
Porch, fresh.....	353,819	15,008	460,420	18,274	325,455	10,906	335,117	10,020
Rockfish, fresh.....	2,065,678	63,110	2,253,305	67,822	1,893,072	59,325	1,819,987	51,280
Rockfish, salted.....	42,553	1,806	30,716	1,354	29,210	1,258	9,670	480
Salmon, chinook, fresh.....	6,765,430	271,092	4,380,116	134,492	2,341,045	91,639	3,541,204	141,150
Salmon, chinook, salted.....							90,000	3,600
Salmon, silver, fresh.....	1,365,720	49,826	1,184,052	35,381	1,073,446	34,510	881,762	27,635
Salmon, silver, salted.....	435,600	17,324	167,009	6,080	116,200	4,448	39,000	1,500
Salmon, steelhead, fresh.....	404,921	10,506	363,309	7,067	315,731	6,220	310,442	6,080
Sardines, fresh.....	1,097,397	22,429	1,314,800	20,591	907,508	18,098	752,094	15,210
Sea bass, fresh.....	452,847	17,957	319,081	12,500	372,258	12,414	253,212	9,610
Sea bass, salted.....	2,506	125	6,581	291	21,391	1,022	4,500	180
Shad, fresh.....	263,788	10,833	318,140	11,891	445,006	15,836	626,494	14,370
Smelt, fresh.....	1,015,478	57,492	2,073,599	61,300	2,120,084	64,623	2,010,894	53,460
Striped bass, fresh.....	16,296	4,073	20,119	4,021	30,074	4,692	66,200	6,480
Sturgeon, fresh.....	693,659	21,250	912,585	18,869	727,551	22,213	18,017	21,850
Yellow-tail, fresh.....	188,272	7,336	112,583	4,817	100,081	6,951	103,027	6,870
Yellow-tail, salted.....	58,243	2,116	172,268	6,100	178,751	6,334	191,407	6,810
Other fish.....	1,717,851	33,277	1,995,101	36,922	1,902,092	37,071	2,217,419	46,150
Abalone meats and shells.....	310,979	8,089	203,783	5,553	302,781	7,572	404,547	9,350
Octopus and squid.....	484,100	38,212	267,809	20,810	314,910	24,320	374,622	20,038
Clams, hard.....	570,710	6,232	511,980	5,975	450,800	5,080	470,500	6,440
Clams, soft.....	1,118,700	11,807	1,261,980	13,421	1,515,360	15,877	2,017,200	20,430
Oysters.....	12,369,000	571,525	12,829,500	592,137	13,387,800	618,465	15,008,700	698,250
Mussels.....	2,100,000	8,750	2,700,000	11,250	2,108,080	12,500	2,880,000	12,000
Crabs.....	2,080,400	70,045	2,000,000	83,125	2,348,109	91,406	2,805,320	102,000
Shrimp and prawn.....	5,535,322	254,017	5,822,693	266,524	6,891,040	228,601	5,315,344	241,810
Squid, frozen.....	266,458	7,327	278,310	7,747	272,245	7,668	301,273	8,480
Terrapin and frogs.....	41,250	5,400	47,503	7,550	40,762	7,770	45,625	8,050
Half-seal and sea-lion pelts.....		2,198		1,770		3,206		2,260
Fur-seal pelts.....		15,210		60,816		134,220		167,520
Sea-otter pelts.....		30,700		29,300		31,700		38,150
Whale oil.....	1,510,080	61,052	2,235,915	105,052	1,763,085	71,190	1,574,843	62,123
Whalebone.....	119,650	520,478	170,118	680,472	223,771	1,118,855	197,330	937,371
Seal oil.....	14,610	619	11,790	521	9,990	423		42
Cod sounds.....							600	
Cod oil.....					975	95		
Cod tongues.....	12,000	862	13,800	960	16,200	1,134	27,500	1,925
Alge.....	30,170	807	29,345	1,174	19,141	705	28,325	1,130
Total.....	38,305,055	2,465,317	53,330,194	2,502,826	52,483,006	3,031,439	57,838,466	3,022,061

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Crabs, hard...
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Fisheries of California

1892.	
No.	Value.
84	\$800, 45
12, 416, 30	304, 00
1, 391	183, 52
193	20, 08
2, 046	120, 54
1, 299	43, 00
49	08
203	15, 05
203	68
13, 07	13, 07
500, 32	500, 32
240, 00	240, 00
2, 526, 740	2, 526, 740

1892.

Pounds.	Value.
150, 175	\$1, 50
217, 100	8, 00
109, 614	3, 85
77, 110	2, 28
172, 222	6, 12
65, 002	2, 19
274, 565	50, 80
230, 670	7, 07
182, 048	92, 42
43, 837	1, 754
180, 887	55, 790
40, 000	1, 200
350, 309	14, 150
335, 117	10, 027
819, 067	51, 285
541, 204	141, 132
90, 000	3, 600
881, 762	27, 032
39, 000	1, 500
310, 442	6, 084
752, 994	15, 237
253, 212	9, 610
4, 500	1, 800
526, 494	14, 377
910, 804	53, 400
60, 309	6, 480
118, 017	21, 850
103, 027	6, 871
191, 407	6, 811
217, 410	46, 130
404, 547	9, 350
374, 622	29, 030
479, 500	6, 440
017, 200	20, 430
4, 008, 700	698, 257
880, 000	12, 000
862, 320	102, 000
313, 341	241, 817
309, 275	8, 480
45, 625	8, 050
2, 267	2, 267
167, 520	36, 150
36, 150	62, 123
574, 843	937, 371
197, 330	42
27, 509	1, 025
28, 325	1, 133
838, 466	3, 022, 091

In the foregoing figures, the products have, wherever practicable, been reduced to the common unit of a pound. In the following table such products as crabs, clams, oysters, etc., that are commonly sold on a different basis, and the pelts of marine mammals of which only the value is given in the above table, are shown by number, bushels, etc., as the case may be.

Species.	1889.	1890.	1891.	1892.
Crabs.....	number.....	676, 800	696, 667	732, 700
Clams, hard.....	bushels.....	8, 154	7, 314	6, 440
Clams, soft.....	do.....	18, 645	21, 033	25, 256
Mussels.....	do.....	35, 000	45, 000	49, 968
Oysters.....	do.....	146, 150	151, 325	159, 130
Fur-seal and sea-lion pelts.....	number.....	814	659	573
Fur-seal pelts.....	do.....	1, 691	5, 818	8, 948
Sea-otter pelts.....	do.....	307	293	193
Whale oil.....	gallons.....	241, 344	298, 122	235, 198
				200, 979

SHAD AND STRIPED BASS.

Among the most interesting and important information that may be presented regarding the fisheries of California is that concerning the remarkable success attending the introduction of shad and striped bass in the waters of the State. While much has already been said and written on this subject, the following data, representing the personal inquiries of the writer, are thought to contain some points of interest not before generally known.

Soon after the shad first began to be caught in the gill nets of the salmon fishermen of San Francisco Bay and Sacramento River, the fish were protected by State law, and the few examples occasionally smuggled into the San Francisco market sometimes brought the fishermen \$5 apiece. The rapid increase of the fish, however, soon made it apparent that further protection was unnecessary, and, accordingly, in 1889 the restrictions on capture were removed. In the year named the fish were so abundant that at times they sold for 10 cents per pound. In 1892 the catch had become so large that the price at which the fish were retailed in San Francisco was only 2 or 3 cents per pound, two fish often being sold for 25 cents. At times the San Francisco Bay fishermen were able to sell their catch at only 1 cent a pound. In other parts of the State, where only a small number of shad are taken incidentally during the salmon fishery, much higher prices are received in the local market.

The catch of shad in California waters is made chiefly in San Francisco Bay and Sacramento River. Monterey Bay continues to be the southern limit on the coast at which shad are found. More fish are taken on the north side of the bay by the Santa Cruz fishermen than elsewhere in that region. The mountain streams which enter the bay at Santa Cruz may be responsible for the presence of the shad only on that side of the bay. The fish is also taken in small numbers in all the

coast rivers north of San Francisco. In the vicinity of San Francisco the principal part of the shad yield is obtained between February and May, but the market fishermen of San Francisco take larger or smaller quantities during every month. San Francisco is the only city in the United States in the markets of which fresh shad just from the water may be found at any time in the year.

All of the shad taken in California are obtained with gill nets and haul seines used in other branches of the fisheries, no special apparatus being used and no special attention being given to their capture.

The following table is of interest as showing the rapid increase of shad during the comparatively few years which have elapsed since its introduction on the Pacific Coast. The fish have not only increased in numbers, but also show a gain in average weight and size which has been quite marked. While a few years ago the average weight was only $2\frac{1}{2}$ or 3 pounds, it is now somewhat over 4 pounds, and large numbers of specimens weighing 8 pounds or more are taken.

Counties.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Contra Costa	96,722	\$3,869	102,216	\$4,089	108,111	\$4,320	139,364	\$4,181
Humboldt	300	30	250	25	160	16	100	10
Sacramento	13,224	793	15,960	958	17,510	1,051	21,579	1,295
San Francisco	61,072	2,443	116,942	3,508	230,460	6,014	242,749	4,855
Santa Cruz	20,264	810	24,880	905	30,120	1,205	35,000	1,400
Solano	72,206	2,888	57,892	2,316	58,739	2,350	87,702	2,631
Total	263,788	10,833	318,140	11,891	445,006	15,856	526,494	14,372

The striped bass of the Atlantic is justly classed as one of the best of the food-fishes of that coast. This fish was unknown on the Pacific up to its introduction a few years since through the agency of the United States Fish Commission. During the past four years it has steadily and largely increased in abundance and size, apparently thriving as well in its new home on the Pacific Coast as on the Atlantic seaboard. The principal catch is from about the first of October up to the middle of February, but a few are taken in all of the other months. Most of the fish are obtained from the salmon gill nets fished in San Francisco Bay and its several arms, and near the mouth of the Sacramento River.

The only apparatus used exclusively for striped bass are a few small purse seines. The seines are from 40 to 50 fathoms long, 3 fathoms deep, and cost \$125 each. Each seine is operated by four fishermen and two boats. The salmon gill nets, in which many bass are found, are 200 to 250 fathoms long, $4\frac{1}{2}$ fathoms deep, with a 6 to 6 $\frac{1}{2}$ inch mesh, and a value of \$150 to \$225 each. Most of the bass are taken in and near the mouth of the San Joaquin River.

The spawning-grounds of the fish are located in Middle River and Old River, both arms of the San Joaquin, and only a few miles above its mouth. These rivers have sandy and gravelly beds that are favorite

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1892.	
Pounds.	Value.
139,364	\$4,181
100	10
21,579	1,295
242,749	4,855
35,000	1,400
87,702	2,631
526,494	14,372

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grounds for the striped bass during the spawning season. Many fish are taken from this section, but few, if any, are found further up the San Joaquin River.

The striped bass seems to make its home between the entrance to the Golden Gate and the short distance mentioned up the San Joaquin, a distance of some 100 to 125 miles. It does not go up the Sacramento River much, if any, above its mouth, none being caught by Sacramento fishermen near that city.

The striped bass vary in weight from 3 to 25 pounds, in some cases reaching 35 to 40 pounds; the average is 8 to 12 pounds. With the increase of the abundance of the fish and the augmented catch, both the consumer and the fisherman have reaped benefits; the marked decrease in price that favored the one was more than made up to the fisherman in his larger sales. The average price received by the fishermen was 40 cents a pound in 1889, 25 cents in 1890, 20 cents in 1891, and 12½ cents in 1892.

During the season of 1892, when fish were most abundant, the fishermen received only 8 cents a pound, and again, in times of scarcity, as high as 20 cents a pound. During 1888 the few bass caught brought a dollar a pound in city markets; in 1892 the retail price was 20 to 25 cents a pound. The yearly catch has been as follows:

Years.	Pounds.	Value.
1889.....	2,440	\$970
1890.....	9,760	2,440
1891.....	21,350	4,270
1892.....	42,700	5,337

DETAILED STATISTICAL DATA.

In the following tables detailed statistics of the fisheries of California are given for the years 1889 to 1892 inclusive. The fishery interests of each county are separately indicated. The tables presented are: (1) The number of persons engaged in different capacities in the fishing industry; (2) the same designated by nativity and nationality; (3) the vessels, boats, apparatus, shore property, and cash capital devoted to the fisheries; (4) the quantity and value of products taken; (5) the same specified by the apparatus with which obtained. The statistical information is thus more complete than any heretofore offered for this State.

Table showing by counties the number of persons employed in the fisheries of California in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.
Contra Costa			337	62	399			333	62	395
Del Norte			45	67	112			46	72	118
Humboldt			352	31	383			316	0	322
Los Angeles			165		165			175		175
Marin			236	89	325			233	87	320
Monterey			122		122			123		123
Orange			8		8			10		10
Sacramento			46	11	57			46	11	57
San Diego	33		72		105	30		72		102
San Francisco	1,090	24	797	263	2,174	1,355	24	799	270	2,448
San Luis Obispo			35		35			38		38
San Mateo			195		195			197		197
Santa Barbara			35		35	3		36		39
Santa Cruz			60		60			63		63
Shasta			9		9			9		9
Solano			380	74	454			378	39	417
Sonoma			18		18			19		19
Tehama			24		24			25		25
Ventura			4		4			4		4
Total	1,123	24	2,940	597	4,681	1,385	27	2,922	547	4,881

Counties.	1891.					1892.				
	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.	On ves- sels fishing.	On vessels trans- porting.	In shore fish- eries.	On shore, in can- neries, etc.	Total.
Contra Costa			320	62	382			320	62	382
Del Norte			47	45	92			48	70	118
Humboldt			314	6	320			320	6	326
Los Angeles	3		191	25	210			199	25	224
Marin			238	88	326			239	90	329
Monterey			121		121			121		121
Orange			12		12			12		12
Sacramento			45	11	56			44	11	55
San Diego	27		82		109	30		62		92
San Francisco	1,562	34	812	261	2,669	1,758	24	824	286	2,892
San Luis Obispo			38		38			38		38
San Mateo			204		204			200		200
Santa Barbara		3	37		40	3		37		40
Santa Cruz			62		62			60		60
Shasta			11		11			11		11
Solano			381	58	439			384	60	444
Sonoma			19		19			19		19
Tehama			20		26			20		26
Ventura			4		4			4		4
Total	1,532	37	2,964	576	5,109	1,798	27	2,908	610	5,403

Table show

Cou

Africa

Australia

Austria

Belgium

Canada

China

Denmark

East Indies

England

France

Germany

Greece

Holland

Ireland

Italy

Japan

Mexico

New Brunswick

Newfoundland

New Zealand

Norway

Novo Scotia

Portugal

Russia

St. Helena

Sandwich Is.

Scotland

South America

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Table showing by counties the nativity and nationality of the vessel fishermen of California in 1892.

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19 19 38

25 25 50

4 4 8

222 547 769

68 610 678

510 5,403

Countries.	Los Angeles.		San Diego.		San Francisco.		Santa Barbara.	
	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.	Nativ-ity.	Nation-ality.
Africa.....					1			
Australia.....					16			
Austria.....					6	1		
Belgium.....					7	5		
Canada.....					28			
China.....			6	6	3	3		
Denmark.....					44	29		
East Indies.....					2			
England.....					132	212		
France.....					24	19		
Germany.....					131	80		
Greece.....					4			
Holland.....					37	5		
Ireland.....					12			
Italy.....					11			
Japan.....					45	45		
Mexico.....					4	4		
New Brunswick.....					7			
Newfoundland.....					1			
New Zealand.....					3			
Norway.....					125	72		
Novæ Scotia.....					20			
Portugal.....	3	2	18	12	129	88		
Russia.....					34	22		
St. Helena.....					6			
Sandwich Islands.....					31	28		
Scotland.....					14			
Spain.....					65	55		
Sweden.....					129	71		
Switzerland.....					6	4		
United States.....	7	8	6	12	612	1,014	3	3
United States Indians.....					9	9		
United States of Colombia.....					2	2		
West Indies.....					18			
Total.....	10	10	30	30	1,782	1,782	3	3

NOTE.—In this table the various provinces of the British Empire are shown separately as regards the nativity of the fishermen, but in the matter of nationality all are given under the general head of England.

Table showing the nativity of the shore or boat fishermen of California in 1892.

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Total.

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90 329

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37 40

60 60

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84 443

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Counties.	Countries.														Total.
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	Sandwich Islands.	Mexico.	
Contra Costa.....	1	159	2	6	6	2	16	137							320
Del Norte.....	18								39						48
Humboldt.....	110		32						89	25	30	35			329
Los Angeles.....	53		3				10	54	2	2	28	42			169
Marin.....	9			13	1			15	2						239
Monterey.....		80	3			1		7				30			121
Orange.....	6							8							12
Sacramento.....		20			4			2							44
San Diego.....	50											12			62
San Francisco.....	6	300		111		61	72	218				56			824
San Luis Obispo.....	5		2									30		1	38
San Mateo.....		200													200
Santa Barbara.....	12	18		5				2							37
Santa Cruz.....	18	7	2		4			28			1				60
Shasta.....	11														11
Solano.....	11		14		20		101	170		4	14	28		12	384
Sonoma.....	10							1	8						19
Tehama.....	26														26
Ventura.....															4
Total.....	346	975	48	135	35	64	205	713	66	34	73	233	18	1	2,968

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Table showing the nationality of the shore or boat fishermen of California in 1892.

Counties.	Countries.																Total.
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	Sandwich Islands.	Mexico.	Great Britain.	France.	
Contra Costa.....	67	150	...	2	...	2	1	98	...	...	...	...	...	...	...	...	320
Del Norte.....	18	...	...	...	...	...	...	...	30	...	...	...	...	...	...	...	48
Humboldt.....	232	...	5	...	...	...	...	35	20	9	6	7	...	...	...	...	320
Los Angeles.....	190	...	2	...	...	...	12	42	2	2	11	30	...	...	...	...	199
Marin.....	11	200	...	11	...	...	...	15	2	...	...	...	...	...	...	...	239
Monterey.....	37	80	2	...	...	...	...	2	...	...	...	...	...	...	...	...	121
Orange.....	8	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	12
Sacramento.....	4	20	...	...	...	...	...	2	...	...	...	...	...	...	...	...	44
San Diego.....	54	...	...	...	...	...	...	...	...	...	...	...	18	...	...	...	62
San Francisco.....	220	300	...	82	...	30	41	113	...	...	...	38	...	...	...	...	824
San Luis Obispo.....	25	...	1	...	...	...	...	...	...	...	...	11	...	1	...	...	38
San Mateo.....	...	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	200
Santa Barbara.....	14	18	...	5	...	...	...	...	...	...	...	...	...	...	...	...	37
Santa Cruz.....	33	7	...	...	...	...	...	20	...	...	...	...	...	...	...	...	60
Shasta.....	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
Solano.....	138	...	...	...	...	...	71	145	1	...	...	12	...	...	...	...	384
Sonoma.....	10	...	...	...	...	...	...	1	8	...	...	...	...	12	...	6	39
Tehama.....	26	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26
Ventura.....	2	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	4
Total.....	1,010	675	10	100	...	32	125	479	66	11	17	106	18	1	12	6	2,968

Table showing the nativity and nationality of shoresmen and factory hands employed in the fishing industry of California in 1892.

Counties.	Nativity.						Nationality.							
	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.	Total.	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.	Total.
Contra Costa.....	12	.....	50	.....	.....	.....	62	12	.....	50	.....	.....	.....	62
Del Norte.....	15	55	.....	.....	.....	.....	70	15	55	.....	.....	.....	.....	70
Humboldt.....	6	.....	.....	.....	.....	.....	6	6	.....	.....	.....	.....	.....	6
Los Angeles.....	25	.....	.....	.....	.....	.....	25	25	.....	.....	.....	.....	.....	25
Marin.....	10	.....	.....	35	26	13	90	.....	.....	.....	15	13	6	90
Sacramento.....	6	.....	5	.....	.....	.....	11	.....	.....	5	.....	.....	.....	11
San Francisco.....	286	.....	.....	.....	.....	.....	286	286	.....	.....	.....	.....	.....	286
Solano.....	13	.....	47	.....	.....	.....	63	13	.....	47	.....	.....	.....	60
Total.....	379	55	102	35	26	13	610	419	55	102	15	13	6	610

Table showing

Boats.....
 Apparatus—
 Seines.....
 Gill nets...
 Bag nets...
 Fyke nets...
 Trammel net
 Hoop nets...
 Lines.....
 Pots.....
 Hoos and r...
 Minor appa...
 Shore prop...
 Cash capital

Total.

Boats.....
 Apparatus—
 Seines.....
 Gill nets...
 Bag nets...
 Fyke nets...
 Trammel net
 Hoop nets...
 Lines.....
 Pots.....
 Hoos and r...
 Minor appa...
 Shore prop...
 Cash capital

Total.

Vessels fishi...
 Tonnage...
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets...
 Bag nets...
 Fyke nets...
 Trammel net
 Hoop nets...
 Lines.....
 Pots.....
 Hoos and r...
 Minor appa...
 Shore prop...
 Cash capital

Total.

Vessels fishi...
 Tonnage...
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets...
 Bag nets...
 Fyke nets...
 Trammel net
 Hoop nets...
 Lines.....
 Pots.....
 Hoos and r...
 Minor appa...
 Shore prop...
 Cash capital

Total.

nia in 1892.

Table showing by counties the apparatus and capital employed in the fisheries of California in 1880, 1890, 1891, and 1892.

Mexico.	Great Brit. ain.	France.	Total.
320			
48			
320			
199			
239			
121			
12			
44			
02			
824	1		
38			
200			
37			
00			
11			
384	12	6	
16			
20			
4			
2, 968	1	12	6

employed in the

ality.

Sw. each.	Norway.	Great Britain.	Total.
			82
			70
			6
			25
5	13	6	90
			11
			206
			60
5	13	6	610

Items.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Marin.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1880.										
Boats.....	166	\$23, 110	31	\$910	146	\$3, 020	99	\$17, 925	58	\$4, 040
Apparatus—shore fisheries:										
Seine.....			3	800	17	5, 100	4	400	7	550
Gill nets.....	75	16, 500	31	950	120	0, 600	108	4, 770	128	2, 280
Bag nets.....	193	4, 875					23	2, 250	250	0, 280
Fyke nets.....	24	480							12	180
Trammel nets.....										
Hoop nets.....					18	45				
Lines.....		480				50		730		
Pots.....							98	128		
Hoes and rakes.....						12				24
Minor apparatus.....										3
Shore property.....		24, 365		22, 000		20, 000		405		66, 100
Cash capital.....		60, 000		12, 500		30, 000				25, 000
Total.....		129, 810		37, 160		64, 827		26, 608		104, 457
1890.										
Boats.....	164	22, 970	30	887	142	2, 940	105	18, 573	58	4, 025
Apparatus—shore fisheries:										
Seine.....			3	800	15	4, 500	4	400	7	550
Gill nets.....	72	15, 960	30	918	115	6, 325	113	5, 020	126	2, 245
Bag nets.....	190	4, 800					23	2, 250	245	0, 125
Fyke nets.....	24	480							12	180
Trammel nets.....										
Hoop nets.....					18	45				
Lines.....		498				50		745		
Pots.....							105	135		
Hoes and rakes.....						12				22
Minor apparatus.....										3
Shore property.....		24, 365		22, 000		5, 000		415		66, 000
Cash capital.....		60, 000		17, 000		5, 000				25, 000
Total.....		129, 073		41, 605		23, 872		27, 538		104, 150
1891.										
Vessels fishing.....							1	500		
Tonnage.....							14. 41			
Outfit.....								400		
Boats.....	160	22, 943	30	885	141	2, 920	115	19, 360	58	4, 010
Apparatus—vessel fisheries:								50		
Lines.....										
Apparatus—shore fisheries:										
Seine.....			3	825	15	4, 500	4	400	7	550
Gill nets.....	70	15, 715	30	900	112	6, 160	130	5, 450	126	2, 245
Bag nets.....	189	4, 760					29	2, 700	252	0, 300
Fyke nets.....	24	480							12	180
Trammel nets.....										
Hoop nets.....					18	45				
Lines.....		525				60		910		
Pots.....							105	135		
Hoes and rakes.....						14				22
Minor apparatus.....										3
Shore property.....		24, 330		14, 000		5, 000		5, 075		66, 075
Cash capital.....		10, 000		12, 000		5, 000		10, 000		25, 000
Total.....		78, 753		28, 610		23, 699		45, 580		104, 385
1892.										
Vessels fishing.....							3	7, 000		
Tonnage.....							64. 21			
Outfit.....								1, 000		
Boats.....	164	22, 910	30	885	144	3, 520	121	20, 341	58	4, 080
Apparatus—vessel fisheries:								150		
Lines.....										
Apparatus—shore fisheries:										
Seine.....			3	850	14	4, 200	4	400	7	550
Gill nets.....	70	15, 825	30	900	119	6, 545	140	5, 950	125	2, 220
Bag nets.....	189	4, 790					28	2, 025	250	0, 250
Fyke nets.....	24	480							12	180
Trammel nets.....										
Hoop nets.....					18	45				
Lines.....		570				80		960		
Pots.....							105	135		
Hoes and rakes.....						17				25
Minor apparatus.....										3
Shore property.....		24, 330		22, 000		5, 000		5, 690		66, 000
Cash capital.....		20, 000		8, 000		5, 000		5, 000		25, 000
Total.....		88, 075		32, 635		24, 407		49, 251		104, 314

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Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	Monterey.		Orange.		Sacramento.		San Diego.		San Luis Obispo.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Vessels fishing.....							11	\$5,000		
Tonnage.....							127.81			
Outfit.....								4,425		
Boats.....	80	\$5,040	4	\$90	23	\$375	88	15,016	14	\$1,025
Apparatus—vessel fisheries:										
Lines.....								510		
Apparatus—shore fisheries:										
Seines.....	25	2,500	1	150	8	410	10	2,000		
Gill nets.....	354	8,090			13	075	12	1,200	40	2,000
Bag nets.....	5	200	1	75			2	1,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					18	53				
Lines.....		1,245		40				467		100
Pots.....							25	38		
Hoes and rakes.....								20		
Minor apparatus.....								45		645
Shore property.....		2,165				1,565		5,700		370
Cash capital.....						6,000				
Total.....		20,140		355		9,880		37,221		5,340
1890.										
Vessels fishing.....							10	5,000		
Tonnage.....							105.22			
Outfit.....								3,825		
Boats.....	87	5,095	5	120	22	355	90	16,275	16	1,975
Apparatus—vessel fisheries:										
Lines.....								480		
Apparatus—shore fisheries:										
Seines.....	25	2,500	1	150	8	410	10	2,000		
Gill nets.....	357	8,227			12	900	12	1,200	28	1,910
Bag nets.....	5	200	1	75			2	1,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					17	53				
Lines.....		1,287		65				490		110
Pots.....							25	38		
Hoes and rakes.....								20		
Minor apparatus.....								45		400
Shore property.....		2,230				1,578		5,700		500
Cash capital.....						6,000				
Total.....		20,430		410		9,796		36,073		5,195
1891.										
Vessels fishing.....							9	4,600		
Tonnage.....							89.10			
Outfit.....								3,500		
Boats.....	86	5,932	6	150	21	340	100	17,088	16	1,975
Apparatus—vessel fisheries:										
Lines.....								430		
Apparatus—shore fisheries:										
Seines.....	25	2,500	2	300	8	400	6	1,200		
Gill nets.....	353	8,075			10	750	10	1,000	38	1,910
Bag nets.....	5	200	2	150			3	1,500	2	300
Fyke nets.....					25	500				
Hoop nets.....					19	58				
Lines.....		1,300		75				536		120
Pots.....							25	38		
Hoes and rakes.....								22		
Minor apparatus.....								60		400
Shore property.....		2,450				1,530		5,700		700
Cash capital.....						6,000				
Total.....		20,517		675		9,598		36,574		5,411
1892.										
Vessels fishing.....							10	5,150		
Tonnage.....							95.91			
Outfit.....								3,900		
Boats.....	84	5,800	6	150	21	340	77	13,844	16	1,975
Apparatus—vessel fisheries:										
Lines.....								480		
Apparatus—shore fisheries:										
Seines.....	25	2,500	2	300	8	400	3	600		
Gill nets.....	350	8,000			10	750	6	600	40	2,000
Bag nets.....	5	200	2	150			4	2,000	2	300
Fyke nets.....					25	500				
Hoop nets.....					20	60				
Lines.....		1,385		75				580		140
Pots.....							25	38		
Hoes and rakes.....								22		
Minor apparatus.....								75		400
Shore property.....		2,500				1,550		5,700		800
Cash capital.....						6,000				
Total.....		20,395		675		9,600		32,989		5,615

Appara

Boats.....
 Apparatus—
 Seines.....
 Gill nets.....
 Bag nets.....
 Trammel n.....
 Lines.....
 Pots.....
 Minor app.....
 Shore prop.....
 Cash capital.....

Total ..

Vessels trans.....
 Tonnage.....
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets.....
 Bag nets.....
 Trammel n.....
 Lines.....
 Pots.....
 Minor app.....
 Shore prop.....
 Cash capital.....

Total ..

Vessels trans.....
 Tonnage.....
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets.....
 Bag nets.....
 Trammel n.....
 Lines.....
 Pots.....
 Minor app.....
 Shore prop.....
 Cash capital.....

Total ..

Vessels trans.....
 Tonnage.....
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets.....
 Bag nets.....
 Trammel n.....
 Lines.....
 Pots.....
 Minor app.....
 Shore prop.....
 Cash capital.....

Total ..

Vessels trans.....
 Tonnage.....
 Outfit.....
 Boats.....
 Apparatus—
 Seines.....
 Gill nets.....
 Bag nets.....
 Trammel n.....
 Lines.....
 Pots.....
 Minor app.....
 Shore prop.....
 Cash capital.....

Total ..

Apparatus and capital employed in the fisheries of California, etc.—Continued.

San Luis Obispo.			San Mateo.		Santa Barbara.		Santa Cruz.		Shasta.		Solano.	
No.	Value.		No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.												
Boats			48	\$2,415	22	\$2,775	43	\$5,040	3	\$60	259	\$33,765
Apparatus—shore fisheries:												
Seines					3	600	1	75	3	300		
Gill nets					17	1,690	113	2,120			186	36,000
Bag nets	14	\$1,925	328	8,200			8	1,100				
Trawl net							80	1,625				
Lines								190				2,010
Pots					69	90						
Minor apparatus	40	2,000				300						
Shore property	2	300		7,800		410		826		50		20,000
Cash capital												43,000
Total		100		18,415		5,935		10,970		410		134,871
1890.												
Vessels transporting					1	5,000						
Tonnage					14.80							
Outfit						300						
Boats			47	2,400	23	2,880	48	4,960	3	60	259	33,765
Apparatus—shore fisheries:												
Seines					3	600	1	75	3	300		
Gill nets					19	1,900	90	1,945			186	36,000
Bag nets	10	1,975	325	8,140			8	1,025				
Trawl net							74	1,410				
Lines						70		190				2,140
Pots					60	100						
Minor apparatus						300						
Shore property	28	1,910		7,900		465		774		50		20,000
Cash capital	2	300										15,000
Total		110		18,440		11,615		10,319		410		195,965
1891.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						440						
Boats			48	2,440	25	3,150	54	4,590	4	75	263	34,225
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	104	1,920			192	37,050
Bag nets			330	8,260			9	1,325				
Trawl net							75	1,425				
Lines	16	1,975				68		207				2,200
Pots					70	105						
Minor apparatus						300						
Shore property				7,900		480		808		50		50,000
Cash capital												8,000
Total		120		18,600		10,443		10,410		525		131,500
1892.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1893.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1894.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1895.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1896.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1897.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1898.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335		10,171		520		131,851
1899.												
Vessels transporting					1	4,300						
Tonnage					11.92							
Outfit						300						
Boats			50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:												
Seines					3	600	1	75	4	400		
Gill nets					20	1,000	100	1,805			192	37,050
Bag nets			335	8,375			9	1,300				
Trawl net							71	1,356				
Lines						75		220				2,376
Pots					73	110						
Minor apparatus						300						
Shore property				8,000		500		950		50		50,000
Cash capital												8,000
Total		140		18,875		10,335						

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Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Vessels fishing.....	36	\$508,000							47	\$603,900
Tonnage.....	8,270.55								8,308.36	
Outfit.....		286,357								269,782
Vessels transporting.....	6	25,000							6	25,000
Tonnage.....	338.49								338.49	
Outfit.....		1,800								1,000
Boats.....	239	60,650	8	\$500	10	\$180	4	\$700	1,351	179,336
Apparatus—vessel fisheries:										
Paranzella nets.....	5	950							5	950
Lines.....		288								798
Other apparatus.....		3,250								3,250
Apparatus—shore fisheries:										
Seines.....	60	7,200	2	150	13	1,285			187	21,620
Gill nets.....	1,170	27,000	6	600					2,273	110,865
Bag nets.....	435	13,375					2	150	1,249	37,805
Fyke nets.....									40	980
Trammel nets.....	315	5,175							407	6,980
Hoop nets.....									36	100
Lines.....		5,700		40				10		11,138
Pots.....									183	256
Tongs.....	50	500							50	500
Hoes and rakes.....		125								rel
Minor apparatus.....		1,710								2,793
Shore property.....		287,800				250				450,806
Cash capital.....		168,000								344,500
Total.....		1,471,680		1,290		1,715		860		2,081,050
1890.										
Vessels fishing.....	46	680,300							56	685,300
Tonnage.....	9,803.35								9,908.57	
Outfit.....		322,482								326,307
Vessels transporting.....	6	25,000							7	30,000
Tonnage.....	338.43								353.23	
Outfit.....		2,300								2,600
Boats.....	243	60,960	8	540	10	180	4	700	1,364	180,500
Apparatus—vessel fisheries:										
Paranzella nets.....	5	950							5	950
Lines.....		382								802
Other apparatus.....		5,250								5,250
Apparatus—shore fisheries:										
Seines.....	62	7,360	2	150	14	1,400			188	21,195
Gill nets.....	123	24,920	6	600					2,280	108,160
Bag nets.....	443	13,625					2	150	1,246	37,690
Fyke nets.....									49	980
Trammel nets.....	300	4,950							386	6,540
Hoop nets.....									35	98
Lines.....		6,679		42				10		12,376
Pots.....									190	273
Tongs.....	50	500							50	500
Hoes and rakes.....		125								179
Minor apparatus.....		1,620								2,368
Shore property.....		332,800				250				490,027
Cash capital.....		175,000								303,000
Total.....		1,665,203		1,332		1,830		860		2,215,155

Apparatus

1891.

Vessels fishing.....
Tonnage.....
Output.....
Vessels transporting.....
Tonnage.....
Output.....
Boats.....
Apparatus—vessel fisheries:
Paranzella nets.....
Lines.....
Other apparatus.....
Apparatus—shore fisheries:
Seines.....
Gill nets.....
Bag nets.....
Fyke nets.....
Trammel nets.....
Hoop nets.....
Lines.....
Pots.....
Tongs.....
Hoes and rakes.....
Minor apparatus.....
Shore property.....
Cash capital.....

Total

1892.

Vessels fishing.....
Tonnage.....
Output.....
Vessels transporting.....
Tonnage.....
Output.....
Boats.....
Apparatus—vessel fisheries:
Paranzella nets.....
Seines.....
Lines.....
Other apparatus.....
Apparatus—shore fisheries:
Seines.....
Gill nets.....
Bag nets.....
Fyke nets.....
Trammel nets.....
Hoop nets.....
Lines.....
Pots.....
Tongs.....
Hoes and rakes.....
Minor apparatus.....
Shore property.....
Cash capital.....

Total

continued.

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Total.		San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
No.	Value	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1891.											
47	\$603,900	Vessels fishing	55	\$739,500	.....	.....	.....	.....	.....	65	\$744,600
398.36	269,762	Tonnage	9,942.46	.....	.....	.....	.....	.....	.....	10,045.97	335,410
6	25,000	Output .....	.....	331,519	.....	.....	.....	.....	.....	0	40,300
338.49	1,000	Vessels transporting	8	36,000	.....	.....	.....	.....	.....	536.18	3,540
1,351	179,336	Tonnage	524.20	.....	.....	.....	.....	.....	.....	.....	184,123
.....	.....	Output .....	.....	3,100	.....	.....	.....	.....	.....	.....	.....
.....	.....	Boats	248	61,650	8	\$550	11	\$195	4	\$720	.....
.....	.....	Apparatus—vessel	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	950	fisheries:	.....	.....	.....	.....	.....	.....	.....	15	2,850
.....	798	Paranzella nets	15	2,850	.....	.....	.....	.....	.....	.....	899
.....	3,250	Lines .....	.....	419	.....	.....	.....	.....	.....	.....	0,250
.....	.....	Other apparatus .....	.....	9,250	.....	.....	.....	.....	.....	.....	.....
.....	.....	Apparatus—shore	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....
187	21,520	Seine	98	7,840	2	150	14	1,400	.....	192	21,140
2,273	110,865	Gill nets	1,185	27,800	6	600	.....	.....	.....	2,386	110,575
1,240	37,805	Bag nets	452	13,000	.....	.....	.....	2	150	1,274	39,545
49	980	Fyke nets .....	.....	.....	.....	.....	.....	.....	.....	49	980
407	6,080	Tammel nets	318	5,247	.....	.....	.....	.....	.....	405	6,852
36	100	Hoop nets .....	.....	.....	.....	.....	.....	.....	.....	37	103
.....	11,138	Lines .....	.....	7,202	.....	50	.....	.....	12	.....	13,331
183	256	Pots .....	.....	.....	.....	.....	.....	.....	.....	200	278
50	500	Tongs	50	500	.....	.....	.....	.....	.....	50	500
.....	161	Hoes and rakes .....	.....	125	.....	.....	.....	.....	.....	.....	183
.....	2,703	Minor apparatus .....	.....	1,687	.....	.....	.....	.....	.....	.....	2,450
.....	459,806	Shore property .....	.....	352,506	.....	.....	250	.....	.....	.....	537,528
.....	344,500	Cash capital .....	.....	172,000	.....	.....	.....	.....	.....	.....	248,000
.....	2,081,050	Total .....	.....	1,773,089	.....	1,350	1,845	882	.....	.....	2,302,446
1892.											
56	685,300	Vessels fishing	63	834,500	.....	.....	.....	.....	.....	76	846,650
908.57	326,307	Tonnage	11,792.65	.....	.....	.....	.....	.....	.....	11,952.77	301,500
7	30,000	Output .....	.....	386,600	.....	.....	.....	.....	.....	7	43,800
353.23	2,600	Vessels transporting	6	39,500	.....	.....	.....	.....	.....	483.53	2,500
1,364	180,500	Tonnage	471.61	.....	.....	.....	.....	.....	.....	.....	183,520
.....	.....	Output .....	.....	2,200	.....	.....	.....	.....	.....	.....	.....
.....	.....	Boats	252	63,600	8	550	11	195	4	720	1,391
.....	.....	Apparatus—vessel	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	950	Paranzella nets	20	3,800	.....	.....	.....	.....	.....	20	3,800
.....	802	Seine	1	400	.....	.....	.....	.....	.....	1	400
.....	5,250	Lines .....	.....	494	.....	.....	.....	.....	.....	.....	1,124
.....	.....	Other apparatus .....	.....	10,450	.....	.....	.....	.....	.....	.....	10,450
.....	.....	Apparatus—shore	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	fisheries:	.....	.....	.....	.....	.....	.....	.....	.....	.....
188	21,105	Seine	102	8,160	2	150	14	1,400	.....	192	20,585
2,280	108,160	Gill nets	1,298	80,070	6	600	.....	.....	.....	2,506	113,121
1,246	37,690	Bag nets	454	14,050	.....	.....	.....	2	150	1,279	40,160
49	980	Fyke nets .....	.....	.....	.....	.....	.....	.....	.....	49	980
386	6,540	Tammel nets	357	5,890	.....	.....	.....	.....	.....	440	7,426
35	98	Hoop nets .....	.....	.....	.....	.....	.....	.....	.....	38	105
.....	12,376	Lines .....	.....	8,294	.....	50	.....	.....	15	.....	14,830
106	273	Pots .....	.....	.....	.....	.....	.....	.....	.....	203	283
50	500	Tongs	50	500	.....	.....	.....	.....	.....	50	500
.....	179	Hoes and rakes .....	.....	125	.....	.....	.....	.....	.....	.....	189
.....	2,388	Minor apparatus .....	.....	1,725	.....	.....	.....	.....	.....	.....	2,503
.....	490,027	Shore property .....	.....	403,000	.....	.....	250	.....	.....	.....	596,320
.....	303,900	Cash capital		169,000							248,000
.....	2,215,155	Total		1,982,358		1,350	1,845	885			2,526,746

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Table showing by counties and species the yield of the fisheries of California in 1889.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Spec.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.							88,891	\$3,454	Barracuda, fresh.
Carp, fresh.	11,014	\$357							Carp, fresh.
Calitus-eod, fresh.					21,040	\$735			Calitus-eod, fresh.
Flounders, fresh.	256,092	3,850			132,440	3,130	177,822	7,112	Flounders, fresh.
Herring, fresh.	192,519	2,888			10,000	200	61,000	2,440	Herring, fresh.
Mackerel, fresh.							117,423	4,097	Mackerel, fresh.
Perch, fresh.					20,150	504	17,200	688	Perch, fresh.
Rockfish, fresh.					20,115	755	45,954	1,838	Rockfish, fresh.
Salmon, chinook, fresh.	3,105,747	127,830	218,875	\$6,078					Salmon, chinook, fresh.
Salmon, silver, fresh.			180,205	3,543	1,170,515	37,283			Salmon, silver, fresh.
Salmon, silver, salted.					435,000	17,324			Salmon, silver, salted.
Salmon, steelhead, fresh.			48,750	728	392,171	9,778			Salmon, steelhead, fresh.
Sardines, fresh.							18,307	669	Sardines, fresh.
Sea bass, fresh.							11,109	444	Sea bass, fresh.
Shad, fresh.	96,722	3,809			300	30			Shad, fresh.
Smelt, fresh.	130,012	2,070			20,500	738	145,301	5,812	Smelt, fresh.
Striped bass, fresh.	174,776	3,443							Striped bass, fresh.
Sturgeon, fresh.	350,410	10,513							Sturgeon, fresh.
Yellow-tail, fresh.							30,650	1,226	Yellow-tail, fresh.
Other fish, fresh and salted.	206,264	3,221					61,774	2,470	Other fish, fresh and salted.
Abalone meats and shells.					43,750	947	19,810	452	Abalone meats and shells.
Clams, hard.					10,800	270			Clams, hard.
Clams, soft.					80,400	3,000			Clams, soft.
Crabs.									Crabs.
Shrimp and prawn.	919,221	41,769							Shrimp and prawn.
Spiny lobster.							108,000	2,815	Spiny lobster.
Hair-seal and sea-lion pelts.								580	Hair-seal and sea-lion pelts.
Seal oil.							7,200	288	Seal oil.
Total.	5,373,277	199,810	450,830	10,349	2,384,781	74,093	910,531	34,985	Total.

Species.	Marin.		Monterey.		Orange.		Sacramento.		Spec.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.			28,056	\$1,080	2,000	\$80			Barracuda, fresh.
Carp, fresh.							30,300	\$1,377	Carp, fresh.
Flounders, fresh.	407,653	\$7,840	278,400	5,565	5,481	195			Flounders, fresh.
Flounders, salted.			67,880	2,715					Flounders, salted.
Herring, fresh.	337,442	7,080			4,645	170			Herring, fresh.
Mackerel, fresh.			75,040	3,753	3,000	120			Mackerel, fresh.
Perch, fresh.	80,997	3,000			2,320	92	4,282	255	Perch, fresh.
Rockfish, fresh.			1,112,753	22,207	6,000	240			Rockfish, fresh.
Rockfish, salted.			30,750	1,230					Rockfish, salted.
Salmon, chinook, fresh.	25,000	1,000	10,098	606			151,510	10,607	Salmon, chinook, fresh.
Sardines, fresh.					2,000	80			Sardines, fresh.
Sea bass, fresh.	30,142	1,320			3,000	120			Sea bass, fresh.
Shad, fresh.							13,224	763	Shad, fresh.
Smelt, fresh.	269,150	6,440	83,258	3,339	17,805	710			Smelt, fresh.
Sturgeon, fresh.	30,240	1,200					4,886	203	Sturgeon, fresh.
Yellow-tail, fresh.					5,000	200			Yellow-tail, fresh.
Other fish, fresh and salted.	248,687	3,572	19,280	600	2,000	80	200,726	4,821	Other fish, fresh and salted.
Abalone meats and shells.			3,850	73					Abalone meats and shells.
Octopus and squid.			468,000	37,440					Octopus and squid.
Clams, hard.	32,060	690							Clams, hard.
Clams, soft.	11,100	109							Clams, soft.
Shrimp and prawn.	1,225,628	55,693							Shrimp and prawn.
Terrapin and frogs.	11,250	3,000							Terrapin and frogs.
Algae.			5,800	232					Algae.
Total.	2,721,310	91,444	2,183,255	79,581	53,251	2,087	413,958	18,146	Total.

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.		Spec.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.	5,000	\$240							Barracuda, fresh.
Flounders, fresh.	69,674	2,737					5,500	\$220	Flounders, fresh.
Mackerel, fresh.	9,845	483							Mackerel, fresh.
Rockfish, fresh.	120,528	4,845					3,375	135	Rockfish, fresh.
Rockfish, salted.	3,215	211							Rockfish, salted.
Salmon, chinook, fresh.	13,552	610	28,760	\$720	1,074,400	\$78,036	28,810	1,610	Salmon, chinook, fresh.
Shad, fresh.	20,264	810			72,306	2,888			Shad, fresh.
Smelt, fresh.	18,600	745							Smelt, fresh.
Striped bass, fresh.					900	240			Striped bass, fresh.
Sturgeon, fresh.					232,704	6,084			Sturgeon, fresh.
Total.	260,678	10,786	28,760	720	2,270,300	89,048	35,085	1,965	Total.

Spec.

Total.

Spec.

Anchovy, fresh.
Barracuda, fresh.
Bonito, fresh.
Bonito, salted.
Carp, fresh.
Cod, salted.
Calitus-eod, fresh.
Flounders, fresh.
Flounders, salted.
Herring, fresh.
Kingfish, fresh.
Mackerel, fresh.
Perch, fresh.
Rockfish, fresh.
Rockfish, salted.
Salmon, chinook.
Salmon, silver.
Salmon, steel.
Sardines, fresh.
Sea bass, fresh.
Shad, fresh.
Smelt, fresh.
Striped bass.
Sturgeon, fresh.
Yellow-tail, fresh.
Yellow-tail, salted.
Other fish, fresh and salted.
Abalone meats and shells.
Clams, hard.
Clams, soft.
Crabs.
Mussels.
Oysters.
Shrimp and prawn.
Spiny lobster.
Terrapin and frogs.
Hair-seal and sea-lion pelts.
Sea-otter pelts.
Whalebone.
Cod tongues.
Seal oil.
Algae.

Total.

F.

Yield of the fisheries of California in 1889—Continued.

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Table showing by counties and species the yield of the fisheries of California in 1890.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.							142,414	\$5.00	Barracuda, fresh.
Carp, fresh.	12,306	\$460							Barracuda, salt.
Cultus-cod, fresh.					20,280	\$710			Salmon, fresh.
Flounders, fresh.	285,550	4,283			164,112	3,807	187,583	7.50	Salmon, salted.
Herring, fresh.	214,129	3,212			11,150	223	48,000	1.00	Flounders, fresh.
Mackerel, fresh.							100,174	0.40	Herring, fresh.
Perch, fresh.					21,010	539			Mackerel, fresh.
Rockfish, fresh.					24,068	748	57,740	2.31	Perch, fresh.
Salmon, chinook, fresh.	1,423,880	50,055	315,250	\$10,357					Rockfish, fresh.
Salmon, silver, fresh.			250,375	4,227	631,577	31,154			Salmon, chinook, salted.
Salmon, silver, salted.					107,000	0,080			Sardines, fresh.
Salmon, steelhead, fresh.			51,875	777	311,524	0,230			Salmon, silver, salted.
Sardines, fresh.							24,705	96	Salmon, steelhead, salted.
Sea bass, fresh.							14,348	51	Sardines, salted.
Sea bass, salted.							3,781	15	Sea bass, fresh.
Shad, fresh.	102,210	4,080			250	25			Sea bass, salted.
Smelt, fresh.	118,700	2,231			28,160	704	182,260	7.20	Shad, fresh.
Striped bass, fresh.	15,715	3,114							Smelt, fresh.
Sturgeon, fresh.	235,522	7,066							Striped bass, fresh.
Yellow-tail, fresh.							38,260	1.50	Sturgeon, fresh.
Other fish, fresh and salted.	221,150	3,450					107,077	4.30	Yellow-tail, fresh.
Abalone meats and shells.					42,000	900	860		Other fish, fresh and salted.
Clams, hard.					12,000	300			Abalone meats and shells.
Clams, soft.					90,000	3,125			Clams, hard.
Crabs.									Clams, soft.
Shrimp and prawn.	947	43,983							Crabs.
Spiny lobster.							107,000	2.80	Shrimp and prawn.
Hair-seal and sea-lion pelts.							4,800	16	Spiny lobster.
Seal oil.									Hair-seal and sea-lion pelts.
Total.	3,027,087	128,784	017,500	15,361	1,827,631	55,145	1,099,048	42.70	Seal oil.

Species.	Marin.		Monterey.		Orange.		Sacramento.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.			18,058	\$1,120	3,000	\$120			Barracuda, fresh.
Carp, fresh.							45,004	\$1.60	Barracuda, salt.
Cultus-cod, fresh.					8,098	350			Carp, fresh.
Flounders, fresh.	629,303	\$12,068	123,082	2,462					Cultus-cod, fresh.
Flounders, salted.			43,046	1,747					Flounders, fresh.
Herring, fresh.	308,951	7,054	3,920	106	8,415	332			Flounders, salted.
Mackerel, fresh.			41,812	2,066	6,000	240			Herring, fresh.
Perch, fresh.	81,907	3,280			5,080	190	5,005	20	Mackerel, fresh.
Rockfish, fresh.			1,245,078	24,902	15,000	600			Perch, fresh.
Rockfish, salted.			18,200	728					Rockfish, fresh.
Salmon, chinook, fresh.	22,110	880	8,770	520			145,540	10.18	Rockfish, salted.
Sardines, fresh.					5,035	200			Salmon, chinook, fresh.
Sea bass, fresh.	30,365	1,200			5,000	200			Sardines, fresh.
Shad, fresh.							15,960	95	Sea bass, fresh.
Smelt, fresh.	278,090	0,250	107,184	4,287	20,715	828			Shad, fresh.
Striped bass, fresh.							54		Smelt, fresh.
Sturgeon, fresh.	38,170	1,520					3,860	23	Striped bass, fresh.
Yellow-tail, fresh.					10,000	400			Sturgeon, fresh.
Other fish, fresh and salted.	275,100	4,078	24,400	881	2,000	80	212,629	5.12	Yellow-tail, fresh.
Abalone meats and shells.			4,400	83					Other fish, fresh and salted.
Clams, hard.	80,450	655							Abalone meats and shells.
Clams, soft.	10,080	101							Clams, hard.
Shrimp and prawn.	1,290,000	58,643							Clams, soft.
Terrapin and frogs.	12,563	3,350							Shrimp and prawn.
Algae.			0,500	200					Terrapin and frogs.
Total.	3,071,370	99,679	1,645,840	30,258	80,282	3,540	420,552	18.45	Algae.

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.	3,731	\$182							Barracuda, fresh.
Flounders, fresh.	77,770	3,110					6,190	\$24	Flounders, fresh.
Mackerel, fresh.	10,495	478							Mackerel, fresh.
Rockfish, fresh.	174,805	0,950					4,515	18	Rockfish, fresh.
Rockfish, salted.	3,003	150							Rockfish, salted.
Salmon, chinook, fresh.	12,500	550	25,825	\$646	1,030,580	\$41,523	21,375	1,285	Salmon, chinook, fresh.
Shad, fresh.	24,880	905			57,802	2,310			Shad, fresh.
Smelt, fresh.	21,437	860							Smelt, fresh.
Striped bass, fresh.					1,218	244			Striped bass, fresh.
Sturgeon, fresh.					200,923	8,098			Sturgeon, fresh.
Total.	328,618	13,291	25,825	646	1,350,613	51,881	32,080	1,719	Total.

Yield of the fisheries of California in 1890.—Continued.

Yield of the fisheries of California in 1890.

Los Angeles.		Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
142,414	\$5,61	arraucuda, fresh.	131,200	\$5,328	22,705	\$720			60,115	\$3,000
		arraucuda, salted.	115,840	4,654						
		onito, fresh.	35,040	1,401					52,617	2,618
187,583	7.50	onito, salted.	180,645	6,323	2,200	110			4,572	235
48,000	1.90	ounders, fresh.	6,078	243	15,040	632	473,085	\$7,105	6,208	311
100,174	6.40	erring, fresh.	20,000	800						
10,000	8.	ackerel, fresh.	8,190	327	82,310	3,030	354,814	5,120	3,083	150
57,710	2.30	erch, fresh.	18,030	721						
		ockfish, fresh.	30,000	1,200	75,106	3,010				
		ockfish, salted.			5,000	250			4,516	226
		ardines, fresh.	5,000	200						
		ea bass, fresh.	10,965	410	50,315	1,750			8,585	418
		ea bass, salted.			2,800	140				
24,765	96	neft, fresh.	10,080	403	25,115	875	243,802	3,855		
14,544	57	ellow-tail, fresh.	24,000	960					90,343	1,532
3,781	15	ellow-tail, salted.	166,875	5,841					5,303	268
		ther fish, fresh and salted.	51,210	2,040			347,554	5,142	14,730	675
182,260	7.20	halone meats and shells.	55,560	914					114,933	3,942
		etopms and squid.	256,000	20,180						
		ams, hard.	350,000	2,500						
38,220	1.50	ariop and prawn.					1,813,240	73,303		
107,677	4.30	dry lobster.	40,370	1,609					130,940	3,928
860	4.	air seal and sea-lion pelts.		875		143				527
		ea otter pelts.								4,000
		hale oil.			38,250	1,270			4,800	256
		cal oil.			2,190	73			22,845	914
107,000	2.80	Alge.								
4,800	19	Total.	1,517,119	56,080	321,031	12,003	3,052,501	94,915	468,557	21,230
1,099,648	42.70									
Sacramento.		Species.	San Francisco.		Tehama.		Ventura.		Total.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
		Anchovies, fresh.	135,000	\$2,700					135,000	\$2,700
		arraucuda, fresh.					11,415	\$180	135,238	10,645
		arraucuda, salted.							115,840	4,654
		onito, fresh.					6,720	218	93,383	4,237
45,904	\$1.60	onito, salted.							187,417	6,358
		arp, fresh.							58,113	1,974
		odfish, salted.	1,782,679	44,567					1,782,679	44,567
		ultus-cod, fresh.	147,478	5,573					167,758	6,283
		lounders, fresh.	1,545,006	42,009			2,973	116	3,531,168	85,237
		lounders, salted.							43,640	1,747
5,605	30	erring, fresh.	2,300,415	35,530					3,308,824	51,996
		ingfish, fresh.	10,208	300					10,208	306
		ackerel, fresh.							311,564	12,698
		erch, fresh.	248,108	12,405					400,429	18,273
145,540	10.18	ockfish, fresh.	100,430	27,310			15,068	600	2,253,306	97,822
		ockfish, salted.							29,710	1,354
15,900	96	almon, chinook, fresh.	218,426	8,737	125,860	\$3,147			3,380,116	134,022
54	20	almon, silver, fresh.							1,184,052	35,381
		almon, silver, salted.							167,000	6,680
3,800	20	almon, steelhead, fresh.							363,300	7,007
		ardines, fresh.	1,280,000	19,200					1,314,800	20,591
212,629	5.12	ea bass, fresh.	195,000	7,800			4,507	178	319,041	12,500
		ea bass, salted.							6,581	291
		had, fresh.	116,942	3,508					318,110	11,801
		snell, fresh.	1,002,603	33,487					2,073,559	91,306
		Striped bass, fresh.	3,132	626					20,119	4,021
		Sturgeon, fresh.	65,110	1,953					612,585	18,809
		ellow-tail, fresh.					9,080	395	412,583	4,817
		ellow-tail, salted.							172,583	6,100
429,552	18.45	ther fish, fresh and salted.	653,200	10,153			2,310	77	1,805,101	36,022
		Abalone meats and shells.	38,000	500					203,793	5,553
		etopms and squid.	11,800	336					267,809	20,816
		Clams, hard.	80,530	1,920					511,060	5,075
		Clams, soft.	1,239,900	13,020					1,261,980	13,421
		Oysters.	12,820,560	592,137					12,820,560	592,137
		Mussels.	2,700,000	11,250					2,700,000	11,250
		Crabs.	2,000,000	80,000					2,000,000	83,125
		Shrimp and prawn.	1,950,900	90,664					5,822,093	206,593
		Spin. lobster.							178,310	7,747
6,190	\$24	Tecapin at frogs.	35,000	4,200					47,563	7,550
4,515	18	Hair-seal and sea-lion pelts.								1,770
		Fur-seal pelts.								69,816
21,375	1.28	Sea-otter pelts.								20,300
		Whale oil.	2,197,605	103,782					3,295,915	105,052
		Whalebones.	170,118	680,472					170,118	680,472
		Cod tongues.	13,800	966					13,800	966
		Seal oil.							11,700	521
		Alge.							20,345	1,174
32,080	1.71	Total.	33,629,049	1,933,202	125,860	3,147	52,913	2,064	53,330,194	2,592,826

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Table showing by counties and species the yield of the fisheries of California in 1891.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.							210,001	\$6,43	Barracuda, fresh.
Carp, fresh.	14,188	\$426							Barracuda, salt.
Culius-cod, fresh.					24,118	\$840			Bonito, fresh.
Flounders, fresh.					151,018	3,017	157,810	0.31	Bonito, salted.
Herring, fresh.	203,130	3,145			12,000	240	68,000	2.72	Flounders, fresh.
Mackerel, fresh.							320,469	13.05	Herring, fresh.
Perch, fresh.					23,650	600	25,691	98	Mackerel, fresh.
Rockfish, fresh.					34,472	1,034	81,192	3.24	Rockfish, fresh.
Salmon, chinook, fresh.	594,006	23,700	308,750	\$3,262					Rockfish, salted.
Salmon, silver, fresh.			182,500	4,818	830,040	24,698			Salmon, chinook.
Salmon, silver, salted.					116,200	4,448			Sea bass, fresh.
Salmon, steelhead, fresh.			18,750	280	296,981	5,940			Sea bass, salted.
Sardines, fresh.							66,007	1.32	Shad, fresh.
Sea bass, fresh.							18,206	72	Shad, fresh.
Sea bass, salted.							4,301	17	Shad, salted.
Shad, fresh.	108,011	4,329							Shad, salted.
Smelt, fresh.	141,420	2,167			32,000	800	175,065	7.07	Shad, salted.
Striped bass, fresh.	23,932	3,500							Shad, salted.
Sturgeon, fresh.	269,725	8,092							Shad, salted.
Yellow-tail, fresh.									Shad, salted.
Other fish, fresh and salted.	213,810	3,422							Shad, salted.
Abalone meats and shells.									Shad, salted.
Clams, hard.					47,250	1,012			Shad, salted.
Clams, soft.					15,000	375			Shad, salted.
Crabs.					98,100	3,400			Shad, salted.
Shrimp and prawn.	813,806	36,067							Shad, salted.
Spiny lobster.							102,125	2.68	Shad, salted.
Total.	2,382,028	85,889	510,000	14,360	1,741,895	52,116	1,427,542	52,523	Total.

Species.	Marin.		Monterey.		Orange.		Sacramento.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.			13,235	\$785	2,000	\$80			Anchovies, fresh.
Carp, fresh.							45,430	\$1,599	Atka mackerel.
Flounders, fresh.	401,395	\$7,017			6,710	257			Barracuda, fresh.
Flounders, salted.			41,071	1,614					Barracuda, salt.
Herring, fresh.	320,541	6,050			6,408	255			Bonito, fresh.
Mackerel, fresh.			32,734	1,637	3,600	120			Bonito, salted.
Perch, fresh.	55,008	2,200			3,265	120	4,553	271	Codfish, salted.
Rockfish, fresh.			758,578	15,172	7,000	280			Culius-cod, fresh.
Rockfish, salted.			19,472	700					Flounders, fresh.
Salmon, chinook, fresh.	15,035	600	7,999	480			76,112	5,321	Flounders, salt.
Sardines, fresh.	3,561	142							Herring, fresh.
Sea bass, fresh.	15,482	610			3,600	120			Kingfish, fresh.
Shad, fresh.									Mackerel, fresh.
Smelt, fresh.	242,090	5,048	70,985	3,080	18,115	721	17,516	1,051	Perch, fresh.
Striped bass, fresh.									Rockfish, fresh.
Sturgeon, fresh.	15,040	630			5,000	200			Rockfish, salted.
Yellow-tail, fresh.					2,000	80	228,445	5,506	Rockfish, salted.
Other fish, fresh and salted.	264,840	3,024	16,923	610					Salmon, chinook.
Abalone meats and shells.			3,700	66					Salmon, silver.
Octopus and squid.			300,760	23,060					Salmon, steelhead.
Clams, hard.	28,700	615							Sardines, fresh.
Clams, soft.	10,380	106							Sea bass, fresh.
Shrimp and prawn.	1,085,175	49,280							Sea bass, salted.
Terrapin and frogs.	12,262	3,270							Shad, fresh.
Algo.			7,780	310					Shad, salted.
Total.	2,470,415	79,501	1,469,735	52,314	56,688	2,236	375,463	14,028	Shad, salted.

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.	4,356	\$212							Octopus and squid.
Flounders, fresh.	71,151	2,840					4,900	\$196	Clams, hard.
Mackerel, fresh.	12,855	502							Clams, soft.
Rockfish, fresh.	183,084	7,265					4,264	171	Oysters.
Rockfish, salted.	5,130	237							Mussels.
Salmon, chinook, fresh.	15,260	600	29,110	\$730	694,181	\$27,767	33,050	2,199	Crabs.
Shad, fresh.	30,120	1,205			58,739	2,350			Shrimp and prawn.
Smelt, fresh.	25,061	1,220							Spiny lobster.
Striped bass, fresh.					2,265	340			Terrapin and frogs.
Sturgeon, fresh.					366,380	10,991			Salmon, chinook.
Total.	347,611	14,293	29,110	730	121,505	41,448	45,820	2,566	Salmon, silver.

Total.

California in 1891.

Yield of the fisheries of California in 1891—Continued.

Los Angeles.		Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
210,001	\$6,430	Barracuda, fresh.	229,755	\$9,188	49,800	\$1,750			58,000	\$2,900
		Barracuda, salted.	113,542	3,974	5,500	275				
		Bonito, fresh.	59,960	2,380					40,182	2,000
		Bonito, salted.	189,783	5,949	1,000	50			3,701	180
157,810	6,311	Flounders, fresh.	5,059	203	21,346	955	451,400	\$6,871	7,010	348
98,000	2,729	Herring, fresh.	35,230	1,410			338,550	4,977		
326,469	13,065	Mackerel, fresh.	14,960	590	122,800	4,560			5,975	297
25,001	98	Rockfish, fresh.	27,768	951						
81,192	3,248	Rockfish, salted.	62,000	2,480	129,720	4,970				
		Salmon, chinook, fresh.			1,500	75			3,117	166
		Sea bass, fresh.	8,000	320						
		Sea bass, salted.	12,200	495	88,070	3,110			9,015	451
		Shad, fresh.			17,000	850				
69,007	1,329	Smelt, fresh.	15,735	630	19,930	687	234,700	3,720	7,790	388
18,208	729	Yellow-tail, fresh.	53,000	2,360					20,015	1,000
4,301	17	Yellow-tail, salted.	63,461	2,230					4,632	231
		Other fish, fresh and salted.	84,630	3,380			320,120	4,745	17,084	842
175,965	7,003	Abalone meats and shells.	52,120	1,172					241,826	6,248
		Clams, hard.	280,000	2,000						
		Shrimp and prawn.					1,356,345	61,610		
67,690	2,708	Spiny lobster.	25,000	625					145,120	4,355
118,550	5,029	Half-seal and sea-lion pelts.		750	359					2,097
5,135	8	Sea-otter pelts.								1,500
		Whale oil.			30,450	1,220				
		Seal oil.			5,400	183			4,500	240
		Algae.							11,361	455
102,125	2,688	Total.	1,314,303	41,102	490,590	19,014	2,710,115	81,923	579,338	23,698
1,427,512		Species.	San Francisco.		Tehama.		Ventura.		Total.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
		Anchovies, fresh.	115,000	\$2,111					145,000	\$2,114
		Atka mackerel, salted.	64,800	4,860					64,800	4,860
		Barracuda, fresh.					8,610	\$372	575,751	21,717
		Barracuda, salted.							119,042	4,249
45,430	\$1,599	Bonito, fresh.					0,318	240	100,410	4,626
		Bonito, salted.							174,464	6,179
		Carp, fresh.							50,818	2,016
		Codfish, salted.	2,047,911	51,393					2,047,911	51,393
		Calico cod, fresh.	189,590	0,709					213,618	7,639
		Flounders, fresh.	1,599,784	44,693			3,896	155	3,071,989	77,280
4,553	274	Flounders, salted.							41,071	1,644
		Herring, fresh.	2,773,126	29,774					3,757,075	48,571
76,112	5,321	Kingfish, fresh.	24,080	903					24,080	903
		Mackerel, fresh.							518,883	20,863
		Perch, fresh.	189,420	5,683					325,455	10,906
17,510	1,051	Rockfish, fresh.	199,502	24,179			13,200	520	1,893,072	59,325
		Rockfish, salted.							29,219	1,258
157	24	Salmon, chinook, fresh.	418,322	17,633	115,623	\$2,890			2,341,045	91,039
2,250	195	Salmon, silver, fresh.							1,073,440	34,516
		Salmon, silver, salted.							116,200	4,448
228,445	5,566	Salmon, steelhead, fresh.							315,731	6,220
		Gardines, fresh.	800,000	17,200					977,568	18,088
		Sea bass, fresh.	220,410	6,710			4,815	190	372,258	12,414
		Sea bass, salted.							21,301	1,022
		Shad, fresh.	230,460	0,914					445,006	15,856
		Smelt, fresh.	1,135,693	39,114					2,120,084	64,623
		Striped bass, fresh.	4,320	648					30,674	4,602
		Sturgeon, fresh.	72,250	2,305					727,551	22,213
		Yellow-tail, fresh.					9,276	323	100,981	6,591
		Yellow-tail, salted.	110,658	3,873					178,751	6,334
375,463	14,028	Other fish, fresh and salted.	624,465	10,268			2,730	108	1,992,992	37,971
		Abalone meats and shells.							302,781	7,572
		Octopus and squid.	14,150	363					314,910	24,323
		Clams, hard.	64,850	2,023					450,800	5,690
		Clams, soft.	1,489,980	15,396					1,515,360	15,877
		Oysters.	13,387,800	618,455					13,387,800	618,455
		Mussels.	2,998,080	12,500					2,998,080	12,500
		Crabs.	2,250,000	90,000					2,348,100	93,406
4,900	\$196	Shrimp and prawn.	1,037,614	75,735					892,940	223,601
4,264	171	Spiny lobster.							272,245	7,668
35,656	2,190	Terrapin and frogs.	37,500	4,500					49,762	7,770
		Half-seal and sea-lion pelts.								3,206
		Wolverine pelts.							134,220	
		Sea-otter pelts.							31,700	
		Whale oil.	1,727,535	60,070					1,763,685	71,190
		Whalebone.	223,771	1,118,855					223,771	1,118,855
		Cod oil.	975	65						5,425
45,820	2,566	Seal oil.	16,200	1,134					9,050	423
		Cod tongues.							16,200	1,134
		Algae.							19,141	765
		Total.	35,298,514	2,448,840	115,623	2,890	48,005	1,914	52,483,906	3,031,470

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Table showing by counties and species the yield of the fisheries of California in 1892.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Barracuda, fresh.							6,430		Barracuda, fresh.
Carp, fresh.	21,342	\$640							Barracuda, salted.
Cultus-cod, fresh.					30,000	\$1,050			Barracuda, salted.
Flounders, fresh.	303,350	4,550			160,873	4,267	156,548		Barracuda, salted.
Herring, fresh.	227,515	3,412			13,000	200	41,000		Barracuda, salted.
Mackerel, fresh.							313,837		Barracuda, salted.
Perch, fresh.					28,500	500	24,844		Barracuda, salted.
Rockfish, fresh.					50,000	1,500	67,755		Barracuda, salted.
Salmon, chinook, fresh.	1,037,331	41,403	133,503	\$3,587					Barracuda, salted.
Salmon, silver, fresh.			99,124	1,534	782,638	20,098			Barracuda, salted.
Salmon, silver, salted.					39,000	1,560			Barracuda, salted.
Salmon, steelhead, fresh.			49,503	807	260,879	5,217			Barracuda, salted.
Sea bass, fresh.							41,804		Barracuda, salted.
Shad, fresh.	130,364	4,181			100	10	10,212		Barracuda, salted.
Smelt, fresh.	151,075	2,275			42,250	1,050	187,430		Barracuda, salted.
Striped bass, fresh.	38,947	4,674							Barracuda, salted.
Sturgeon, fresh.	323,855	9,715							Barracuda, salted.
Yellow-tail, fresh.							60,347		Barracuda, salted.
Other fish, fresh and salted.	255,470	4,272					111,479		Barracuda, salted.
Abalone meats and shells.									Barracuda, salted.
Clams, hard.					7,775	102			Barracuda, salted.
Clams, soft.					52,500	1,125			Barracuda, salted.
Crabs.					17,400	435			Barracuda, salted.
Shrimp and prawn.	885,010	40,195			112,320	3,900			Barracuda, salted.
Spiny lobster.							128,425		Barracuda, salted.
Hair-seal and sea-lion pelts.									Barracuda, salted.
Total	3,383,850	115,407	282,250	5,988	1,587,235	46,200	1,155,168	44,000	Total

Species.	Marin.		Monterey.		Orange.		Sacramento.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Carp, fresh.							44,320	\$1.5	Carp, fresh.
Flounders, fresh.	442,468	\$7,587	189,820	\$3,796	11,122	\$440			Carp, fresh.
Flounders, salted.			43,837	1,754					Carp, fresh.
Herring, fresh.	338,760	5,967			6,000	240			Carp, fresh.
Mackerel, fresh.			6,209	286					Carp, fresh.
Perch, fresh.	50,000	2,000			5,000	200	5,668		Carp, fresh.
Rockfish, fresh.			725,380	14,506	4,320	173			Carp, fresh.
Salmon, chinook, fresh.	12,000	480	6,915	415			81,112		Carp, fresh.
Sardines, fresh.					5,000	200			Carp, fresh.
Sea bass, fresh.	13,000	520							Carp, fresh.
Shad, fresh.							21,579		Carp, fresh.
Smelt, fresh.	252,065	5,035	74,808	2,905	25,621	1,025			Carp, fresh.
Striped bass, fresh.							199		Carp, fresh.
Sturgeon, fresh.	20,000	800			3,080	147	3,830		Carp, fresh.
Yellow-tail, fresh.									Carp, fresh.
Other fish, fresh and salted.	303,519	4,050	14,058	507			243,497		Carp, fresh.
Abalone meats and shells.			4,189	85					Carp, fresh.
Octopus and squid.			357,622	28,610					Carp, fresh.
Clams, hard.	33,110	720							Carp, fresh.
Clams, soft.	11,040	110							Carp, fresh.
Shrimp and prawn.	1,180,020	53,590							Carp, fresh.
Terrapin and frogs.	13,125	3,500							Carp, fresh.
Algae.			14,835	503					Carp, fresh.
Total	2,600,113	84,059	1,437,733	53,547	60,743	2,425	400,195	11,000	Total

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.		Species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Flounders, fresh.	71,315	\$2,853					5,187		Flounders, fresh.
Mackerel, fresh.	8,783	399							Flounders, fresh.
Rockfish, fresh.	172,220	6,890					3,700		Flounders, fresh.
Rockfish, salted.	2,620	131							Flounders, fresh.
Salmon, chinook, fresh.	14,175	640	31,445	\$785	944,507	\$38,220	28,839		Flounders, fresh.
Shad, fresh.	35,000	1,400			87,702	2,631			Flounders, fresh.
Smelt, fresh.	52,322	2,000							Flounders, fresh.
Striped bass, fresh.					3,910	409			Flounders, fresh.
Sturgeon, fresh.	72,545	2,176			217,687	6,529			Flounders, fresh.
Total	428,980	10,579	3,445	785	1,253,756	47,840	37,726	2,000	Total

Total

California in 1892.

Yield of the fisheries of California in 1892—Continued.

Los Angeles.		Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
6,430	\$23	Barrauda, fresh	199,760	\$7,996						
		Barrauda, salted	100,614	3,837						
		Donito, fresh	50,000	2,000					20,000	\$1,000
		Donito, salted	171,222	6,070					1,000	59
156,548		Founders, fresh	2,960	117	11,110	\$525	505,685	\$7,585	0,500	325
41,000		Herring, fresh	50,000	2,000			379,190	1,688		
313,837		Mackerel, fresh	4,770	191	11,300	456			5,500	275
24,841		Rockfish, fresh	20,000	800						
57,755		Rockfish, salted	50,000	2,000	98,240	3,865				
		Sardines, fresh	3,000	120	6,500	325			550	27
		Sea bass, fresh	10,000	400	61,650	1,808			14,000	700
		Sea bass, salted			500	25				
41,804		Shad, fresh	18,000	720	5,300	186	252,795	3,792	8,000	400
19,212		Yellow-tail, fresh	50,000	2,000					35,000	1,750
		Yellow-tail, salted	189,607	6,721					1,800	90
187,430		Other fish, fresh and salted	158,925	6,360			379,185	5,686	19,450	973
		7.4. Balone meats and shells	124,120	3,234					238,463	5,280
		Clams, hard	252,000	1,800						
66,347		Shrimp and prawn					1,475,020	60,989		
111,479		Miny lobster	20,000	500					54,850	4,040
		Air-seal and sea-lion pelts		600		256				1,021
		Sea-otter pelts								1,200
		Whale oil			32,100	1,070			13,400	540
		Algae								
128,425	3,333	Total	1,483,978	47,520	226,700	8,516	2,901,775	89,740	518,603	18,277
San Francisco.		Species.	Tehama.		Ventura.		Total.			
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
1,155,108	44,000	Anchovies, fresh	150,175	\$1,502			150,175	\$1,502		
		Barrauda, fresh			11,000	\$440	217,190	8,693		
		Barrauda, salted					109,614	3,837		
		Donito, fresh			7,110	280	77,110	3,280		
44,320	\$1.5	Donito, salted					172,222	6,120		
		Cod, fresh	2,274,565	56,864			65,662	2,191		
		Cod, salted	200,670	6,020			2,274,565	56,864		
5,068		Founders, fresh	2,312,210	53,789	3,000	120	2,312,210	53,789		
		Founders, salted					4,182,048	92,426		
		Herring, fresh	3,431,410	30,589			4,480,887	55,706		
		English, fresh	40,000	1,201			40,000	1,201		
81,112	5,67	Mackerel, fresh	201,108	6,353			350,390	14,150		
		Herring, fresh	644,372	19,330	14,000	560	335,117	10,927		
21,579	1.5	Rockfish, salted					1,819,987	51,282		
199		Salmon, chinook, fresh	1,122,928	44,917	128,380	\$3,210	9,070	483		
3,820		Salmon, chinook, salted	90,000	3,600			3,541,204	141,155		
		Salmon, silver, fresh					90,000	3,600		
		Salmon, silver, salted					881,762	27,632		
243,497	5,8	Salmon, steelhead, fresh					39,000	1,560		
		Sardines, fresh	703,130	14,063			310,442	6,084		
		Sea bass, fresh	135,350	5,414			752,994	15,237		
		Sea bass, salted			4,000	160	253,212	9,610		
		Shad, fresh	242,749	4,855			4,500	185		
		Shad, salted	840,568	20,398			520,494	14,902		
		Striped bass, fresh	13,153	1,315			1,919,894	53,460		
		Surgeon, fresh	80,160	2,403			50,209	6,488		
		Yellow-tail, fresh			8,000	320	718,017	21,854		
400,195	11,0	Yellow-tail, salted					103,027	6,871		
		Other fish, fresh and salted	729,877	13,253			191,407	8,811		
		Balane meats and shells	30,000	500	2,000	80	2,217,410	40,159		
		Octopus and squid	17,000	329			404,547	9,351		
		Clams, hard	141,830	2,804			374,622	29,099		
		Clams, soft	1,988,760	19,888			479,500	6,439		
		Oysters	15,098,700	698,257			2,017,200	20,433		
		Mussels	2,880,000	12,000			15,098,700	698,257		
5,187	\$2	Crabs	2,750,000	99,000			2,880,000	12,000		
		Shrimp and prawn	1,774,295	81,043			2,802,320	102,000		
3,700	1.5	Miny lobster					5,313,345	211,817		
28,839	1,73	Air-seal and sea-lion pelts	32,500	4,550			303,273	8,480		
		Sea-otter pelts					45,625	8,050		
		Whale oil						2,267		
		Whalebone	1,542,743	41,053				107,598		
		Walrus	197,339	937,371			1,574,843	62,123		
		Walrus					197,339	937,371		
		Walrus					600	42		
37,720	2,08	Walrus	27,500	1,925			27,500	1,925		
		Algae					28,325	1,133		
		Total	39,701,708	2,418,979	128,380	3,210	40,110	1,900	57,848,406	3,022,991

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Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892.

Apparatus and species.	Los Angeles.		San Diego		San Francisco.		Total.		Apparatus and species.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
1889.									
Lines:									1891.
Barracuda, salted.....			60,683	\$2,124			60,683	\$2,124	Paranzella nets
Bonito, salted.....			95,184	3,331			95,184	3,331	Flounders, fresh
Cod, salted.....					1,463,424	\$30,587	1,463,424	30,587	Kingfish, fresh
Yellow-tail, salted.....			86,804	3,040			86,804	3,040	Rockfish, fresh
Total			242,731	8,495	1,463,424	36,587	1,706,155	45,062	Other fish, salted
Paranzella nets:									Prawn, fresh
Flounders, fresh.....					352,320	8,808	352,320	8,808	Octopus.....
Kingfish, fresh.....					8,460	254	8,460	254	Total
Rockfish, fresh.....					33,312	999	33,312	999	Miscellaneous:
Other fish, fresh.....					11,760	443	14,760	444	Abalone meat and shells.....
Prawn, fresh.....					13,218	1,080	13,218	1,080	Hair-seal pelts.....
Octopus.....					1,100	22	1,100	22	Fur-seal pelts.....
Total					423,170	12,500	423,170	12,500	Sea-otter pelts.....
Miscellaneous:									Whale oil.....
Abalone meat and shells.....			27,540	1,087			27,540	1,087	Whalebone.....
Hair-seal pelts.....				1,000				1,000	Cod oil.....
Fur-seal pelts.....							15,219	15,219	Cod tongues.....
Sea-otter pelts.....							27,700	27,700	Total
Whale oil.....					1,480,080	60,952	1,480,080	60,952	Grand total.....
Whalebone.....					119,650	520,478	119,650	520,478	1892.
Cod tongues.....					12,600	882	12,600	882	Lines:
Total			27,540	2,087	1,612,330	625,231	1,639,870	627,516	Paranzella nets
Grand total.....			270,271	10,582	3,498,924	674,324	3,769,195	684,906	Flounders, fresh
1890.									
Lines:									Barracuda, salted
Barracuda, salted.....			72,400	2,534			72,400	2,534	Bonito, salted
Bonito, salted.....			112,800	3,950			112,800	3,950	Cod, salted
Cod, salted.....					1,782,079	44,567	1,782,079	44,567	Mackerel, fresh
Yellow-tail, salted.....			104,340	3,652			104,340	3,652	Yellow-tail, fresh
Total			289,600	10,130	1,782,079	44,567	2,072,279	54,703	Yellow-tail, salted
Paranzella nets:									Total
Flounders, fresh.....					347,112	8,678	347,112	8,678	Paranzella nets
Kingfish, fresh.....					10,208	306	10,208	306	Flounders, fresh
Rockfish, fresh.....					35,320	1,060	35,320	1,060	Kingfish, fresh
Other fish, fresh.....					13,530	406	13,530	406	Rockfish, fresh
Prawn, fresh.....					9,845	1,770	9,845	1,770	Other fish, fresh
Octopus.....					1,800	36	1,800	36	Prawn, fresh
Total					417,824	12,256	417,824	12,256	Octopus.....
Miscellaneous:									Total
Abalone meat and shells.....			55,590	934			55,590	934	Miscellaneous:
Hair-seal pelts.....				875				875	Abalone meat and shells.....
Fur-seal pelts.....							69,816	69,816	Hair-seal pelts.....
Sea-otter pelts.....							27,300	27,300	Fur-seal pelts.....
Whale oil.....					2,197,065	103,782	2,197,065	103,782	Sea-otter pelts.....
Whalebone.....					170,118	680,472	170,118	680,472	Whale oil.....
Cod tongues.....					13,800	906	13,800	906	Whalebone.....
Total			55,590	1,809	2,381,583	882,336	2,437,173	884,141	Cod sound.....
Grand total.....			345,100	11,045	4,582,086	939,159	4,927,276	951,106	Cod tongues.....
1891.									
Lines:									Total
Atka mackerel, salted.....					64,800	4,800	64,800	4,800	Grand total.....
Barracuda, fresh.....	2,100	\$84					2,100	84	
Barracuda, salted.....			70,904	2,484			70,904	2,484	
Bonito, salted.....			102,234	3,578			102,234	3,578	
Cod, salted.....					2,047,911	51,393	2,047,911	51,393	
Mackerel, fresh.....	12,150	486					12,150	486	
Yellow-tail, fresh.....	2,500	100					2,500	100	
Yellow-tail, salted.....					110,658	3,873	110,658	3,873	
Total	16,750	670	173,198	6,062	2,223,369	60,126	2,412,317	66,856	

Fisheries of California. Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892—Continued.

Total.		Los Angeles.		San Diego.		San Francisco.		Total.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1891.									
Paranzenella nets:									
60,683	\$2.12					621,845	\$18,656	621,845	\$18,656
95,184	3.33					24,080	963	24,080	963
4,483,424	36.58					62,260	2,490	62,260	2,490
86,804	3.01					46,690	1,401	46,690	1,401
						6,582	1,150	6,582	1,150
						6,150	123	6,150	123
7,706,155	45.08								
						767,407	24,783	767,407	24,783
352,320	8.80								
8,460	254								
33,312	96			52,120	\$1,172			52,120	1,172
14,760	44			750					750
1,981	2					134,220		134,220	
1,100	2					30,200		30,200	
						1,727,535	69,970	1,727,535	69,970
423,170	12.50					223,771	1,118,855	223,771	1,118,855
						975	65	975	65
						16,200	1,134	16,200	1,134
27,540	1.08								
	1.00			52,120	1,922	1,908,481	1,354,444	2,020,901	1,356,366
	15.21								
	27.70								
1,480,080	60.95								
119,650	520.45								
12,600	88								
1,639,870	627.56					90,000	3,600	90,000	3,600
3,769,195	684.90								
1892.									
Paranzenella nets:									
		6,430	257					6,430	257
				68,510	2,397			68,510	2,397
				96,558	3,380			96,558	3,380
						2,274,565	56,864	2,274,565	56,864
72,400	2.53	36,435	1,456					36,435	1,456
115,860	3.93	7,040	282					7,040	282
1,782,670	44.56			108,975	3,814			108,975	3,814
104,340	3.63								
2,072,270	54.70	49,905	1,995	274,043	9,591	2,274,565	56,864	2,598,513	68,450
Paranzenella nets:									
						1,406,192	35,229	1,406,192	35,229
347,112	8.67					40,000	1,201	40,000	1,201
10,208	306					116,952	3,508	116,952	3,508
35,320	1.06					74,240	2,228	74,240	2,228
17,530	40					3,270	654	3,270	654
9,845	1.77					8,000	159	8,000	159
1,809	3								
417,824	12.29					1,651,654	42,970	1,651,654	42,970
Miscellaneous:									
				124,210	3,234			124,210	3,234
53,590	934			660					660
	87					167,526		167,526	
	69,810					34,950		34,950	
	27.39					1,542,743	61,053	1,542,743	61,053
	103.78					197,330	937,371	197,330	937,371
170,118	680.45					600	42	600	42
13,800	96					27,500	1,925	27,500	1,925
2,437,173	884.14			124,210	3,894	1,768,182	1,202,867	1,892,392	1,206,761
4,927,270	951.10	49,905	1,995	398,253	13,485	5,784,401	1,306,310	6,232,550	1,321,700
64,800	4.86								
2,100	8								
70,964	2.48								
102,234	3.55								
2,047,911	51.39								
12,150	48								
2,500	10								
110,053	3.85								
2,413,317	60.85								

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	30, 140	\$600								
Gill nets and trammel nets:										
Monterey			28, 056	\$1, 680						
San Diego			36, 703	1, 472			10, 680	\$427		
San Francisco	92, 376	1, 847								
Santa Barbara							20, 675	1, 033	2, 615	\$125
Total	92, 376	1, 847	64, 843	3, 152			31, 355	1, 460	2, 615	125
Lines:										
Los Angeles			88, 891	3, 454						
Orange			2, 000	80						
San Diego			121, 000	4, 840	36, 423	\$1, 275	34, 350	1, 375	56, 135	1, 965
San Luis Obispo			25, 116	875	1, 000	50	1, 500	75		
Santa Barbara			65, 370	3, 250	19, 520	978	2, 834	141		
Santa Cruz			5, 000	240						
Ventura			10, 802	490			10, 580	405		
Total			318, 239	13, 229	56, 043	2, 303	49, 264	1, 900	56, 135	1, 965
Grand total....	122, 510	2, 447	383, 088	16, 381	56, 943	2, 303	80, 619	3, 456	58, 750	2, 090

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					125, 450	\$2, 500			10, 000	\$200
Los Angeles					3, 090	123			41, 000	1, 640
Marin					65, 395	2, 000			20, 915	1, 077
Orange					1, 415	50			2, 280	90
Sacramento	10, 004	\$353			5, 050	202			18, 150	725
San Diego					224, 104	8, 094			386, 541	11, 596
San Francisco					3, 540	172				
Santa Barbara					5, 500	220				
Total	10, 004	353			433, 546	14, 840			484, 886	15, 328
Gill nets and trammel nets:										
Los Angeles									4, 000	160
Marin									53, 835	2, 153
Monterey					163, 208	3, 260				
San Diego									6, 830	273
San Francisco			10, 070	\$967	440, 490	18, 053			1, 159, 624	34, 789
Santa Cruz					22, 650	900				
Total			10, 070	967	635, 357	22, 219			1, 224, 280	37, 375
Bag nets and parauzella nets:										
Contra Costa					256, 692	3, 850			192, 519	2, 888
Los Angeles					61, 562	2, 460			16, 000	640
Marin					342, 258	5, 240			256, 692	3, 850
Monterey					61, 710	1, 235	47, 500	\$1, 000		
Orange					2, 874	100			2, 365	80
San Diego					2, 000	80				
San Francisco			15, 100	604	513, 400	7, 700			396, 060	5, 940
San Luis Obispo					10, 360	506				
San Mateo					748, 883	11, 401				
Santa Cruz					33, 100	1, 321				
Ventura					2, 130	87				
Total			15, 100	604	2, 634, 909	33, 985	47, 500	1, 000	863, 636	13, 398
Fyke nets and minor nets:										
Contra Costa	11, 914	357								
Sacramento	20, 236	1, 024								
Total	41, 150	1, 381								

Table showing by

Counties and apparatus of capture

Seines:

Humboldt

Los Angeles

Monterey

Orange

San Francisco

San Luis Obispo

Santa Barbara

Santa Cruz

Total

Grand total

Counties and apparatus of capture

Seines:

Humboldt

Los Angeles

Marin

Orange

Sacramento

San Diego

San Francisco

Santa Barbara

Santa Cruz

Total

Gill nets and trammel nets:

Los Angeles

Marin

Monterey

San Diego

San Francisco

Santa Barbara

Santa Cruz

Total

Bag nets and parauzella nets:

Los Angeles

Orange

San Diego

San Francisco

Santa Cruz

Ventura

Total

Fyke nets and minor nets:

Sacramento

Lines:

Humboldt

Los Angeles

Monterey

Orange

San Diego

San Francisco

San Luis Obispo

Santa Barbara

Santa Cruz

Sonoma

Ventura

Total

Grand total

in the shore or

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1880—Continued.

Bonito, salted.		Counties and apparatus of capture.		Carp, fresh.		Cutlass-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
				Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
		Lines:											
		Humboldt				21,040	\$735	6,990	\$630				
		Los Angeles				113,230	4,529	113,230	4,529				
		Monterey				53,572	1,070	20,380	\$815				
		Orange				1,192	45	1,192	45				
		San Francisco				78,234	2,730	2,715	275				
		San Luis Obispo						6,000	210				
2,615	\$125	Santa Barbara						4,215	213				
		Santa Cruz						13,924	507				
2,615	125	Total				99,274	3,465	201,858	7,479	20,380	815		
		Grand total		51,214	\$1,734	131,044	4,736	3,305,070	78,523	07,880	2,715	2,572,811	\$66,101
56,135	1,965												
		Counties and apparatus of capture.											
56,135	1,965												
58,750	2,090												
		Seines:											
		Humboldt				20,150	\$504						
		Los Angeles				10,200	408					15,750	\$563
		Marin				53,410	2,133						
		Orange				1,000	40					2,000	80
		Sacramento				972	50						
		San Diego				16,193	648					7,000	280
		San Francisco				107,125	9,856					1,070,000	21,400
		Santa Barbara								1,200	\$60		
		Santa Cruz								3,215	211		
		Total				299,050	13,648			4,415	271	1,094,750	22,323
		Gill nets and trammel nets:											
		Los Angeles		25,105	\$1,001								
		Marin				36,587	1,467						
		Monterey		5,500	275			538,325	\$10,767				
		San Diego		3,000	120								
		San Francisco						95,405	4,770				
		Santa Barbara		2,583	125								
		Santa Cruz		2,702	130			28,000	1,120				
		Total		38,950	1,654	36,587	1,467	661,730	10,657				
		Bag nets and parangola nets:											
		Los Angeles				7,000	280	13,988	550			2,641	100
		Orange				1,320	52						
		San Diego				6,682	265						
		San Francisco						190,405	40,016				
		Santa Cruz						35,250	1,410				
		Ventura						5,380	216				
		Total				14,902	597	155,023	6,201			2,641	106
		Fyke nets and minor nets:											
		Sacramento				3,310	196						
		Lines:											
		Humboldt						26,115	755				
		Los Angeles		62,318	3,693			31,966	1,279				
		Monterey		63,540	3,478			574,428	11,500	30,750	1,210		
		Orange		3,000	120			6,000	240				
		San Diego		7,090	281			35,000	1,400				
		San Francisco						391,620	18,281				
		San Luis Obispo		95,070	3,550			79,000	3,065	4,000	200		
		Santa Barbara		2,202	115					3,388	105		
		Santa Cruz		7,083	358								
		Sonoma						63,278	2,415				
		Ventura						3,375	135				
								4,831	192				
		Total		276,303	11,595			1,215,613	30,202	38,138	1,505		
		Grand total		315,253	13,249	353,849	15,908	2,032,366	62,120	42,553	1,866	1,097,397	22,420

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.			
	Chinook.		Silver.		Steelhead.		Silver.			
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
Selnes:										
Del Norte.....	105,458	\$2,070	180,205	\$3,543	48,750	\$728				
Humboldt.....			580,441	17,414	193,480	5,804	225,400	\$8,916		
Shasta.....	28,700	720								
Tehama.....	118,145	2,955								
Total.....	252,363	6,351	760,646	20,957	242,230	6,532	225,400	8,016		
Gill nets and trammel nets:										
Contra Costa.....	3,195,747	127,830								
Del Norte.....	113,417	3,402								
Humboldt.....			596,074	10,869	198,691	3,974	210,200	8,408		
Marin.....	25,000	1,000								
Sacramento.....	151,510	10,007								
San Francisco.....	1,093,503	40,140								
Solano.....	1,973,400	78,936								
Sonoma.....	20,810	1,610								
Total.....	6,489,417	263,525	596,074	19,839	198,691	3,974	210,200	8,408		
Lines:										
Monterey.....	20,098	606								
Santa Cruz.....	13,552	610								
Total.....	23,650	1,216								
Grand total....	6,765,430	271,092	1,365,720	40,826	440,921	10,506	435,600	17,324		
Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Selnes:										
Humboldt.....					300	\$30	29,500	\$738		
Los Angeles.....							90,976	3,639		
Marin.....							46,520	1,860		
Orange.....							9,385	375		
San Diego.....							8,000	360		
San Francisco.....							139,978	5,599		
Santa Barbara.....							3,380	108		
Total.....					300	30	328,739	12,739		
Gill nets and trammel nets:										
Contra Costa.....					96,722	3,869			13,770	\$3,443
Los Angeles.....	2,777	\$111					35,325	1,413		
Marin.....	33,142	1,320					43,500	1,740		
Monterey.....							83,258	3,330		
Sacramento.....					13,224	793				
San Diego.....	3,000	120					3,110	125		
San Francisco.....	325,000	13,000			61,072	2,443	559,914	22,390	1,560	\$90
San Luis Obispo.....	52,180	1,820	2,500	\$125			28,000	980		
Santa Barbara.....	5,418	275					2,810	142		
Santa Cruz.....					20,264	810	18,600	745		
Solano.....					72,200	2,888			960	240
Total.....	421,517	16,046	2,500	125	263,488	10,863	774,577	30,871	16,296	4,073
Bag nets and paranzella nets:										
Contra Costa.....							130,012	2,070		
Los Angeles.....							19,000	700		
Marin.....							179,130	2,740		
Orange.....							8,420	335		
San Francisco.....							256,690	4,492		
San Mateo.....							218,010	3,485		
Total.....							812,162	13,882		
Lines:										
Los Angeles.....	8,332	333								
Orange.....	3,000	120								
San Diego.....	8,748	350								
Santa Barbara.....	0,490	320								
Ventura.....	4,760	188								
Total.....	31,330	1,311								
Grand total....	452,847	17,957	2,500	125	263,788	10,833	1,915,478	57,492	16,296	4,073

Table showing by counties and rates of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Selnes:
 Del Norte.....
 Humboldt.....
 Los Angeles.....
 Marin.....
 Orange.....
 Sacramento.....
 San Diego.....
 Santa Barbara.....
 Santa Cruz.....
 Shasta.....
 Sonoma.....
 Tehama.....
 Total.....

Gill nets and trammel nets:
 Contra Costa.....
 Del Norte.....
 Humboldt.....
 Los Angeles.....
 Marin.....
 Monterey.....
 Sacramento.....
 San Diego.....
 San Francisco.....
 Santa Barbara.....
 Santa Cruz.....
 Solano.....
 Sonoma.....
 Total.....

Bag nets and paranzella nets:
 Contra Costa.....
 Los Angeles.....
 Los Angeles.....
 Marin.....
 Monterey.....
 Orange.....
 San Diego.....
 San Francisco.....
 San Luis Obispo.....
 San Mateo.....
 Santa Cruz.....
 Ventura.....
 Total.....

Fyke nets and lines:
 Contra Costa.....
 Humboldt.....
 Los Angeles.....
 Monterey.....
 Orange.....
 San Diego.....
 San Francisco.....
 San Luis Obispo.....
 Santa Barbara.....
 Santa Cruz.....
 Solano.....
 Sonoma.....
 Ventura.....
 Total.....
 Grand total.....

es in the shore or

Salmon, salted.			Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
Silver.			Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Pounds.	Value.											
			Seine:									
			Del Norte.....									
			Humboldt.....									
			Los Angeles.....									
			Marlin.....									
			Orange.....									
			Sacramento.....									
			San Diego.....									
			San Francisco.....									
			Santa Barbara.....									
			Santa Cruz.....									
			Shasta.....									
			Sonoma.....									
			Ventura.....									
			Total.....									
			Gill nets and trammel nets:									
			Contra Costa.....									
			Del Norte.....									
			Humboldt.....									
			Los Angeles.....									
			Marlin.....									
			Monterey.....									
			Sacramento.....									
			San Diego.....									
			San Francisco.....									
			San Luis Obispo.....									
			Santa Barbara.....									
			Santa Cruz.....									
			Solano.....									
			Sonoma.....									
			Ventura.....									
			Total.....									
			Bag nets and parane- tella nets:									
			Contra Costa.....									
			Los Angeles.....									
			Marlin.....									
			Monterey.....									
			Orange.....									
			San Diego.....									
			San Francisco.....									
			San Luis Obispo.....									
			San Mateo.....									
			Santa Cruz.....									
			Ventura.....									
			Total.....									
			Fyke nets and minor nets:									
			Contra Costa.....									
			Sacramento.....									
			Total.....									
			Lines:									
			Contra Costa.....									
			Humboldt.....									
			Los Angeles.....									
			Monterey.....									
			Orange.....									
			San Diego.....									
			San Francisco.....									
			San Luis Obispo.....									
			Santa Barbara.....									
			Santa Cruz.....									
			Solano.....									
			Sonoma.....									
			Ventura.....									
			Total.....									
			Grand total.....									

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	33,750	\$075								
Gill nets and trammel nets:										
Monterey			18,658	\$1,120						
San Diego			31,020	1,241			7,260	\$318		
San Francisco	101,250	2,025								
Santa Barbara							26,945	1,340	2,425	\$115
Total	101,250	2,025	49,678	2,361			34,905	1,658	2,425	115
Lines:										
Los Angeles			142,414	5,097						
Orange			3,000	120						
San Diego			102,180	4,085	43,440	\$1,520	27,080	1,083	67,785	2,375
San Luis Obispo			22,705	720						
Santa Barbara			60,115	3,000			25,672	1,278	2,147	110
Santa Cruz			3,731	182						
Ventura			11,415	480			5,726	218		
Total			345,560	14,284	43,440	1,520	58,478	2,579	72,132	2,593
Grand total	135,000	2,700	395,238	16,045	43,440	1,520	63,383	4,237	74,557	2,706

Counties and apparatus of capture.	Carp, fresh.		Cultus-eel, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					150,560	\$3,132			11,150	\$225
Los Angeles					2,637	105			28,000	1,125
Marin					62,180	2,480			28,279	1,135
Orange					2,687	100			4,325	175
Sacramento	11,590	\$400								
San Diego					4,203	170			14,000	560
San Francisco					208,370	8,335			485,860	7,525
Santa Barbara					2,813	141				
Sonoma					6,190	248				
Total	11,590	400			445,739	14,711			571,614	10,490
Gill nets and trammel nets:										
Los Angeles									2,500	100
Marin									56,572	2,263
Orange					188,323	3,800			3,920	156
San Diego									6,000	240
San Francisco			27,538	\$1,105	418,572	16,850			1,457,580	21,865
Santa Cruz					26,050	1,078				
Total			27,538	1,105	633,845	21,734			1,526,572	24,660
Bag nets and paranzella nets:										
Contra Costa					285,550	4,283			214,129	3,215
Los Angeles					129,929	5,197			17,500	700
Marin					378,800	5,782			284,100	4,261
Monterey					65,450	1,810				
Orange					4,586	180			4,120	165
San Diego					1,815	73			425,075	6,385
San Francisco			22,460	895	367,702	8,716				
San Luis Obispo					7,040	352				
Santa Cruz					473,065	7,195			354,814	5,112
Santa Cruz					35,250	1,410				
Ventura					2,973	116				
Total			22,460	895	1,952,180	34,614	30,534	1,222	1,300,638	19,840
Fyke nets and minor nets:										
Contra Costa	12,209	366								
Sacramento	34,314	1,202								
Total	46,523	1,568								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890.

Counties and apparatus of capture.

Lines:

Humboldt ..

Los Angeles ..

Monterey ..

Orange ..

San Francisco ..

San Luis Obispo ..

Santa Barbara ..

Santa Cruz ..

Total ..

Grand total ..

Counties and apparatus of capture.

Seines:

Humboldt ..

Los Angeles ..

Marin ..

Orange ..

Sacramento ..

San Diego ..

San Francisco ..

Santa Barbara ..

Santa Cruz ..

Total ..

Gill nets and trammel nets:

Los Angeles ..

Marin ..

Monterey ..

San Diego ..

San Francisco ..

Santa Barbara ..

Santa Cruz ..

Total ..

Bag nets and paranzella nets:

Los Angeles ..

Orange ..

San Diego ..

San Francisco ..

Santa Cruz ..

Ventura ..

Total ..

Fyke nets and minor nets:

Sacramento ..

Lines:

Humboldt ..

Los Angeles ..

Monterey ..

Orange ..

San Diego ..

San Francisco ..

San Luis Obispo ..

Santa Barbara ..

Santa Cruz ..

Sonoma ..

Ventura ..

Total ..

Grand total ..

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Bonito, salted.			Counties and apparatus of capture.	Carp, fresh.		Calanus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.			
Lbs.	Value.	Lbs.		Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.			
Lines:															
			Humboldt			20,280	\$710	7,513	\$675						
			Los Angeles					55,017	2,201						
			Monterey					57,432	1,152	13,115	\$525				
			Orange					1,725	70						
			San Francisco			97,480	3,573	3,340	330						
			San Luis Obispo					8,000	280						
			Santa Barbara					3,485	170						
			Santa Cruz					15,570	622						
			Total			117,760	4,283	152,282	5,500	13,115	525				
			Grand total		58,113	\$1,974	167,758	6,283	3,184,046	70,559	43,649	1,747	3,398,824	\$54,906	
Mackerel, fresh.															
Perch, fresh.															
Rockfish, fresh.															
Rockfish, salted.															
Sardines, fresh.															
			Lbs. <th>Value.</th> <th>Lbs.</th> <th>Value.</th> <th>Lbs.</th> <th>Value.</th> <th>Lbs.</th> <th>Value.</th> <th>Lbs.</th> <th>Value.</th> <th>Lbs.</th> <th>Value.</th>	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	
Lines:															
			Humboldt			21,010	\$539								
			Los Angeles			7,200	288						10,765	\$791	
			Marin			47,015	1,920						5,035	200	
			Orange			2,172	80								
			Sacramento			1,373	83								
			San Diego			12,320	493						5,006	200	
			San Francisco			248,108	12,405						1,280,000	10,200	
			Santa Barbara							1,087	\$54				
			Santa Cruz							3,000	150				
			Total			340,698	15,808			4,087	204	1,300,800	20,391		
Gill nets and trammel nets:															
			Los Angeles		35,792	\$1,431		34,082	1,360						
			Monterey												
			San Diego		2,680	107									
			San Francisco												
			Santa Barbara		1,463	70									
			Santa Cruz		2,945	148									
			Total		42,880	1,756		34,082	1,360						
Dag nets and paranza nets:															
			Los Angeles				12,790	512	17,434	697			5,000	200	
			Orange				2,917	110							
			San Diego				5,710	228							
			San Francisco						99,055	3,953					
			Santa Cruz						46,825	1,873					
			Ventura						7,750	310					
			Total				21,417	850	171,064	6,833			5,000	200	
Fyke nets and minor nets:															
			Sacramento				4,232	255							
Lines:															
			Humboldt						24,968	748					
			Los Angeles			124,382	4,976								
			Monterey			41,312	2,066								
			Orange			6,000	240								
			San Diego			5,510	220								
			San Francisco												
			San Luis Obispo			82,310	3,030								
			Santa Barbara			1,620	80								
			Santa Cruz			7,550	330								
			Sonoma												
			Ventura												
			Total			268,684	10,942			1,320,358	41,926	26,629	1,150		
			Grand total			311,564	12,698	400,420	18,273	2,217,988	60,762	30,716	1,354	1,314,800	20,591

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.			
	Chinook.		Silver.		Steelhead.		Silver.			
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
Seines:										
Del Norte.....	149,666	\$1,490	250,375	\$4,227	51,875	\$777				
Humboldt.....			400,272	15,343	153,423	3,008	91,342	\$3,654		
Shasta.....	25,825	040								
Tehama.....	125,860	3,147								
Total.....	301,351	8,283	710,647	19,570	205,298	3,845	91,342	3,654		
Gill nets and trammel nets:										
Contra Costa.....	1,423,880	50,055								
Del Norte.....	195,581	5,807								
Humboldt.....			474,305	15,811	158,101	3,102	75,658	3,020		
Marin.....	22,110	880								
Sacramento.....	145,540	10,188								
San Francisco.....	218,426	8,737								
Solano.....	1,030,580	41,223								
Sonoma.....	21,375	1,281								
Total.....	3,057,495	125,133	474,305	15,811	158,101	3,102	75,658	3,020		
Lines:										
Monterey.....	8,770	520								
Santa Cruz.....	12,500	550								
Total.....	21,270	1,070								
Grand total....	3,380,110	124,492	1,184,952	35,381	363,399	7,007	167,000	6,680		
Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					250	\$25	28,160	\$704		
Los Angeles.....							90,120	3,605		
Marin.....							42,060	1,680		
Orange.....							10,800	435		
San Diego.....							7,800	312		
San Francisco.....							141,730	5,669		
Santa Barbara.....							2,287	115		
Total.....					250	25	323,047	12,520		
Gill nets and trammel nets:										
Contra Costa.....					102,216	4,089			15,715	\$3,114
Los Angeles.....			3,781	\$151			42,640	1,701		
Marin.....	30,305	\$1,200					41,230	1,640		
Monterey.....							107,184	4,287		
Sacramento.....					15,900	058			54	
San Diego.....	2,915	119					2,280	91		
San Francisco.....	195,000	7,800			116,942	3,508	560,922	22,676	3,132	620
San Luis Obispo.....	50,315	1,750	2,800	140			25,115	875		
Santa Barbara.....	3,875	102					2,500	125		
Santa Cruz.....					24,880	995	21,437	860		
Solano.....					57,892	2,316			1,218	24
Total.....	282,470	11,061	6,581	291	317,890	11,800	809,314	32,255	20,119	4,022
Bag nets and paranzella nets:										
Contra Costa.....							148,760	2,231		
Los Angeles.....							49,500	1,980		
Marin.....							165,400	2,460		
Orange.....							9,825	393		
San Francisco.....							203,951	5,142		
San Mateo.....							243,802	3,855		
Total.....							911,238	10,531		
Lines:										
Los Angeles.....	14,344	574								
Orange.....	5,009	200								
San Diego.....	8,050	321								
Santa Barbara.....	4,710	220								
Ventura.....	4,507	178								
Total.....	36,611	1,499								
Grand total....	310,081	12,560	6,581	291	318,140	11,891	2,073,599	81,306	20,119	4,022

Table showi

Counties and
ratus of cap

Seines:
Del Norte.....
Humboldt.....
Los Angeles.....
Marin.....
Orange.....
Sacramento.....
San Diego.....
San Francisco.....
Santa Barbara.....
Santa Cruz.....
Shasta.....
Sonoma.....
Tehama.....

Total..

**Gill nets and
nel nets:**
Contra Costa.....
Del Norte.....
Humboldt.....
Los Angeles.....
Marin.....
Monterey.....
Sacramento.....
San Diego.....
San Francisco.....
San Luis Obispo.....
Santa Barbara.....
Santa Cruz.....
Solano.....
Sonoma.....

Total..

**Bag nets and
zella nets:**
Contra Costa.....
Los Angeles.....
Marin.....
Monterey.....
Orange.....
San Diego.....
San Francisco.....
San Luis Obispo.....
San Mateo.....
Santa Cruz.....
Ventura.....

Total..

**Fyke nets and
nets:**
Contra Costa.....
Sacramento.....

Total..

Lines:
Contra Costa.....
Humboldt.....
Los Angeles.....
Monterey.....
Orange.....
San Diego.....
San Francisco.....
San Luis Obispo.....
Santa Barbara.....
Santa Cruz.....
Solano.....
Sonoma.....
Ventura.....

Total..

Grand t

F.

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890.—Continued.

Salmon, salted.		Counties and apparatus of capture.	Surgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
Pounds.	Value.		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
91,342	\$3,654	Selma:										
		Del Norte									451,010	\$9,494
		Humboldt									922,806	20,088
		Los Angeles							10,185	\$707	166,877	6,670
		Marin									180,434	7,211
91,342	3,654	Orange									25,109	987
		Sacramento							53,542	1,310	60,505	1,799
		San Diego							15,805	624	68,078	2,350
		San Francisco							6,860	263	2,404,678	55,925
		Santa Barbara									35,825	1,740
		Santa Cruz							15,778	\$703	2,800	3,000
75,658	3,020	Shasta							11,060	500	25,825	646
		Sonoma									0,190	248
		Telama									125,860	3,147
		Total			15,778	790	2,800	140	106,212	3,564	4,474,003	115,080
75,658	3,020	Still nets and trammel nets:										
		Contra Costa	195,095	\$5,871					280	11	1,737,780	70,660
		Del Norte									195,584	5,867
		Humboldt									708,064	21,009
		Los Angeles									83,713	3,383
		Marin	38,170	1,530							222,529	8,802
		Monterey							16,121	623	921,540	21,779
		Sacramento	3,860	232							165,414	11,380
		San Diego							15,615	625	68,476	2,741
		San Francisco	10,277	488					48,672	1,140	3,265,802	91,451
		San Luis Obispo									78,230	2,765
		Santa Barbara									37,208	1,842
		Santa Cruz									116,787	4,704
		Solano	202,443	6,074							1,202,133	49,857
		Sonoma									21,375	1,283
		Total	450,445	14,185					80,588	2,399	8,912,707	207,988
		Bag nets and paranzella nets:										
		Contra Costa							208,196	3,065	856,635	12,791
		Los Angeles							69,322	2,773	301,475	12,059
		Marin							278,100	4,078	1,136,400	17,651
		Monterey							8,375	258	104,350	2,750
		Orange									21,448	843
		San Diego									7,525	301
		San Francisco							470,638	6,834	1,870,781	31,928
		San Luis Obispo									7,040	352
		San Mateo							347,554	5,142	1,419,235	21,312
		Santa Cruz									82,675	3,283
		Ventura			4,700	185			2,346	77	17,769	688
		Total			4,700	185			1,384,531	22,227	5,833,702	103,398
		Fyke nets and minor nets:										
		Contra Costa							12,683	389	24,892	746
		Sacramento							159,087	3,813	197,633	5,270
		Total							171,770	4,199	222,525	6,016
		Lines:										
		Contra Costa	39,827	1,105							39,827	1,196
		Humboldt									52,761	2,133
		Los Angeles			38,260	1,530			19,200	768	431,923	17,359
		Monterey									797,367	18,152
		Orange			10,000	400					42,725	1,710
		San Diego			24,000	900	62,535	2,189	20,000	800	390,680	14,751
		San Francisco	48,833	1,465					93,600	1,410	620,657	24,448
		San Luis Obispo									195,321	7,400
		Santa Barbara			14,565	742	2,590	128	3,670	175	122,006	6,081
		Santa Cruz									126,756	5,144
		Solano	67,480	2,024							67,480	2,024
		Sonoma									4,515	180
		Ventura			5,280	210					34,244	1,376
		Total	156,140	4,684	92,105	3,842	65,128	2,317	138,470	3,233	2,934,162	101,953
		Grand total	612,585	18,869	112,583	4,817	67,028	2,457	1,881,571	35,610	22,377,159	624,435

ishes in the shoreable showing by counties and apparatus of capture the yield of food-fishes in the shore or bout fisheries of California in 1891—Continued.

sh.	Bonito, salted		Counties and apparatus of capture.	Carp, fresh.		Cultus-eel, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
			Lines:										
			Humboldt			24,118	\$840	8,645	\$770				
			Los Angeles					80,253	3,210				
			Monterey					22,153	442	12,492	\$500		
			Orange					1,365	55				
548			San Francisco			125,890	4,254	4,000	400				
			San Luis Obispo					10,130	360				
000	1,685		Santa Barbara					3,900	195				
			Santa Cruz					14,626	525				
548	1,685		Total			150,008	5,004	145,072	6,017	12,492	500		
			Grand total	59,618	\$2,016	213,618	7,639	2,720,984	62,687	41,071	1,044	3,757,075	\$48,571
			Counties and apparatus of capture.										
838	07,549	2.57											
000	1,000												
	2,016	10											
240													
078	70,565	2.53	Lines:										
626	72,256	2.60	Humboldt			23,625	\$690					62,007	\$1,166
			Los Angeles			7,915	317						
			Marin			30,118	1,200					3,561	142
			Orange			1,500	69						
			Sacramento			1,076	65						
			San Diego			17,518	701					8,000	320
			San Francisco			180,420	5,683					800,000	17,200
			Santa Barbara							779	\$49		
			Santa Cruz							5,130	257		
			Total			271,172	8,710			5,909	306	933,568	18,828
			Bill nets and trammel nets:										
			Los Angeles			78,117	\$3,124						
			Marin			2,800	140						
			Monterey			3,970	150						
			San Diego										
			San Francisco										
			Santa Barbara			3,225	162						
			Santa Cruz			3,590	175						
			Total			91,702	3,700	24,890	1,000	403,339	12,480		
			Bag nets and parangas:										
			Los Angeles			17,770	671					4,000	160
			Orange			1,805	60						
			San Diego			6,250	250						
			San Francisco										
			Santa Barbara										
			Ventura										
			Total			25,801	981	177,085	7,077			4,000	160
			Yoke and minor nets:										
			Sacramento			3,477	200						
			Lines:										
			Humboldt					34,472	1,034				
			Los Angeles			248,352	9,934	58,645	2,340				
			Monterey			20,934	1,497	305,892	7,017	10,472	760		
			Orange			3,000	120	7,000	280				
			San Diego			10,990	440	62,000	2,480				
			San Francisco					370,406	14,219				
			San Luis Obispo			122,800	4,560	129,720	4,970	1,500	75		
			Santa Barbara			2,750	135			2,338	117		
			Santa Cruz			9,265	417						
			Sonoma					91,504	3,605				
			Ventura					4,264	171				
			Total			427,181	17,103	1,100,388	37,278	23,310	952		
			Grand total	518,883	20,863	325,430	10,906	1,830,812	50,835	20,219	1,258	937,568	18,988

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte.....	114,890	\$3,440	182,500	\$4,818	18,750	\$280		
Humboldt.....			442,166	14,739	147,388	2,948	66,384	\$2,460
Shasta.....	29,110	730						
Tehama.....	114,623	2,890						
Total.....	259,623	7,060	624,666	19,557	166,138	3,228	66,384	2,460
Gill nets and trammel nets:								
Contra Costa.....	504,800	3,916						
Del Norte.....	193,860							
Humboldt.....			448,780	14,059	149,593	2,092	49,816	1,983
Marin.....	15,035	600						
Sacramento.....	76,112	5,228						
San Francisco.....	448,322	17,933						
Solano.....	694,181	27,767						
Sonoma.....	30,650	2,199						
Total.....	2,058,172	83,403	448,780	14,059	149,593	2,092	49,816	1,983
Lines:								
Monterey.....	7,990	480						
Santa Cruz.....	15,260	600						
Total.....	23,250	1,170						
Grand total.....	2,341,045	91,639	1,073,446	34,516	315,731	6,220	116,200	4,443

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					10	\$16	32,000	\$800		
Los Angeles.....							68,974	2,760		
Marin.....							28,310	1,120		
Orange.....							9,470	278		
San Diego.....							12,000	480		
San Francisco.....							170,971	6,839		
Santa Barbara.....							3,790	188		
Total.....					160	16	325,515	12,565		
Gill nets and trammel nets:										
Contra Costa.....					108,011	4,320			23,932	\$3,500
Los Angeles.....			4,301	\$172			45,491	1,819		
Marin.....	15,482	\$610					27,220	1,080		
Monterey.....							76,985	3,680		
Sacramento.....					17,516	1,051			157	
San Diego.....	3,366	135					3,735	150		
San Francisco.....	3,419	6,710			230,400	6,914	683,884	27,355	4,320	618
San Luis Obispo.....		3,110	17,000	850			19,630	687		
Santa Barbara.....	4,880	245					4,000	200		
Santa Cruz.....					30,120	1,205	25,661	1,226		
Solano.....					58,739	2,350			2,265	310
Total.....	333,102	10,810	21,301	1,077	444,546	15,840	886,906	35,597	30,674	4,602
Bag nets and paravella nets:										
Contra Costa.....							141,420	2,167		
Los Angeles.....							61,500	2,400		
Marin.....							186,500	2,848		
Orange.....							8,045	340		
San Diego.....							280,858	4,920		
San Francisco.....							234,700	3,720		
Santa Barbara.....										
Santa Cruz.....										
Solano.....										
Sonoma.....										
Ventura.....										
Total.....							613,663	16,461		
Lines:										
Los Angeles.....	18,206	728								
Orange.....	3,000	120								
San Diego.....	9,000	360								
Santa Barbara.....	4,135	206								
Ventura.....	4,815	190								
Total.....	39,156	1,004								
Grand total.....	372,258	12,414	21,301	1,022	445,006	15,856	2,120,084	64,623	30,674	4,602

Table showing

Counties and apparatus of capture.

Seines:

Del Norte.....
Humboldt.....
Los Angeles.....
Marin.....
Orange.....
Sacramento.....
San Diego.....
San Francisco.....
Santa Barbara.....
Santa Cruz.....
Shasta.....
Sonoma.....
Tehama.....

Total.....

Gill nets and trammel nets:

Contra Costa.....
Del Norte.....
Humboldt.....
Los Angeles.....
Marin.....
Monterey.....
Sacramento.....
San Diego.....
San Francisco.....
San Luis Obispo.....
Santa Barbara.....
Santa Cruz.....
Solano.....
Sonoma.....

Total.....

Bag nets and paravella nets:

Contra Costa.....
Los Angeles.....
Marin.....
Monterey.....
Orange.....
San Diego.....
San Francisco.....
San Luis Obispo.....
Santa Cruz.....
Ventura.....

Total.....

Tyke and minor:

Contra Costa.....
Sacramento.....

Total.....

Lines:

Contra Costa.....
Humboldt.....
Los Angeles.....
Monterey.....
Orange.....
San Diego.....
San Francisco.....
San Luis Obispo.....
Santa Barbara.....
Santa Cruz.....
Solano.....
Sonoma.....
Ventura.....

Total.....

Grand total.....

Salmon, salted.		Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
Silver.			Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Pounds.	Value											
		Counties:										
		Del Norte.....									316,140	\$8,544
		Humboldt.....									866,090	24,745
06,384	\$2,406	Los Angeles.....							20,325	\$1,081	208,545	7,207
		Marin.....									115,270	4,583
		Orange.....									19,408	770
		Sacramento.....							57,587	1,415	69,930	1,874
06,384	2,406	San Diego.....							21,587	862	88,267	3,531
		San Francisco.....							9,280	461	2,001,057	42,320
		Santa Barbara.....			10,805	\$540	2,500	\$125	12,220	600	33,204	1,655
		Santa Cruz.....									5,130	237
		Shasta.....									29,110	730
49,816	1,983	Sonoma.....									4,900	196
		Tehama.....									115,023	2,890
		Total.....			10,805	540	2,500	125	120,097	4,422	3,872,020	90,308
		Gill nets and trammel nets:										
		Contra Costa.....	213,625	\$6,409					915	37	940,489	38,116
40,816	1,983	Del Norte.....									193,860	5,816
		Humboldt.....									618,189	19,034
		Los Angeles.....									131,409	5,255
		Marin.....	15,940	650							131,707	5,245
		Monterey.....							11,810	455	605,718	14,478
		Sacramento.....	3,250	195							97,035	6,596
		San Diego.....							21,228	845	109,653	4,374
		San Francisco.....	18,137	545					43,070	1,082	3,943,086	97,102
		San Luis Obispo.....									125,900	4,647
		Santa Barbara.....									33,822	1,687
		Santa Cruz.....									123,021	5,132
		Solano.....	274,785	8,241							1,029,970	38,700
116,200	4,418	Sonoma.....									36,656	2,199
		Total.....	525,743	16,022					77,923	2,399	8,151,415	249,303
		Bag nets and paranzella nets:										
		Contra Costa.....							197,882	2,935	813,272	12,310
		Los Angeles.....							76,325	3,053	274,879	10,955
		Marin.....							264,840	3,924	1,083,360	10,251
		Monterey.....							5,110	155	63,874	1,904
		Orange.....									17,476	673
		San Diego.....									7,787	311
		San Francisco.....							440,031	6,		

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Selnes:										
San Francisco	39,053	\$300								
Gill nets and trammel nets:										
San Diego			47,190	\$1,886			13,525	\$540		
San Francisco	111,122	1,112								
Santa Barbara							9,200	460	440	
Total	111,122	1,112	47,190	1,886			22,725	1,000	440	
Lines:										
Los Angeles			254,433	5,345						
San Diego			152,570	6,110	41,104	\$1,440	36,475	1,460	74,664	2.0
San Luis Obispo			7,500	263			10,800	540	500	
Santa Barbara			72,000	3,600						
Ventura			11,000	440			7,110	280		
Total			497,503	15,758	41,104	1,440	54,385	2,280	75,224	2.7
Grand total	150,175	1,502	544,693	17,644	41,104	1,440	77,110	3,280	75,664	2.7
Counties and apparatus of capture.	Carp, fresh.		Culms-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Selnes:										
Humboldt					145,873	\$2,917			13,000	
Los Angeles					2,520	101			25,000	1.0
Marin					38,000	1,520			9,040	
Orange					2,380	95			3,745	
Sacramento	9,915	\$347								
San Diego					2,070	82			36,040	1.5
San Francisco					98,105	2,043			710,209	7.5
Santa Barbara					2,510	125				
Sonoma					5,187	210				
Total	9,915	347			206,654	7,993			807,840	10.4
Gill nets and trammel nets:										
Los Angeles									2,000	
Marin									25,470	1.0
Monterey					123,360	2,468				
San Diego									13,000	
San Francisco			34,000	\$1,020	192,695	5,056			2,257,190	22.5
Santa Cruz					17,845	714				
Total			34,000	1,020	333,900	9,138			2,297,710	24.1
Bag nets and paranzella nets:										
Contra Costa					303,350	4,550			227,515	3.4
Los Angeles					90,804	3,993			14,000	
Marin					404,468	6,067			303,350	4.3
Monterey					34,990	700	30,167	\$1,207		
Orange					5,782	230			2,255	
San Diego					890	35				
San Francisco			30,170	1,085	600,703	9,110			455,027	6.8
San Luis Obispo					9,000	450				
San Mateo					565,565	7,585			379,190	5.0
Santa Cruz					33,520	1,341				
Ventura					3,000	120				
Total			36,170	1,085	2,007,092	34,181	30,167	1,207	1,381,337	21.1
Fyke nets and minor nets:										
Contra Costa	21,342	\$640								
Sacramento	34,405	1,204								
Total	55,747	1,844								

Fresh.	Bonito, salted.		Counties and apparatus of capture.	Carp, fresh.		Cultus cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
			San Diego.										
			San Bernardino.										
			San Luis Obispo.										
			San Mateo.										
			San Francisco.										
			San Jose.										
			San Cruz.										
			Total.										
			Grand total.	65,062	\$2,191	230,070	7,070	2,772,856	57,197	43,837	1,754	4,486,887	\$55,796

				Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
				Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
540	560		quanties and appa-										
280	75,224	2.7	ratus of capture.										
280	75,664	2.7											
			ones:										
			Humboldt			28,500	\$560						
			Los Angeles			7,114	285					36,864	\$654
			Marin			28,525	1,141						
			Orange			4,000	100					5,000	200
			Sacramento			1,114	67						
			San Diego			14,725	589					3,000	120
			San Francisco			201,108	6,023					703,130	14,063
			Santa Barbara							275	\$14		
			Santa Cruz							2,620	131		
			Total			285,080	8,835			2,895	145	747,094	15,037
			gill nets and tram-										
			net nets:										
			Los Angeles	67,350	\$2,093								
			Marin			21,475	859						
			Monterey	125	6			356,860	\$7,137				
			San Diego	1,020	41								
			San Francisco					84,703	2,541				
			Santa Barbara	3,080	154								
			Santa Cruz	2,483	125			43,055	1,723				
			Total	74,358	3,019	21,475	859	484,018	11,401				
			egg nets and paran-										
			-ella nets:										
			Los Angeles			17,727	709	11,938	477			5,000	200
			Orange			1,000	40						
			San Diego			5,275	211						
			San Francisco					91,103	2,733				
			Santa Cruz					45,270	1,811				
			Ventura					7,780	311				
			Total			24,002	960	150,091	5,332			5,000	200
			hook nets and minor										
			nets:										
			Sacramento			4,554	273						
			ones:										
			Humboldt					50,000	1,500				
			Los Angeles	210,052	8,403			45,817	1,833				
			Monterey	6,084	280			368,520	7,369	18,580	743		
			Orange					4,320	173				
			San Diego	3,750	150			50,000	2,000				
			San Francisco					351,614	10,548				
			San Luis Obispo	11,300	456			98,240	3,865	6,500	325		
			Santa Barbara	2,420	121					275	13		
			Santa Cruz	6,300	274			83,895	3,356				
			Souoma					3,700	148				
			Ventura					6,220	249				
			Total	239,906	0,684			1,062,326	31,041	25,355	1,081		
			Grand total	313,964	12,703	335,117	10,927	1,703,035	47,774	28,250	1,226	752,994	15,237

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Table showing by counties and apparatus of capture the yield of food-fishes in the shore and boat fisheries of California in 1892—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte.....	40,563	\$1,067	99,124	\$1,534	40,563	\$867	21,630	\$865
Humboldt.....			388,050	12,935	129,350	2,587		
Shasta.....	31,445	785						
Tehama.....	128,389	3,210						
Total.....	209,397	5,062	487,174	14,469	178,913	3,454	21,630	865
Gill nets and trammel nets:								
Contra Costa.....	1,037,331	41,493						
Del Norte.....	84,000	2,520						
Humboldt.....			394,588	13,163	131,529	2,630	17,370	695
Marin.....	12,000	480						
Sacramento.....	81,112	5,678						
San Francisco.....	1,122,928	44,917						
Solano.....	944,507	38,220						
Sonoma.....	28,839	1,730						
Total.....	3,310,717	135,038	394,588	13,163	131,529	2,630	17,370	695
Lines:								
Monterey.....	6,915	415						
Santa Cruz.....	14,175	640						
Total.....	21,090	1,055						
Grand total....	3,541,204	141,155	881,762	27,632	310,442	6,084	39,000	1,569

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt.....					100	\$10	42,250	\$1,056		
Los Angeles.....							75,323	3,013		
Marin.....							24,500	980		
Orange.....							11,921	477		
San Diego.....							13,645	546		
San Francisco.....							112,470	4,500		
Santa Barbara.....							4,290	213		
Total.....					100	10	284,369	10,785		
Gill nets and trammel nets:										
Contra Costa.....					139,304	4,181			38,947	\$4,674
Los Angeles.....	2,553	\$102					51,107	2,044		
Marin.....	13,090	520					25,500	1,020		
Monterey.....					21,579	1,295	74,868	2,905	109	30
Sacramento.....										
San Diego.....	2,375	95					4,355	174		
San Francisco.....	135,359	5,414			242,749	4,855	433,747	17,348	13,153	1,315
San Luis Obispo.....	61,659	1,808	500	\$25			5,390	186		
Santa Barbara.....	7,640	372					3,740	187		
Santa Cruz.....					35,009	1,400	52,322	2,990		
Solano.....					87,702	2,631			3,919	46
Total.....	222,568	8,311	500	25	526,394	14,362	650,939	26,044	56,209	6,488
Bag nets and parangella nets:										
Contra Costa.....							151,675	2,275		
Los Angeles.....							61,000	2,440		
Marin.....							202,065	3,035		
Orange.....							13,700	548		
San Francisco.....							303,351	4,550		
San Mateo.....							252,705	3,792		
Total.....							984,586	16,640		
Lines:										
Los Angeles.....	16,659	666								
San Diego.....	7,825	305								
Santa Barbara.....	6,360	328								
Ventura.....			4,000	160						
Total.....	30,844	1,299	4,000	160						
Grand total....	253,212	9,610	4,500	185	526,494	14,372	1,910,894	53,469	56,209	6,488

Salmon, salted.		Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
Pounds.	Value.		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
		Lines:										
21,630	\$865	Del Norte									198,250	\$3,468
		Humboldt									768,753	21,100
		Los Angeles							14,174	\$681	161,004	5,737
		Marin									100,971	4,030
21,630	865	Orange									27,046	1,082
		Sacramento							63,168	1,417	74,107	1,861
		San Diego							18,150	725	88,530	3,510
		San Francisco							15,550	547	1,867,625	35,068
		Santa Barbara									42,465	2,123
		Santa Cruz			18,620	\$931	800	\$10	16,000	860	42,620	131
		Shasta									31,445	785
17,370	605	Sonoma									5,187	210
		Tehama									128,389	3,210
		Total			18,620	931	800	40	120,642	4,263	3,516,482	83,044
		Gill nets and trammel nets:										
17,370	605	Contra Costa	274,575	\$8,237					1,080	43	1,491,297	58,628
		Del Norte									84,000	2,520
		Humboldt									543,487	16,488
		Los Angeles									123,010	4,319
		Marin	20,600	800							117,445	4,608
		Monterey							0,638	3-2	564,851	12,988
		Sacramento	3,820	220							106,710	7,232
		San Diego							14,850	595	96,375	3,853
		San Francisco	18,840	565					30,665	1,012	4,686,132	108,627
		San Luis Obispo									67,450	2,019
		Santa Barbara									24,100	1,195
		Santa Cruz									150,705	6,052
		Solano	217,037	6,529							1,253,750	47,849
		Sonoma									28,839	1,736
		Total	554,872	16,360					65,235	2,092	9,338,157	278,798
		Bag nets and parangas:										
		Contra Costa							228,185	3,443	910,725	13,680
		Los Angeles							73,845	2,954	283,314	11,333
		Marin							303,519	4,050	1,213,402	18,302
		Monterey							4,420	125	69,577	2,032
		Orange									22,737	908
		San Diego									26,165	246
		San Francisco							508,657	8,123	2,001,011	32,426
		San Luis Obispo									0,000	450
		San Mateo									1,516,755	22,751
		Santa Cruz							379,185	5,686	78,700	3,152
		Ventura							2,600	80	15,950	638
		Total			3,170	127			1,490,811	25,061	6,127,426	105,918
		Wye nets and minor nets:										
		Contra Costa							96,205	786	47,547	1,426
		Sacramento							180,329	4,355	219,288	5,832
		Total							200,534	5,141	266,835	7,258
		Lines:										
		Contra Costa	49,280	1,478							49,280	1,478
		Humboldt									95,000	3,900
		Los Angeles			59,307	2,372			23,460	938	603,943	21,725
		Monterey			3,656	147					445,869	9,682
		Orange									10,990	435
		San Diego			50,000	2,000	86,552	2,907	125,925	5,040	622,745	24,102
		San Francisco	61,320	1,840					92,715	1,343	641,604	18,197
		San Luis Obispo									125,650	4,984
		Santa Barbara			16,380	819	1,000	50	3,450	173	117,235	5,872
		Santa Cruz									124,320	5,068
		Solano	72,545	2,176							72,545	2,176
		Sonoma									3,700	148
		Ventura			4,830	193					33,160	1,322
		Total	183,145	5,494	134,197	5,531	81,632	2,957	245,550	7,404	3,005,441	90,389
		Grand total	718,017	21,854	155,987	6,589	82,432	2,997	2,143,170	43,931	22,354,341	574,407
56,209	6,488											

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Table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California in 1889, 1890, 1891, and 1892.

Years and counties.	Crabs.		Shrimp and prawn.		Spiny lobsters.		Abalone meat and shells.		Years and counties.
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
1889.									1889.
Bag nets:									Humboldt
Contra Costa			919, 221	\$41, 760					Marin
Marin			1, 225, 028	55, 003					San Diego
San Francisco			1, 845, 221	81, 550					San Francisco
San Mateo			1, 532, 034	60, 010					Total
Total			5, 522, 104	251, 637					1890.
Other apparatus:									Humboldt
Humboldt	86, 400	\$3, 000							Marin
Los Angeles					108, 000	\$2, 815	10, 810	\$45	San Diego
Monterey							3, 850		San Francisco
San Diego					48, 158	1, 203			Total
San Francisco	1, 044, 000	70, 045					30, 000	60	1891.
Santa Barbara					110, 300	3, 309	228, 870	5, 87	Humboldt
Total	2, 030, 400	70, 045			266, 458	7, 327	282, 539	7, 08	Marin
1890.									San Diego
Bag nets:									San Francisco
Contra Costa			967, 947	43, 983					Total
Marin			1, 290, 600	58, 043					1892.
San Francisco			1, 941, 055	88, 804					Humboldt
San Mateo			1, 613, 246	73, 303					Marin
Total			5, 812, 848	264, 823					San Diego
Other apparatus:									San Francisco
Humboldt	90, 000	3, 125							Total
Los Angeles					107, 000	2, 810	890	3	1889.
Monterey							4, 400	8	Los Angeles
San Diego					40, 370	1, 009	28, 000	56	Marin
San Francisco	2, 000, 000	80, 000			130, 940	3, 028	114, 933	3, 94	Monterey
Santa Barbara									San Francisco
Total	2, 000, 000	83, 125			278, 310	7, 747	148, 103	4, 01	San Luis Obispo
1891.									Santa Barbara
Bag nets:									Total
Contra Costa			813, 806	36, 967					1890.
Marin			1, 085, 175	40, 280					Los Angeles
San Francisco			1, 691, 232	74, 585					Marin
San Mateo			1, 350, 345	61, 610					Monterey
Total			4, 880, 558	222, 451					San Francisco
Other apparatus:									San Luis Obispo
Humboldt	98, 100	3, 400							Santa Barbara
Los Angeles					102, 125	2, 688	5, 135	8	Total
Monterey							3, 700	60	1890.
San Diego					25, 000	625			Los Angeles
San Francisco	2, 250, 000	90, 000			145, 120	4, 355	241, 826	6, 24	Marin
Santa Barbara									Monterey
Total	2, 348, 100	93, 406			272, 245	7, 668	274, 661	6, 88	San Francisco
1892.									San Luis Obispo
Bag nets:									Santa Barbara
Contra Costa			885, 010	40, 195					Total
Marin			1, 180, 020	53, 500					1891.
San Francisco			1, 770, 025	80, 389					Marin
San Mateo			1, 475, 020	66, 080					Monterey
Total			5, 310, 075	241, 163					San Francisco
Other apparatus:									San Luis Obispo
Humboldt	112, 320	3, 900			128, 425	3, 340	7, 775	16	Santa Barbara
Los Angeles							4, 189	8	Total
Monterey					20, 000	500			1892.
San Diego							30, 000	500	Los Angeles
San Francisco	2, 750, 000	99, 000			154, 850	4, 610	238, 403	5, 28	Marin
Santa Barbara									Monterey
Total	2, 862, 320	102, 900			303, 275	8, 480	280, 427	0, 11	San Francisco

, etc., in the shore table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California—Continued.

Abalone meat and shells.		Years and counties.	Clams, hard.		Clams, soft.		Mussels.		Oysters.	
Pounds.	Value.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.		
1889.										
		Yumboldt	43,750	\$937	10,800	\$270				
		Marin	32,000	600	11,100	109				
		San Diego	420,000	3,000						
		San Francisco	74,900	1,605	1,000,800	11,518	2,100,000	\$8,750	12,309,000	\$571,525
		Total	570,710	4,232	1,118,700	11,897	2,100,000	8,750	12,309,000	571,525
1890.										
		Yumboldt	42,000	900	12,000	300				
		Marin	30,450	655	10,080	101				
10,810	\$41	San Diego	350,000	2,500						
3,850		San Francisco	89,530	1,020	1,230,900	13,020	2,700,000	11,250	12,820,500	592,137
		Total	511,980	5,975	1,261,980	13,421	2,700,000	11,250	12,820,500	592,137
1891.										
		Yumboldt	47,250	1,012	15,000	375				
		Marin	28,700	615	10,380	100				
		San Diego	280,000	2,000						
		San Francisco	94,850	2,033	1,489,980	15,390	2,998,080	12,500	13,387,800	618,455
		Total	450,800	5,660	1,515,360	15,877	2,998,080	12,500	13,387,800	618,455
1892.										
		Yumboldt	52,500	1,125	17,400	435				
		Marin	33,110	720	11,040	110				
		San Diego	252,000	1,800						
		San Francisco	141,890	2,804	1,988,700	19,888	2,840,000	12,000	15,098,700	608,257
860	3.00	Total	479,500	6,440	2,017,200	20,433	2,880,000	12,000	15,098,700	608,257
4,400										
28,000	56									
114,033	3.94									
Years and counties.										
148,193	4.61									
		Los Angeles				215	\$580	7,200	\$288	
		Marin			11,250	\$3,000				
		Monterey	468,000	\$37,440						
		San Francisco	15,000	750	30,000	2,400				5,800
		San Luis Obispo					78	195	33,210	1,107
		Santa Barbara					181	3,423	4,200	224
		Total	483,000	38,190	41,250	5,400	474	4,108	44,610	1,019
5,135	86									
3,700	66									
1890.										
		Los Angeles				83	225	4,800	102	
24,000	48	Marin	250,000	20,480	12,563	3,360				
241,826	6.24	Monterey	10,000	300	35,000	4,200				6,500
		San Francisco					53	142	40,440	1,343
		San Luis Obispo					199	2,527	4,800	256
274,061	6.88	Santa Barbara								22,845
		Total	260,000	20,780	47,563	7,550	335	2,805	50,040	1,791
1891.										
		Marin			12,262	3,270				
		Monterey	300,700	23,960						7,780
		San Francisco	8,000	240	37,500	4,500				
		San Luis Obispo					133	359	41,940	1,403
		Santa Barbara					182	3,597	4,500	240
7,775	162	Total	308,700	24,200	49,762	7,770	315	3,956	46,440	1,643
4,189	85									
1892.										
		Los Angeles					121	330		
39,000	594	Marin			13,125	3,500				
298,403	5.28	Monterey	357,622	28,610						14,835
		San Francisco	9,000	270	32,500	4,550				
		San Luis Obispo					65	256	36,015	1,200
280,427	0.11	Santa Barbara					85	2,221	2,150	112
		Total	366,622	28,880	45,625	8,050	301	2,807	38,165	1,312

SAN DIEGO COUNTY.

As compared with the last investigation, the fisheries of the most southern county in California show considerable fluctuation. The decrease in the general building trade had called to other sections of the State a large number of men and their families, thus reducing the home demand for food-fish, and consequently curtailing the extent of the fisheries. Some attempts have recently been made to increase the domestic and foreign trade in fish, but these efforts were scarcely sufficient to retain the few fishermen employed. During 1892 a limited quantity of fresh fish was shipped as far east as Denver, Colo., and on a carload, made up of crawfish (i. e., spiny lobsters), fresh fish, and salted fish, was sent to Chicago and Philadelphia in a refrigerator car. It was probably the first attempt to dispose of the abundant crawfish of the west coast in the markets east of the Rocky Mountains. At the time of this experiment the true lobsters were very scarce and of high price in the East, and the crawfish was regarded as a fair substitute and met with a ready sale at good prices.

The yield of the fisheries of this county is nearly equally divided between fish consumed in a fresh condition and those cured. The aggregate amount of fish proper taken in 1892 was somewhat less than in 1889, as may be seen from the following comparison:

Fish.	1889.	1892.
	Pounds.	Pounds.
Fresh.....	630,409	522,000
Cured.....	530,220	560,300
Total.....	1,160,629	1,082,300

Both the dry and pickle cured fish are largely exported to the Sandwich Islands. Five-eighths of the catch is taken by means of small vessels ranging in size from 7 to 15 tons. These vessels in most cases frequent grounds south of San Diego. Sometimes, if fish are not found nearer, they resort to grounds 100 miles from the home port. The crew usually consists of three men, who employ hand and tread lines. About three-eighths of the catch is obtained by small boats fishing nearer the shore. The shore fishermen go out in the morning and return the same evening, fishing along the coast some 10 to 15 miles south of San Diego, and about the same distance north from Point Loma, at the entrance to the harbor of San Diego.

Chinese junks were formerly much used by the Chinese fishermen of San Diego County. In 1888 thirteen of various sizes were engaged in fishing. Year by year the Chinese have been withdrawing from the business, deeming it too hazardous on account of the danger from seizure by the Mexican Government for illegal fishing, and the possibility of not being permitted to reenter the United States. The junk fishermen, sailing under no flag, have been obliged to pay alien port charges, which materially reduced the profits of the business. In

few cases the junks have been sold to American fishermen, the numbers by which they were known to the customs officials being supplanted by names. The junks used in San Diego County have declined from 13 used in 1888, 6 in 1889 and 1890, to 1 in 1893.

The shore fisheries of this county are carried on from small cat, sloop, or schooner rigged boats, carrying a crew of two men, who reside in San Diego and market their catch in that city. A small camp of Portuguese fishermen is found at La Playa, on the side of the bay opposite San Diego. These fishermen man their boats singly, and cure all of their catch, most of which is pickled for the Sandwich Islands trade. Of the quantity pickled, about three-fourths are albacore, one-eighth bonito, and one-eighth yellow-tail. The entire catch is taken by trolling. When fishing each boat uses four 15-fathom lines, each provided with a single hook. Just above the hook a decoy bait is fastened consisting of a piece of bone sometimes cut to resemble a small fish, but in most cases simply a narrow fragment without definite shape.

In the vessel fishery the same kinds of lines are employed, although eight instead of four are used by each craft. The lines are fished from the sides of the vessels, being rigged on poles in a manner similar to that employed in the mackerel fishery of the Atlantic coast many years ago.

In hand-lining the men use what may be designated a reverse trawl, not noticed elsewhere in the United States. The line is from 100 to 150 fathoms long and is provided with 25 to 50 hooks attached to gangings, which in turn are fastened to the main line at intervals of a foot apart, beginning at the bottom. The hooks are baited with either fresh or salted fish. Such lines are used from the sides of the vessels in from 5 to 100 fathoms of water. The fishermen seem pleased with this rig, and comment on its superiority over other forms of lines. Having dropped the line over the side of the vessel to the bottom, they have a string of baited hooks suspended that attract the fish much more effectively than would be the case with a single hook or a series of hooks arranged on the ordinary trawl. As soon as the line reaches the bottom the fishermen begin to draw it in and the fish follow it toward the surface. Often as many as half the hooks are found to have fish on them.

The fishermen report no scarcity of fish on the grounds adjacent to the Bay of San Diego, but few fish are now caught inside of the bay, where fine fishing was formerly enjoyed. The city sewage and the dumping of city refuse and garbage just outside of the harbor have, in the opinion of the fishermen, prevented the fish from entering the bay.

In September, 1891, an experimental shipment of 3,660 pounds of pickled fish was made to the Sandwich Islands. The fish met with such favor that the business rapidly increased, until in 1892 the fish so shipped amounted to 34,300 pounds. The largest part of the pickled fish consists of albacore, which are taken in abundance at all seasons of the year, and range in size from 30 to 70 pounds. The principal part of the catch is taken by trolling on the grounds some 10 miles southwest from Point Loma. The fish intended for the Sandwich

1889.	1892.
Pounds. 630,400 530,220	Pounds. 522,000 560,350
1,160,620	1,088,350

Islands trade are prepared as follows: After the removal of the head and viscera, the fish, without being split, are cut transversely into slices 1 to 1½ inches thick, which are thrown into vats of strong pickle and after being thoroughly cured are packed into barrels and half barrels for shipment.

Among the invertebrate products of the fisheries of this county the crawfish, or the spiny lobster, is most important. This crustacean occurs in great abundance and is taken in pots and drop nets of various kinds. The pots used by one firm of fishermen are unique in being made of iron, to better withstand the heavy swell and rough sea. The general style is similar to the traps used by the lobster fishermen of Massachusetts. The frame is constructed of ¾-inch gas-pipe, the body of galvanized-iron wire, twine being used at the ends in the construction of the funnels. These pots are 20 inches square and 4 feet long. It is claimed that they will emerge in good shape from usage that would totally destroy the ordinary lobster pots. They were first used during the winter of 1893.

The business of taking abalones continues of some importance. These mollusks appear to have increased to some extent during the past few years, owing to the discontinuance of the Chinese fisheries; the low prices received for shells and meat affording no inducement to white fishermen to undertake the business.

ORANGE COUNTY.

This is a county recently formed from parts of Los Angeles and other adjacent counties. The principal center is Newport, which was formerly included in Los Angeles County. The fisheries consist in the operations of a few fishermen located at Newport. The catch in 1889 amounted to about 75,000 pounds, which was hauled in teams to Santa Ana, and sent thence by express to Los Angeles.

LOS ANGELES COUNTY.

The fisheries of this county present few changes in methods compared with the conditions found in the previous investigation. There has, however, been quite an increase in the extent of the industry, and it is probable that the next few years will witness a still further augmentation. New and competing lines of railroad have been opened up, freight rates have been reduced, and new fishing stations have been established. The centers in this county from which commercial fishing is now prosecuted are Redondo Beach, Ballona, Santa Monica, Long Beach, San Pedro, and Wilmington.

Redondo Beach, located 22 miles from Los Angeles, was first reached by railroad in November, 1889. Previous to the construction of the road the few fishermen at this point sent their catch by teams to Los Angeles. A marked increase in the important fisheries has ensued since the establishment of rail communication with Los Angeles, the catch being 51,700 pounds in 1889, and 181,905 pounds in 1892. Fishing is here done by means of bag nets, gill nets, and hand lines, which are

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operated along the beach from small boats. There being no harbor or shelter, in stormy weather the boats and fishing gear are hauled high up on the beach. Fish are generally abundant and in large variety, and the fishermen have no difficulty in speedily filling their dories.

At Ballona, located 8 miles north of Redondo Beach, four American fishermen plied their vocation in 1889, 1890, and 1891, but abandoned the business the following year. The catch averaged about 30,000 pounds annually. Two other small fishing-camps are located $2\frac{1}{2}$ and 6 miles, respectively, to the south of Redondo Beach.

The fishing business of Santa Monica is limited, the annual shipments and local consumption aggregating only 75,000 to 100,000 pounds.

From Long Beach 30,000 to 35,000 pounds of fresh fish are annually sent by express to Los Angeles by fishermen living at San Pedro and Wilmington, but taking their fish off Long Beach. San Pedro, with its safe harbor and good rail and steamboat facilities, as well as its nearness to the fishing-grounds, continues to be the chief fishing center in Los Angeles County. The fisheries have shown a steady increase, largely on account of reduced rates for railroad transportation.

Large shipments of fresh, pickled, and dry fish are sent from this point to San Francisco, Los Angeles, and other points. The total quantities of fishery products sent from this place during the four years ending 1892 were as follows:

Years.	Pounds.	Value.
89.....	480,370	\$17,938
90.....	547,550	20,702
91.....	505,385	19,276
92.....	650,253	24,444

Wilmington, by virtue of its shipping advantages, is the second point of fishing importance in Los Angeles County. The quantities of fresh and salt products distributed from this point during the years named were as follows:

Years.	By express.	By freight.	By team.	Total.
	Pounds.	Pounds.	Pounds.	Pounds.
89.....	131,383	34,045	102,125	268,152
90.....	129,100	18,548	110,415	258,063
91.....	182,879	352,263	35,260	570,402
92.....	69,451	223,045	20,350	312,846

The shipments by express and team consisted of fresh fish sent to Los Angeles. The shipments by freight were salt fish, abalones, and salmon pelts. In March, 1891, a firm located at this place began the extensive curing of fish. The business consisted chiefly in pickling haddock and barracuda and in packing sardines in kegs and small packages. In March, 1892, the curing establishment was burned and not rebuilt, this fact accounting for the diminution in the catch of this county in 1892 as compared with 1891.

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The quantities of cured fish shipped from Wilmington in the years 1889 to 1892, inclusive, were as follows:

Species.	1889.	1890.	1891.	1892.
	Pounds.	Pounds.	Pounds.	Pounds.
Mackerel	9, 023	9, 059	175, 229	109, 8
Sardines	2, 256	2, 265	43, 807	27, 2
Barracuda	6, 766	6, 794	131, 421	82, 2
Total	18, 045	18, 118	350, 458	218, 8

Additional shipments of prepared products were as follows:

Products.	1889.	1890.	1891.	1892.
Abalone meat	3, 170	430	435	.....
Abalone shells	12, 400	.....	1, 375	.....
Seal-ion pelts	11, 000	.....	.....	4, 000
Seal-ion oil	960	640	.....	.....

Los Angeles, the principal community in the county, has no fishery but is the chief distributing-point for fishery products caught in the waters of the county and consumed in many of the interior towns of southern California. Nearly all the fresh fish shipped from the different fishing stations of the county is sent by rail or team to the wholesale and retail dealers of Los Angeles. A somewhat unusual feature of the business is the contracting by the dealers for all the fish caught by the fishermen at a uniform price per pound, usually 4 cents, regardless of the different species. Dealers in Los Angeles are experimenting with the smoking, pickling, and canning of several of the desirable food fishes found on the coast of the county. The barracuda have been smoked and pronounced by experts equal to finnan haddies, of which considerable quantities were previously imported from the East. The bull's-eye mackerel has been pickled to some extent; this is a very good food-fish in a fresh condition, but owing to the deficiency of fat in its flesh it does not make a satisfactory pickled fish.

Some sardines of excellent quality have been packed in oil, mustard, and other ways common to the trade. In the vicinity of San Pedro and Santa Catalina Island, sardines are, in their season, found in large quantities. During February, March, and April of each year small sardines are usually abundant and in fine condition for canning. In May and June the larger sardines arrive and appear to crowd out the fish of smaller size. In July and August the large fish withdraw and the small fish again become plentiful. Up to August the fish are generally in fine condition, but after that date at times the small fish are usually of poor quality for canning. The larger sardines found in the part of the State are somewhat smaller in size than those occurring in San Francisco Bay, being of the size most suitable for packing in half-pound cans in mustard and spices. There appears to be a bright future for the sardine industry in this county, and the expansion of the business may be confidently expected during the next few years.

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VENTURA COUNTY.

1891.	1892.
Pounds.	Pounds.
175,229	109,273
43,807	27,382
131,421	82,891
350,458	219,546

follows:

1891.	1892.
435	435
1,375	435
.....	435
.....	435

There are no fisheries in the county, but a few fish are caught in the adjacent islands, and present few new features as compared with 1888. The branches of the fishing industry here followed are the taking of the shore food-fishes, the hunting of sea otters and sea lions, and the utilization of abalones and algae.

The fisheries of this county are prosecuted from Santa Barbara and the adjacent islands, and present few new features as compared with 1888. The branches of the fishing industry here followed are the taking of the shore food-fishes, the hunting of sea otters and sea lions, and the utilization of abalones and algae.

SANTA BARBARA COUNTY.

The fisheries of this county are prosecuted from Santa Barbara and the adjacent islands, and present few new features as compared with 1888. The branches of the fishing industry here followed are the taking of the shore food-fishes, the hunting of sea otters and sea lions, and the utilization of abalones and algae.

Fish are abundant at all seasons and the weather is mild and favorable for fishing throughout the year. The extent of the fisheries is, however, quite limited and does not to any extent represent the resources of the county. The few fishermen here, mainly Austrians and Chinese, make a good living with little exertion, carrying on their business only when the weather is perfect and they are so disposed. Most of the catch is consumed locally, the demand being considerable during the winter months, when thousands of visitors and tourists are found in this section. In summer but small quantities of fish are taken.

Three camps of fishermen and sea-lion hunters are located on the islands of Santa Cruz and Santa Rosa, the fishermen being Americans and Chinese. The former give attention to sea lions and sea otters, while the Chinese take most of the algae and abalones, and prepare the dry fish which are exported.

Sea lions are taken at San Miguel and Flea Islands and on Richardson's Rock. They are hunted for their oil, which brings about 40 cents per gallon, and their hides, which are worth about 4 cents per pound. The skins are tanned and make serviceable leather. Many of the sea lions are of large size. Of late years there has been quite a demand for live specimens to be placed in public parks and gardens in some of the eastern cities, and a considerable number have also been shipped alive to Europe. In 1891, 34 sea lions, weighing 9,580 pounds, were shipped east from this county, and in the following year 17, weighing 5,470 pounds, were so disposed of. The sea lions sought for their oil and hides are killed by means of guns, while those captured alive are taken by throwing a lasso over their heads.

Six American fishermen in three boats hunt the sea otters around the islands of San Miguel, Santa Rosa, and San Nicholas. The number killed is quite small and the animals are growing scarcer each year. Thirty were taken in 1889, 20 in 1890, 12 in 1891, and 8 in 1892, the pelts having an average value to the hunters of \$150.

Of late years abalones have been more abundant. The low price of fish and shells which had for some time prevailed offered small inducement for even the frugal Chinese to take these mollusks, which consequently are the main article of commerce in this county. The Chinese gather from the rocks a large quantity of algæ, which they dry, pack in bales, and export to a larger market. The other products of the coast are dried squid and dried abalones for Chinese. Most of the fish are shipped by rail to San Francisco. The quantity of fish shipped in 1890, 1891, and 1892 was as follows:

SAN LUIS OBISPO COUNTY.

Compared with the extent of the fisheries shown in the previous report the fishing industry of this county has undergone a slight increase, as gauged by the quantity and value of the products taken. Port Harford, with the steamboat and railroad connections, is the most important of the several fishing stations of the county, the others being located at Morro and Cazuecos, 15 and 21 miles, respectively north of Port Harford, and at San Simeon, a shore whaling station some 20 miles farther north.

The catch of food-fish in 1892 was unusually light, owing to scarcity of mackerel and barracuda; the catch of the former at Port Harford was 105,000 pounds in 1891 and only 7,300 pounds in 1892, the catch of barracuda falling off from 50,000 pounds to 750 pounds.

In close proximity to Port Harford are Pecho Rock and Lion Rock, which are favorite resorts for a large number of sea lions, which are hunted for their pelts and oil. The extent of this branch of the fisheries in the years 1890, 1891, and 1892 was as follows:

Years.	Sea lions killed.	Pelts.		Oil.	
		Pounds.	Value.	Gallons.	Value.
1890	53	3,577	\$143	202	8
1891	133	8,978	359	732	18
1892	95	6,412	250	522	12

The shore whale fishery, which was at one time carried on with considerable activity from a number of stations along the California coast, is now restricted to the limited operations of a few fishermen at San Simeon, at the northern end of this county. The results of the business during the past four years were as follows:

Years.	Whales killed.	Oil made.	
		Gallons.	Value.
1889	5	4,000	\$1,500
1890	7	5,000	2,000
1891	7	5,000	2,000
1892	5	4,000	1,500

MONTEREY COUNTY.

The fisheries of this county have a peculiar interest in that Monterey Bay, the principal fishing-ground, represents the limit of migration of many fishes; shad and salmon, for instance, are here found in some numbers, but do not occur south of Monterey Bay, while a large variety of fish are found in abundance. The quantity of fish caught in Monterey Bay in 1890, 1891, and 1892 was as follows:

low price of fish annually migrate northward as far as this section which are seldom found in any abundance in higher latitudes. Among the latter are the mackerel, bonito, albacore, and barracuda. The fishermen of this county usually find a great abundance of fish and have the choice of a larger number of species than is found elsewhere on the west coast. The other economic water products of this county consist chiefly of squid and algae. With few exceptions the fishermen are Portuguese or Chinese, the latter comprising two-thirds of the fishing population. Most of the Portuguese are naturalized citizens.

Nearly all of the catch of both whites and Chinese is sent by steamer or rail to San Francisco. The squid and dry fish shipped by the Chinese are in large part reshipped to the Sandwich Islands or China. The quantities of fresh fish sent to market by the white and Chinese fishermen of this county were somewhat less in 1892 than during the three previous years, as shown in the following table. The species shipped are specified in the detailed tables elsewhere presented.

Statement of fresh fish shipped to San Francisco by fishermen of Monterey County.

Fishermen.	1889.	1890.	1891.	1892.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
White.....	975,507	1,130,962	825,338	672,129
Chinese.....	345,849	360,230	157,015	199,380
Total.....	1,325,356	1,500,212	982,353	871,509

The following shipments were also made by the Chinese fishermen, consisting of dry fish, squid, and abalones and abalone shells, and algae:

Products.	1889.	1890.	1891.	1892.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Dry fish.....	102,000	61,000	61,240	63,830
Dry squid.....	468,000	300,000	300,760	357,622
Dry abalones.....	1,150	1,300	900	1,235
Abalone shells.....	2,700	3,100	2,800	2,954
Algae.....	5,800	6,500	0,500	14,835
Total.....	579,650	330,900	372,200	440,476

SANTA CRUZ COUNTY.

The fisheries of Santa Cruz County present no new features as compared with the conditions recorded in the last report. The quantity of fish taken shows a small increase each year, but the industry may be regarded as only imperfectly developed. Shad are found along the coast of this county, but do not appear to be undergoing the marked increase in numbers which is witnessed in the more northern counties of the State. In 1889 20,000 pounds were taken, and in 1892 the catch was 35,000 pounds. Salmon are also caught in limited quantities each year. The few fresh-water streams entering the ocean on this part of the coast probably accounts for the small increase in shad and

salmon. The bulk of the catch consists of flounders, rockfish, smelt and sturgeon, and nearly the entire yield is sent fresh to San Francisco. The shipments of fresh fish during each of the four years ending 1892 were as follows:

Years.	Pounds.	Value.
1889.....	249,960	\$9,96
1890.....	310,776	12,43
1891.....	350,694	13,22
1892.....	354,213	14,16

SAN FRANCISCO COUNTY AND VICINITY.

By far the most extensive fisheries of California are located at San Francisco, which has the distinction of being the most important fishing center on the Pacific Coast of North America. Besides maintaining valuable fisheries, the city is the principal market for the product of nearly every county in the State and is in very close relation with the adjacent counties of Contra Costa, Solano, Sonoma, and Marin.

The branches which give prominence to this region are the general market fisheries of San Francisco Bay and tributaries and of the adjacent ocean, the cod fishery, the whale fishery, the fur-seal and sea-otter fishery, the oyster industry, and the Chinese fisheries. These have been so fully described in the previous report that it is only necessary at this time to record their extent and the few changes which have ensued.

PHYSICAL FEATURES OF SAN FRANCISCO BAY AND TRIBUTARIES.

A large part of the salt-water and fresh-water fish received in San Francisco is taken in San Francisco Bay and its tributary bays and streams. This inland water area is of large extent and well adapted to the support of a large amount and variety of animal life. The quantity of fishery products annually withdrawn from these waters is enormous but it is doubtful if the full resources are utilized or appreciated.

In a general way the dimensions of San Francisco Bay and the smaller bays connected therewith may be stated as follows: From the southern end of San Francisco Bay, bordering on Santa Clara County, to San Francisco is a distance of 25 miles, the width of the bay being from 2 to 10 miles. Between San Francisco and the entrance of San Pablo Bay the distance is 11 miles; San Pablo Bay is 10 miles long and from 8 to 10 miles wide. Karquines Strait, which connects San Pablo Bay with Suisun Bay, is 8 miles long and $\frac{1}{2}$ to 1 mile wide. Suisun Bay is 16 miles long and from $\frac{1}{2}$ to 6 miles wide. The total length of these connected waters is about 70 miles.

At the northern end of Suisun Bay, in Solano County, the two largest rivers in the State have their outlets. A peculiar feature of these rivers, probably not found elsewhere in the United States, is the relation existing between their respective sources and outlets. The San

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Pounds.	Value.
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310,776	12,431
330,694	13,228
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Joquin takes it rise in the semitropical section of the southern part of the State, and flows northward hundreds of miles through a warm region. The Sacramento, with its head waters among the perpetually snow-covered Sierra Nevada Mountains, flows south many hundred miles, and, through numerous passages, mingles with the San Joaquin and is lost in the tide waters of the bay. These two streams constantly carry with them a large amount of minute animal and vegetable life, much of which must find a congenial home in San Francisco Bay and furnish a large and varied quantity of food for the fish life of the fresh, brackish, and salt waters.

Another interesting feature of the bay is the almost uniform temperature of the water, there being only a few degrees variation at any season of the year. That the conditions are extremely favorable to the support of aquatic life is demonstrated in the rapid increase and permanent residence of the several fine food-fishes introduced from the Atlantic Coast by the Government. Some of the fishes thus acclimatized are naturally anadromous, but in San Francisco Bay, contrary to their usually migratory habits, they do not appear to have any desire to spend much if any of their existence in the ocean.

Another feature which has its influence upon the quantity of animal life present in San Francisco Bay is the absence of fishing banks or submerged chains of mountains off the coast of California adjacent to the Golden Gate. Fishing-grounds such as are found off the coast of the Atlantic States do not occur within many hundred miles of the California coast. It may therefore be assumed that during very stormy weather numbers of the near-shore marine fishes would seek food and shelter inside the Golden Gate, where, finding favorable conditions, many remain.

THE MARKET FISHERIES.

The fresh-fish business of San Francisco presents few changes or improvements. Fish are handled in the same primitive manner often described and always noticed by everyone that takes any interest in visiting the fish markets. The fish are seldom dressed and but a small amount of ice is used. Several of the dealers united as one company during 1892 and have made quite an improvement in having larger and more inviting quarters in which to transact their business. Six days in the week, every week in the year, with the exception of a few stormy days, the little lateen-rigged fishing boats sail out in the morning for the same fishing-grounds, with the same kind of fishing gear, nets, or crawls; with little trouble they catch the same varieties of fish, and the evening finds them back in their fishing dock.

The use of steamers, recommended in a previous report, in place of sail vessels is slowly taking place. The first steamer to engage in the market fisheries began work in or about 1885. This vessel was a tug that combined towing part of the time with fishing, when not otherwise engaged. During 1891 several of the wholesale firms united and added two steamers to the business, and in 1892 one more was added,

making four steam vessels then in the market fishery. Some of these steamers are continually engaged in the fishing business, and at most times all four of them are. They leave the fishing dock early every morning, except Saturday, which is their day of rest, made so from the next day being Sunday, in which they could not dispose of their catch as they return in the evening of the same day they leave. The steamers leave the fishing dock and soon pass out through the Golden Gate turning north, a run of a few hours brings them to their usual fishing grounds in Drake Bay, where the paranzella or drag net is soon in the water, and the steamer slowly drags it along the bottom until it is thought best to reel it in, empty the catch, and repeat the operation.

The steamer's crew consists of captain, engineer, fireman, and four to six fishermen, who are hired by the month.

The catch consists mostly of flounders and the numerous varieties of flatfish, with a small amount of many other kinds of bottom fish, some of which are saved and others thrown overboard quite likely to be recaptured the following day, as nearly the same fishing-ground is gone over day after day, and generally the catch is equally good.

One good result of the use of steamers is that the catch can always be landed fresh and only a few hours at most from the time the fish were freely swimming in the ocean.

The many varieties of salt-water fish caught by the market fishermen outside of the Golden Gate have as a general thing been of an average abundance and ample for the needs of the market. Of the anadromous fishes, shad and striped bass have wonderfully increased in the market. The price of the latter has fallen from 75 cents or \$1 a pound, which was freely paid in 1889, to 10 to 15 cents a pound in 1892. Shad, which a few years after their introduction brought \$5 each, have year by year largely increased in numbers, and the price has fallen in the market as low as 25 cents for two fish, or about 3 cents a pound, the fishermen often receiving as little as a cent a pound. Salmon have in few instances been very plentiful, but the season's catches on the whole have not been satisfactory. The tables by counties will show the catch of these and all other species for the past four years.

A conspicuous part of the fresh-fish supply of San Francisco is taken in San Francisco Bay and the adjoining bays to the north. Between San Francisco and the southern end of the bay the principal fisheries carried on are for oysters, shrimp, herring, and smelt. At the extreme end, and for a few miles above on each side, are the only cultivated oyster beds in the State. These embrace several hundred acres. At many places in San Francisco Bay may be found the remains of native oyster beds in the shape of very small shells. Where native oysters are found alive their size is too small to render them of any commercial value. Investigations made by the United States Fish Commission disclosed the existence of a number of these native oyster beds that were not previously known, most of which were south of San Francisco, although a few were in the vicinity of San Pablo Bay. On some

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of these old beds were found numbers of medium-sized eastern oysters in good condition. These were probably the outcome of spat that had drifted with the tide from the cultivated beds of eastern oysters.

Next in importance to the oyster industry is the shrimp fishery carried on by the Chinese. At several points on the west side of the southern part of the bay are located extensive camps of the Chinese fishermen, while in close proximity to their camps along the borders of the bay and as far out as the main channel may be seen hundreds of their shrimp nets fastened to stakes.

From the middle of January to the middle of June smelt are more or less abundant and taken with nets along the west shore and along the border of the channel. From November to February herring and smelt are netted on the east side of the bay. From San Francisco to a distance 5 miles south smelt are caught during July and August, and a short distance south on the east side of the bay smelt and herring are found in December and January.

The foregoing comprise all of the principal fishing done within that part of the bay south of San Francisco. Just inside the Golden Gate primitive traps to the number of several hundred are fished for crabs. The first of the winter catch of herring is taken in Richardson Bay north of the Golden Gate, in which is located one of the large stations for the receiving and curing of cod. Another important station connected with the cod fishery is found a few miles distant on the main bay, these comprising all the firms that are engaged in the cod fishery of California. From the harbor of San Francisco to the upper extremity of Suisun Bay salmon, shad, and striped bass are netted from April to the middle of September, the principal part of the run of fish being taken in or near the channel. On each side of the entrance to San Pablo Bay the Chinese fishermen, whose operations were fully noticed in the previous report, continue to have their camps and follow their important fisheries for shrimp and the smaller species of bottom fish. On the west side of San Pablo Bay sturgeon and flounders are taken between February and May.

The fisheries of Suisun Bay are limited to the taking of salmon, shad, and striped bass.

THE PACIFIC COD FISHERY.

This branch of the Pacific fisheries is making history, although in many respects differing from the much older one of the Atlantic. Since the landing of the first cargo in 1864, up to 1893, the few firms engaged in the catching and curing of codfish have seen many fluctuations and changes in the business. The increase which the industry has undergone has only been reached by seeking the widely separated and distant markets of the Atlantic Coast, the Sandwich Islands, and Australia. Changes have taken place in the mode of preparing the fish for market. A small amount is yet called for in the old style, hard dried with skin on and tied up in bundles of 75 to 100 pounds; but

most of the fish after curing are stripped of their skins, cut up, and packed as boneless fish. This modern way of placing cod on the market has been most favorably received in Australia, where the American boneless cod has nearly driven the hard-cured "stock fish" of northern Europe from the market.

Changes are taking place in the grounds resorted to by fishermen. The distant Okhotsk Sea and far eastern waters, where attention was first called to the cod of the Pacific, have nearly been abandoned by American fishermen for the nearer home fishing-grounds of Bering Sea, and the vessel fisheries of the latter are giving way to the establishment of permanent fishing stations on the islands bordering Bering Sea. Both American and native fishermen remain at these stations and fish on the adjacent banks, which are quickly and easily reached by small boats. The fares are soon taken, and on returning to the station the fish are dressed, salted, and packed away until vessels from San Francisco arrive. These bring salt for curing and supplies for the men, and return with loads of kench-cured fish to be unloaded at the home station, and there prepared as boneless cod.

Firms at San Francisco engaged in the cod fishery have branch stations at the following points on the Shumagin Islands: Sand Point, Red Cove, Company Harbor, Squaw Harbor, Ikaluk, Chichagof Bay, Henderson Island, Unga Island, Nelson Island, Pirate Cove, Sanborn, Rasatska, Johnson's Harbor, and Port Stanley.

The San Francisco cod fleet in Okhotsk Sea in 1889 and 1890 consisted of two brigs of 618 tons, whose aggregate catch was 1,168,484 pounds and 1,123,941 pounds, respectively. During 1891 no American cod vessels visited that region. In 1892 a three-masted schooner of 369 tons took 516,000 pounds of cod.

The extent of the Bering Sea cod fishery carried on by San Francisco vessels during the four years beginning 1889 was as follows, two small schooners being employed in transporting the catch:

Years.	No. of vessels.		Tonnage.	Catch.	
	Brigs.	Schooners.		Pounds.	Value.
1889.....	1	2	208	294,940	\$7,300
1890.....	2	2	376	655,138	16,300
1891.....	4	3	1,120	2,114,711	52,800
1892.....	4	2	994	1,742,155	43,500

The aggregate receipts of salt cod by San Francisco firms, specified by fishing-grounds, are shown for four years in the following table:

Grounds.	1889.	1890.	1891.	1892.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Okhotsk Sea.....	1,168,484	1,123,941		516,000
Bering Sea.....	294,940	655,138	2,114,711	1,742,155
Islands of Alaska.....	1,134,775	1,650,002	1,637,000	2,208,000
Total.....	2,598,199	3,438,681	3,751,711	4,466,155

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Pounds.	Value.
294,940	\$7,32
655,138	16,25
2,114,711	52,46
1,742,155	43,55

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191.	1892.
Pounds.	Pounds.
4,711	516,46
7,000	1,742,15
1,711	2,208,46
	4,466,16

Vessels going to Okhotsk Sea on cod-fishing trips usually leave San Francisco about May 1 and return home by the latter part of September. The start for Bering Sea is made early in April and the home port is reached toward the end of August. There is considerable difference in the size and value of the codfish found in different parts of Bering Sea. As time passes and more knowledge of the extensive fishing banks is gained, fish of larger size, with thicker flesh and of better quality, are taken. A decided improvement in the quality of the catch is noticed compared with a few years back.

On entering Bering Sea vessels first anchor and begin fishing on Lime Bank, at the entrance to Bristol Bay. Cod are not always plentiful in this locality and, if scarce, a move is made to grounds off Port Möller, which is the region resorted to during June and July. It is fished over for some 10 miles northwest and southeast of Port Möller. Occasionally two trips are made, or a vessel will start later than the date mentioned; if so, the catch during August and September is obtained farther north, off Cape Pierce and Hagemeister Island.

THE PELAGIC FUR-SEAL AND SEA-OTTER FISHERY.

The high price commanded by seal pelts in recent years and the almost fabulous sums received for the sea-otter skins, incidentally obtained in the same fishery, have resulted in a marked increase in this branch of the San Francisco fisheries. The size of the fleet increased from six vessels in 1889 to eighteen in 1892, with a corresponding advance in the yield of fur seals, although the number of otters killed was in almost inverse ratio to the size of the fleet.

In addition to the home fleet, vessels from Oregon and Washington come to San Francisco for outfits and crews. Early in January the vessels are busy making ready, and by the middle of February all have sailed. On leaving San Francisco on a sealing trip vessels usually go but a short distance, some 50 miles west or southwest, before the hunting begins. Sometimes the day after leaving port seals are fallen in with, quite a catch is made, and the vessels will be back in port, having been away less than forty-eight hours. The first to sail in 1892 left December 28, and returned January 20, 1893, with 207 skins. Again, not meeting with the moving herds, a vessel will cruise along the southern coast or to the southwest for a few hundred miles, and then, heading to the north, will work up the coast. The business is at the best quite uncertain. Some vessels at the close of the season have a fine balance, others little, if anything, and may show quite a loss.

The sealing crews as a rule ship on a lay or share, which varies somewhat with the different vessels. The captain usually has a private agreement at so much a month, with or without a share or percentage. The first mate receives one-fifteenth of the stock or \$65 a month, or \$10 a month and 40 cents for each seal taken by the boat he is in. The second mate, if by the month, gets \$30 to \$45. The cook and steward, combined in one, is paid \$45 to \$50 a month. The cabin boy receives

\$15 to \$20 a month. The seamen, if on a lay, are entitled to one hundredth of the stock, but most of them receive 50 cents for each seal taken by the boat in which they are. Hunters, so known, are the men who shoot the seals; they usually receive \$2 for each seal and \$6 to \$8 for each otter that they may kill and secure. The owners of the vessel furnish all food, guns, ammunition, and other needed supplies, and in case seals are not found they are the ones to suffer the loss, the crew being out their time only.

The extent of this fishery from 1889 to 1892, inclusive, is shown in condensed form in the following table:

The pelagic fur-seal and sea-otter fleet of San Francisco.

Years.	Vessels.		Seal skins taken.		Sea-otter skins taken.	
	No.	Tonnage.	No.	Value.	No.	Value.
1889.....	6	37, 99	691	\$15, 219	277	\$27, 76
1890.....	9	633. 37	5, 818	69, 810	273	27, 36
1891.....	10	1, 153. 58	8, 048	134, 220	151	30, 26
1892.....	18	1, 308. 30	14, 710	167, 526	227	34, 36

The average number of seals and sea otters taken by each vessel varied greatly during the four years named, and shows the uncertainty attending the prosecution of this fishery. Some vessels returned home without having taken a single pelt, while others obtained as many as 2,600 skins. The following brief statement of averages, based on the foregoing table, shows some interesting points:

Years.	Seal skins.		Sea-otter skins.	
	Average number to a vessel.	Average stock to a vessel.	Average number to a vessel.	Average stock to a vessel.
1889.....	282	\$2, 536	46	\$4, 67
1890.....	640	7, 757	30	3, 03
1891.....	550	8, 380	10	1, 87
1892.....	817	10, 470	12	1, 95

THE WHALE FISHERY.

Probably no other business on the Pacific Coast with anything like the capital invested is followed with the uncertainty of the Arctic whale fishery. One year may witness a remunerative fishery, to be followed the next season with heavy loss of life, money, and property. The fishery continues to center at San Francisco, which, in addition to having a large local fleet, is the permanent headquarters of numbers of vessels belonging in New Bedford, Mass.

With the low prices received for oil, the whale fishery would soon come to an end were it not for the more valuable whalebone. Often during recent years only the bone has been saved if other whales are in sight, the remainder of the carcass being cast adrift. The market price of whalebone has ruled high, with wide fluctuations from time to

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one; in April, 1891, it had advanced to \$6.50, and in October had
ropped to \$5, closing in December at \$5.75. The opening price in
1892 was \$5.62, with sales up to \$6; as the season wore on it declined
to \$5, and later in the year to \$4. During the early fall, news of the
success or failure of the Arctic fishery is anxiously looked for, and the
market is governed by the same. The prices given are eastern quota-
tions, and do not make much difference to the seamen engaged in the
taking of the whales; although they ship on a lay, or share, the price
of whalebone and oil is usually agreed on in advance.

The extent of the whaling business carried on by vessels owned at
San Francisco is shown in condensed form in the following table:

Summary of the San Francisco whale fleet and its operations, 1890 to 1892.

Years.	Number of fisher- men.	Vessels.			Advances to crews.
		Num- ber.	Net ton- nage.	Value.	
1890.....	1,000	32	8,174.01	\$572,000	\$276,297
1891.....	1,059	31	7,626.10	570,000	263,756
1892.....	1,240	36	8,983.10	648,500	302,060

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
1890.....	168,303	\$710,239	6,121	\$3,979	286,901	\$120,498	\$834,716
1891.....	218,781	1,177,042	3,472	2,306	223,860	106,027	1,286,005
1892.....	192,950	1,032,282	12,804	8,579	192,895	81,010	1,121,877

Sea-otter skins.

Average value per skin.	Average stock for vessel.
46	\$4.67
30	3.03
10	1.80
12	1.92

There is no fishery in the United States in which a more heterogeneous
personnel is found than in the Pacific whale fishery. Nearly every
State and every nation is represented, as will appear from the follow-
ing tables based on the official shipping lists:

*Table showing the nativity and nationality of the persons employed on the San Francisco
whaling fleet in 1892.*

Countries.	Nativity.	Nation- ality.	Countries.	Nativity.	Nation- ality.
United States.....	438	630	New Zealand.....	3	.....
Austria.....	6	1	Nova Scotia.....	11	.....
Australia.....	11	.....	Norway.....	50	38
Belgium.....	5	5	Portugal.....	110	79
China.....	3	3	Russia.....	19	10
Canada.....	13	.....	South America.....	14	8
Denmark.....	27	21	Spain.....	58	55
East Indies.....	2	.....	Scotland.....	35	.....
England.....	115	181	Sandwich Islands.....	31	28
France.....	22	18	Switzerland.....	6	4
Germany.....	108	70	Sweden.....	69	49
Holland.....	11	5	St. Helena.....	2	.....
Italy.....	1	.....	United States of Colombia.....	2	2
Ireland.....	32	.....	West Indies.....	18	.....
Japan.....	8	8			
Mexico.....	4	4			
New Brunswick.....	2	.....	Total.....	1,240	1,240

* The nationality of the fishermen of the various British provinces is shown in the aggregate under
the general head of England.

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Of the native-born citizens on the whaling vessels, the following States were represented to the extent shown:

States and Territories.	1892.	States and Territories.	1892.
Alabama.....	1	Minnesota.....	
California.....	77	Missouri.....	
Colorado.....	3	Montana.....	
Connecticut.....	7	Nebraska.....	
Delaware.....	2	Nevada.....	
District of Columbia.....	5	North Carolina.....	
Dakota.....	1	New York.....	
Florida.....	3	New Jersey.....	
Georgia.....	1	Ohio.....	
Illinois.....	15	Oregon.....	
Indiana.....	2	Pennsylvania.....	
Iowa.....	6	Rhode Island.....	
Kansas.....	2	Vermont.....	
Maine.....	28	Virginia.....	
Maryland.....	9	Wisconsin.....	
Massachusetts.....	122		
Mississippi.....	1	Total.....	
Michigan.....	6		

The names, rigs, and tonnage of the vessels constituting the fleet were as shown in the following table:

Name.	Rig.	Net tonnage.	Years engaged.		
			1890.	1891.	1892.
Alton.....	Sch.	84.30	×	×	×
Alexander.....	Brig.	128.88	×	×	×
Bounding Billow.....	Bark.	228.83	×	×	×
Beluga.....	Str.	409.48	×	×	×
Belena.....	Str.	389.67	×	×	×
Bonanza.....	Sch.	128.70	×	×	×
Blakely.....	Sch.	133.64	×	×	×
Eliza.....	Bark.	291.71	×	b	×
E. F. Harriman.....	Bark.	366.10	×	×	×
Granopus.....	Str.	250.26	×	×	×
Helen Mar.....	Bark.	308.13	×	×	×
Hunter.....	Bark.	337.38	×	×	×
Hidalgo.....	Bark.	165.96	×	×	×
Jane Gray.....	Sch.	107.07	×	×	×
John & Winthrop.....	Bark.	321.38	×	×	×
John P. West.....	Bark.	335.64	×	×	×
James Allen.....	Bark.	330.98	×	×	×
J. H. Freeman.....	Str.	359.80	×	×	×
Karluk.....	Str.	220.93	×	×	×
Lyon.....	Bark.	312.28	×	×	×
Mars.....	Bark.	243.44	×	×	×
Mary H. Thomas.....	Sch.	93.08	×	×	×
Mary D. Hume.....	Str.	108.61	×	×	×
Nicotine.....	Sch.	65.50	×	×	×
Narwhal.....	Str.	389.67	×	×	×
Northern Light.....	Bark.	365.42	×	×	×
Orea.....	Str.	462.39	×	×	×
Rosario.....	Sch.	141.25	×	×	×
Percy Edward.....	Brig.	189.18	×	×	×
Stamboul.....	Bark.	247.42	×	×	×
Sea Breeze.....	Bark.	307.24	×	×	×
Silver Wave.....	Sch.	26.90	×	d	×
Thrasher.....	Str.	343.01	×	×	×
Tamoclane.....	Bark.	353.87	×	×	×
W. H. Myer.....	Brig.	256.50	×	×	×
Wanderer.....	Bark.	288.13	×	×	×

a Lost; crew saved.

b Lost on St. Lawrence Island; crew saved.

c Lost in Arctic ice; of the crew of 40 only 2 were saved.

d Tender to the fleet.

e Lost by going ashore at Sandwich Islands; of the crew lost.

The whaling business carried on by New Bedford vessels making their headquarters at San Francisco is about half as extensive as that of the home fleet. The following condensed figures, applying to the years 1890, 1891, and 1892, show the prominent features of the fishery.

FISHERIES.

ls, the following

territories.

18

stituting the fle

con- e.	Years engaged		
	1890.	1891.	1892.
.30	×	×	×
.88	×	×	×
.83	×	×	×
.48	×	×	×
.67	×	×	×
.70	×	×	×
.64	×	×	×
.71	×	b	×
.10	×	×	×
.26	×	×	×
.13	×	×	×
.38	×	×	×
.96	×	×	×
.97	×	×	×
.38	×	×	×
.64	×	×	×
.98	×	×	×
.80	×	×	×
.93	×	×	×
.28	×	×	×
.44	×	×	×
.08	×	×	×
.61	×	×	×
.50	×	×	×
.67	×	×	×
.42	×	×	×
.39	×	×	×
.25	×	×	×
.18	×	×	×
.42	×	×	×
.24	×	×	×
.90	×	d	×
.01	×	×	×
.87	×	×	×
.50	×	×	×
.13	×	×	×

Sandwich Islands;

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of the fishery

Summ

Years

1890
1891
1892

Years

1890
1891
1892

The nation
the New Beo
are exhibited

Table showing

Countries

United States . . .
Austria . . .
Australia . . .
Africa . . .
Brazil . . .
Belgium . . .
Canada . . .
Chile . . .
Denmark . . .
England . . .
East Indies . . .
France . . .
Port Islands . . .
Germany . . .
Holland . . .
Italy . . .
Japan . . .

The national
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The State
are given in

States

Alaska . . .
California . . .
Connecticut . . .
District of Colum . . .
Florida . . .
Illinois . . .
Indiana . . .
Iowa . . .
Kansas . . .
Kentucky . . .
Maine . . .
Maryland . . .
Massachusetts . . .
Michigan . . .
Missouri . . .
New York . . .

Summary of the New Bedford whale fleet and its operations, 1890 to 1892.

Years.	Number of fishermen.	Vessels.				Advances to crews.
		Number.	Net tonnage.	Value.	Value of outfit.	
1890.....	652	17	5,081.98	\$197,000	\$188,900	\$61,500
1891.....	630	16	4,787.95	203,500	182,100	62,800
1892.....	645	17	4,880.33	217,500	194,000	63,400

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
1890.....	114,350	\$400,225	11,535	\$7,497	172,187	\$72,318	\$480,040
1891.....	91,700	412,650	9,790	6,693	130,137	65,395	484,738
1892.....	122,500	551,250	55,293	37,044	161,384	67,778	656,072

The nationality and nativity of the persons constituting the crews of the New Bedford whaling fleet operating in the North Pacific Ocean are exhibited in the following table:

Table showing the nativity and nationality of the persons employed on the New Bedford whaling fleet in 1892.

Countries.	Nativity.	Nationality.	Countries.	Nativity.	Nationality.
United States	220	292	Mexico.....	7	7
Austria.....	1	1	Norway.....	14	14
Australia.....	7	.....	Nova Scotia.....	3	.....
Africa.....	2	.....	New Brunswick.....	3	.....
Brazil.....	2	2	Portugal.....	93	93
Belgium.....	1	1	Peru.....	4	3
Canada.....	6	.....	Poland.....	1	.....
Chile.....	8	8	Russia.....	5	6
Denmark.....	3	2	Spain.....	73	69
England.....	32	73	Sweden.....	9	6
East Indies.....	7	.....	Scotland.....	11	.....
France.....	3	13	Sandwich Islands.....	29	29
Fiji Islands.....	1	.....	St. Helena.....	6	.....
Germany.....	50	21	Switzerland.....	3	3
Holland.....	6	6	United States of Colombia.....	2	2
Italy.....	1	1	West Indies.....	15	.....
Ireland.....	14	.....	Total.....	615	645
Japan.....	3	3			

The nationality of the fishermen of the various British provinces is shown in the aggregate under the general head of England

The States and Territories in which the native-born citizens belong are given in the following statement:

States and Territories.	1892.	States and Territories.	1892.
Alaska.....	2	New Hampshire.....	1
California.....	18	Nevada.....	1
Connecticut.....	3	North Carolina.....	1
District of Columbia.....	1	New Jersey.....	6
Florida.....	1	New Mexico.....	1
Illinois.....	8	Ohio.....	3
Indiana.....	2	Oregon.....	20
Iowa.....	2	Pennsylvania.....	7
Kansas.....	4	Rhode Island.....	2
Kentucky.....	2	Vermont.....	1
Maine.....	4	Virginia.....	3
Maryland.....	5	Wisconsin.....	2
Massachusetts.....	79	Washington.....	2
Michigan.....	2	Total.....	220
Missouri.....	4		
New York.....	30		

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The names, rig, and tonnage of the New Bedford whaling fleet as shown for the years 1890, 1891, and 1892 in the following table:

Name.	Rig.	Net tonnage.	Years engaged		
			1890.	1891.	1892.
Alaska	Bark..	323.00	×	×	×
Andrew Hicks	Bark..	287.96	×	×	×
Alice Knowles	Bark..	287.64	×	×	×
Andrew Barker	Bark..	301.14	×	×	×
Belvedere	Str ..	339.37	×	×	×
Chas. W. Morgan	Bark..	208.06	×	×	×
California	Bark..	348.25	×	×	×
Cape Horn Pigeon	Bark..	201.42	×	×	×
Frances A. Barstow	Brig ..	121.19	×	×	×
Horatio	Bark..	321.58	×	×	×
Josephine	Bark..	384.54	×	×	×
Lagoda	Bark..	352.29	×	a	×
Mermaid	Bark..	259.65	×	×	×
Navarro	Str ..	171.39	×	×	×
Ocean	Bark..	274.32	×	b	×
Reindeer	Bark..	319.62	×	×	×
Sea Ranger	Bark..	259.46	×	×	×
Tamerlane	Bark..	353.87	×	×	×
Triton	Bark..	251.60	×	×	×
William Baylis	Bark..	308.83	×	×	×
William Lewis	Str ..	337.04	×	×	a

a Lost.

b Condemned.

Data are at hand for a very interesting presentation of the number of each kind of whale taken during the years 1890, 1891, and 1892 by the vessels belonging in San Francisco and New Bedford, respectively. The variations in the comparative abundance of the different whales as shown by the numbers killed, are suggestive and instructive:

Number and kind of whales taken in 1890, 1891, and 1892 by the American whaling fleet making headquarters at San Francisco.

Kinds of whales.	Vessels belonging at San Francisco.			Vessels belonging at New Bedford.			Total.		
	1890.	1891.	1892.	1890.	1891.	1892.	1890.	1891.	1892.
Right	42	50	14	19	33	16	61	93	30
Bowhead	69	106	107	46	30	52	115	136	159
Sperm	4	3	3	2	14	20	6	17	23
Humpback	1						1		
Total	116	168	124	67	77	88	183	146	252

THE OYSTER INDUSTRY.

The oyster industry centering at San Francisco is one of the most important branches of the fishing industry of California. San Francisco firms, with extensive beds of native and eastern oysters in San Francisco Bay, are the only planters of oysters in California. Each fall and spring seed oysters in ear-load lots are brought from the Atlantic Coast and planted in the bay. Some years as many as 100 ear-loads, averaging 90 barrels of seed oysters each, are transplanted. A limited amount of the small-sized native oysters are also brought from beds in Washington. The latter are planted solely to keep them fresh and near at hand when desired. If it were not for the constant planting of seed oysters the beds would soon be exhausted, the natural propagation not keeping up with the demand.

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1889 to 1892
employed a
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Vessels.....
shore property.....
oyster beds.....
cash capital.....

Total.....

1890.....
1891.....
1892.....

Ten small sailing vessels are engaged in transporting the oysters, as needed, from the beds to San Francisco. On arriving at the city, the bulk of the oysters grown from Atlantic seed are opened, canned, and packed in ice, and are known to the trade as eastern oysters. They are distributed all over the west coast, meeting those from the Atlantic at Denver, Colo.

In addition to the opening and canning of eastern oysters, considerable business is done in supplying the large city demand for oysters in the shell. Both the eastern and native oysters show an improvement during the past few years; they have larger shell, plumper meat, and a better flavor. The only noteworthy feature since the more detailed report of 1889 is a slow but steady growth in the business.

There is room for an increase in the business, but to accomplish this the industry, as at present carried on, will require large capital, and several years would elapse before the seed would grow and returns be expected. The freight on the seed from the Atlantic is a large item in the expense of the business. Firms now engaged are reported as holding several thousand acres of ground adaptable for oyster-culture, but not so used.

The extent of the oyster industry of San Francisco during the years 1889 to 1892, inclusive, is shown in the following tables. The persons employed at the beds (105 in number) and on shore and the capital devoted to the business were the same each year.

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San Francisco
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the natural

Total.		
1890.	1891.	1892.
61	93	3
115	136	17
6	17	2
1	-----	-----
183	146	22

Items.	Value.
Cash.	\$15, 100
Real property.	100, 000
Wester beds.	100, 000
Cash capital.	75, 000
Total.	290, 100

Years.	Eastern oysters.		Native oysters.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
\$89	120,000	\$480,000	26,150	\$91,525	146,150	\$571,525
\$90.....	125,000	500,000	26,325	92,137	151,325	592,137
\$91.....	130,000	520,000	28,130	98,455	158,130	618,455
\$92.....	146,000	584,000	32,645	111,257	178,645	695,257

SARDINE CANNING.

This branch of the fishing industry is yet in its infancy on the Pacific Coast. The Golden Gate Packing Company, of San Francisco, established in 1890, had up to 1892 the only sardine cannery on the coast. Sardines and anchovies are utilized. Those of small size were packed in oil in the usual quarter-pound cans; the larger fish were put up in round cans holding 1 and 2 pounds. The goods were of fine quality and met with a ready sale, but the quantity prepared was small. A number of causes, chief of which was the failure of sardines to enter San Francisco Bay in sufficient quantities, limited the pack and caused a suspension of the business in 1893, when the cannery was sold and removed to Los Angeles County, where sardines were reported to be in greater abundance. Of late years sardines have been very erratic in their appearance in San Francisco Bay. One year the fish for weeks at a time would be extremely plentiful, while during the next season they would scarcely be found at all. The quantities of fish packed during the three years 1890, 1891, and 1892 were as follows, 100 of the quarter-pound cans, 48 of the 1-pound cans, and 24 of the 2-pound cans being contained in each case:

Grades.	1890.	1891.	1892.
	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>
Quarter oils	3, 000	7, 000	10, 000
One-pound	5, 000	2, 000	.....
Two-pound	5, 000	2, 000	.....
Total	13, 000	11, 000	10, 000

THE FISH TRADE OF SAN FRANCISCO.

The fresh-fish markets of San Francisco are interesting and in some respects unique. In them one may buy a single pound of fish or a carload, both wholesale and retail business being carried on at the same stand. About 12,000,000 pounds of fresh fish are handled annually exclusive of those in the Chinese markets. Large quantities of oysters, clams, mussels, shrimp, and crabs are also sold.

The fish are received daily from the adjacent fishing-grounds visited by the home fishermen, and from the interior waters and coast towns by rail and steamship lines. The fresh and salt waters of the State are rich in quantity and variety of animal life, and fishery products from all over the State find their way to this market. It is said that over 275 species of fish are found in the waters of the State, although many of these are not used as food, except by the frugal Chinese, who rarely permit anything to go to waste.

The follo
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fresh-fish
found in
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able showing

Specie

fish:
Anchovies ..
Barracuda ..
Bonito

Corp

Catfish

Cultus cod ..

Flatfish and

pounds

Herring

Hake

Horse-macker

Kingfish

Mac kerel

Pike

Perch, fresh-

Perch, salt-w

Rockfish

Salmon

Sardines

Sea bass

Striped bass ..

Shad

Skates

Smelt

Sturgeon

Suckers

Tomcod

Trout

Miscellaneous

Total

Alaska, crustac

Oysters

Clams, hard ..

Clams, soft

Mussels

Spiny lobster ..

Crabs

Shrimps

Prawns

Squid and oct

Terrapin

Abalones

Turtles

Frogs

Total

Grand total

F. R. C

The following table represents approximately the quantity and value of all of the important fish and other water products entering into the fresh-fish trade of San Francisco. Most of the products named may be found in the market at all seasons, selling at prices that are within the reach of all classes. Attention may be specially drawn to the figures for shad, striped bass, catfish, and carp, fishes which have been introduced from the east.

Table showing the extent of the fresh-fish trade of San Francisco in 1890, 1891, and 1892.

Species.	1890.		1891.		1892.	
	Quantity.	Retail value.	Quantity.	Retail value.	Quantity.	Retail value.
Anchovies.....pounds..	135,000	\$5,400	145,000	\$4,350	150,215	\$3,755
Barracuda.....do.....	120,000	10,800	150,000	12,000	75,000	6,750
Bonito.....do.....	95,000	5,700	110,000	6,600	95,000	10,450
Carp.....do.....	75,000	3,000	90,000	2,700	75,000	1,875
Catfish.....do.....	10,000	900	20,000	1,400	25,000	1,500
Calloscod.....do.....	150,000	10,500	190,000	11,400	200,000	10,000
Flatfish and flounders, pounds.....	1,415,959	113,176	1,341,038	80,462	1,657,268	66,288
Herring.....pounds.....	2,000,000	60,000	2,400,000	48,000	3,000,000	30,000
Hake.....do.....	100,000	1,000	90,000	900	85,000	850
Horse-mackerel.....do.....	75,000	6,000	40,000	3,600	15,000	1,200
Kingfish.....do.....	40,000	2,400	25,000	2,450	40,000	2,000
Mackerel.....do.....	20,000	2,000	15,000	2,100	10,000	1,500
Pike.....do.....	25,000	1,500	22,000	1,320	20,000	1,200
Perch, fresh-water.....do.....	150,000	15,000	100,000	7,000	40,000	3,200
Perch, salt-water.....do.....	250,000	20,000	200,000	10,000	200,000	8,000
Rockfish.....do.....	1,797,482	145,798	1,034,619	71,723	1,421,489	71,074
Salmon.....do.....	2,125,000	135,500	2,065,000	129,750	2,919,848	143,061
Sardines.....do.....	500,000	10,000	200,000	6,000	103,120	4,125
Sea bass.....do.....	275,000	19,250	325,000	16,250	190,000	7,000
Striped bass.....do.....	5,000	1,000	25,000	3,750	50,000	6,250
Shad.....do.....	300,000	12,000	600,000	18,000	560,000	12,500
Skates.....do.....	50,000	2,500	30,000	1,200	40,000	800
Smelt.....do.....	900,000	63,000	1,000,000	70,000	700,000	42,000
Sturgeon.....do.....	587,025	20,381	715,795	35,789	765,297	34,438
Suckers.....do.....	175,000	5,250	160,000	4,800	140,000	4,200
Tomcod.....do.....	8,000	800	15,000	1,200	25,000	1,500
Trout.....do.....	25,000	5,000	20,000	4,000	18,000	3,600
Miscellaneous.....do.....	31,160	6,230	35,100	5,905	52,930	9,102
Total.....	11,440,221	692,685	11,153,552	562,649	12,523,117	488,218
Polylusks, crustaceans, etc.:						
Oysters.....bushels.....	151,325	592,137	158,130	618,455	178,645	698,287
Clams, hard.....sacks.....	1,000	3,000	1,100	3,300	1,200	3,600
Clams, soft.....boxes.....	25,000	25,000	30,000	30,000	40,000	40,000
Mussels.....buckets.....	45,000	22,500	50,000	25,000	48,000	24,000
Spiny lobsters.....pounds.....	25,000	1,500	20,000	1,200	18,000	1,080
Crabs.....dozens.....	80,000	80,000	90,000	90,000	110,000	90,000
Shrimps.....pounds.....	200,000	12,000	500,000	25,000	775,000	38,750
Prawns.....do.....	15,000	3,750	10,000	2,500	5,000	1,250
Squid and octopus.....do.....	10,000	500	8,000	400	10,000	500
Terrapin.....dozen.....	1,400	5,600	1,500	6,000	1,400	7,000
Abalones.....do.....	1,400	1,050	1,200	900	1,500	1,125
Turtles.....pounds.....	30,000	1,500	25,000	1,250	18,000	900
Frogs.....dozen.....	6,000	21,000	6,000	21,000	8,000	28,000
Total.....		760,537		825,005		943,492
Grand total.....		1,462,222		1,387,654		1,431,710

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EXPORT TRADE OF SAN FRANCISCO.

San Francisco maintains a large export trade in fishery products. Canned salmon constitutes the great bulk of the shipments, but cured codfish, salt salmon, oysters, shrimp, and other products are of considerable importance. The following table, based on the custom-house records, shows in detail the extent of the exportations in the years 1890, 1891, and 1892. The items for which it is possible to present separate figures are cured codfish, other cured fish, canned salmon, pickled salmon, other canned fish, oysters, and other shellfish. The "other cured fish" consist chiefly of dried squid, shipped by the Chinese to Hongkong and the Sandwich Islands. The "other shellfish" are chiefly dried shrimp, with a few dried abalone, shipped by the Chinese to Hongkong, the Sandwich Islands, and other ports.

Table showing exports of fishery products from San Francisco in 1890, 1891, and 1892.

Destination.	Codfish, cured.		Other cured fish.	
	Pounds.	Value.	Pounds.	Value.
1890.				
Australia	473, 270	\$32, 635		
British Columbia	17, 060	1, 260	2, 100	
China	13, 940	973		
Costa Rica	16, 010	1, 226		
East India	1, 900	110		
Guatemala	15, 610	1, 112		
Hongkong	45, 700	3, 080	304, 850	
Japan	3, 490	229		
Mexico	8, 065	576		
Nicaragua	880	56		
San Salvador	5, 600	388		
Sandwich Islands	278, 608	16, 557	404, 050	
Other places	11, 490	809		
Total	892, 313	59, 020	711, 600	
1891.				
Australia	248, 320	15, 155		
British Columbia	7, 800	570		
China	12, 750	872		
United States of Colombia	800	63		
Chilo	800	61		
Costa Rica	28, 580	2, 160		
East India	4, 500	294		
Guatemala	20, 060	1, 544		
Hongkong	35, 410	2, 201	429, 900	
Japan	7, 420	515		
Mexico	6, 840	457		
Nicaragua	950	65		
Oceania	4, 020	243		
San Salvador	5, 620	395		
Sandwich Islands	267, 220	13, 767	324, 900	
Other places	4, 640	306		
Total	656, 730	38, 070	754, 800	
1892.				
Australia	90, 720	5, 136	40, 300	
British Columbia	9, 170	641		
China	17, 580	1, 148		
Costa Rica	21, 816	1, 409		
Guatemala	24, 600	1, 631		
Hongkong	19, 640	1, 077	294, 100	
Japan	1, 810	98		
Mexico	7, 185	435		
Nicaragua	1, 160	73		
Oceania	9, 080	539		
San Salvador	9, 050	576		
Sandwich Islands	270, 590	13, 042	201, 500	
Other places	900	68		
Total	483, 295	25, 873	625, 900	

Exports of

Destina

1890

Australia.....
 British Columbia.....
 China.....
 S. of Colombia.....
 Costa Rica.....
 East India.....
 England.....
 Guatemala.....
 Hongkong.....
 Japan.....
 Mexico.....
 Nicaragua.....
 San Salvador.....
 Sandwich Islands.....
 Other places.....

1891

Australia.....
 British Columbia.....
 China.....
 S. of Colombia.....
 Costa Rica.....
 East India.....
 England.....
 Guatemala.....
 Hongkong.....
 Japan.....
 Mexico.....
 Nicaragua.....
 San Salvador.....
 Sandwich Islands.....
 Other places.....

Total.....

1892

Australia.....
 British Columbia.....
 China.....
 S. of Colombia.....
 Costa Rica.....
 East India.....
 England.....
 Guatemala.....
 Hongkong.....
 Japan.....
 Mexico.....
 Nicaragua.....
 San Salvador.....
 Sandwich Islands.....
 Other places.....

Total.....

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Exports of fishery products from San Francisco in 1890, 1891, and 1892—Continued.

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1890, 1891, and 1892.

Other cured fish.

Pounds. Value

2, 100

304, 850

404, 950

711, 600

420, 900

324, 900

754, 800

40, 300

294, 100

291, 500

325, 900

Destination.	Canned salmon.		Value of pickled salmon.	Value of canned fish other than salmon.	Value of oysters.	Value of other shellfish.	Total value.
	Pounds.	Value.					
1890.							
Australia	2,099,338	\$217,951	\$20,107	\$4,222	\$55	\$1,077	\$270,707
British Columbia	8,840	720	722	748	10,023	1,468	15,065
China	5,010	552	.....	110	.....	75	1,710
U.S. of Colombia	.....	.....	.....	14	.....	268	282
Hile	60,090	5,238	.....	40	.....	7,359	12,643
Costa Rica	29,490	3,187	.....	427	788	74	5,702
England	13,409,480	1,211,458	.....	.....	.....	.....	1,211,458
East India	39,220	4,143	20	.....	.....	174	4,456
Ecuador	119,400	2,044	.....	.....	.....	.....	2,044
France	144,070	16,008	.....	.....	.....	.....	16,008
Germany	9,600	1,100	.....	.....	.....	.....	1,100
Haiti	4,880	541	.....	684	327	84	2,748
Hongkong	204,040	21,419	.....	567	191	213,885	257,533
Japan	12,680	1,356	105	516	50	117	2,499
Mexico	24,030	2,586	66	978	1,447	512	6,165
Nicaragua	3,055	364	.....	190	370	38	1,018
Peru	1,440	150	.....	.....	.....	.....	150
San Salvador	1,500	164	.....	140	140	60	910
Sandwich Islands	229,250	24,082	37,350	7,069	10,563	32,622	153,690
Other places	93,765	9,346	2,322	1,497	445	406	14,915
Total	16,497,190	1,523,909	60,851	17,856	24,434	258,909	1,987,712
1891.							
Australia	1,368,650	131,868	40,323	1,533	282	2,233	191,394
British Columbia	7,200	750	.....	1,354	8,651	2,624	13,349
China	6,520	672	.....	133	.....	261	1,038
U.S. of Colombia	1,850	194	.....	184	482	639	1,562
Hile	19,400	2,025	.....	175	.....	8,149	10,410
Costa Rica	82,906	8,520	.....	138	364	.....	11,182
England	13,001,195	1,221,142	.....	75	.....	.....	1,221,217
East India	12,810	1,295	.....	88	.....	515	2,192
Haiti	5,046	537	.....	361	897	501	3,842
Hongkong	89,100	8,747	37	669	24	192,173	250,596
Japan	7,680	804	.....	193	.....	1,725	3,237
Mexico	32,296	3,493	.....	1,062	1,302	426	6,080
Nicaragua	2,200	252	.....	160	188	190	774
Peru	37,918	2,989	739	502	60	66	5,608
San Salvador	2,800	306	.....	60	460	302	1,529
Sandwich Islands	194,820	20,353	37,651	8,443	9,630	32,279	111,069
Other places	35,420	3,723	1,995	894	345	248	7,511
Total	15,508,115	1,408,613	80,745	16,024	22,700	241,647	1,854,690
1892.							
Australia	1,597,240	169,773	11,470	275	15	829	180,914
British Columbia	4,580	478	.....	527	1,631	1,919	5,199
China	6,956	735	.....	95	15	298	2,291
U.S. of Colombia	.....	.....	.....	.....	.....	280	280
Hile	61,100	5,947	.....	.....	.....	4,605	10,552
Costa Rica	4,760	489	.....	.....	18	.....	1,916
England	17,377,838	1,701,715	.....	.....	.....	.....	1,701,715
East India	18,790	1,943	.....	32	90	541	2,606
Ecuador	2,400	250	.....	225	.....	.....	475
Germany	2,400	225	.....	.....	.....	.....	225
Haiti	13,700	1,409	.....	933	244	56	4,273
Hongkong	65,790	6,074	.....	509	31	195,504	221,265
Japan	4,510	470	.....	241	.....	.....	809
Mexico	23,886	2,489	.....	1,511	1,600	172	6,207
Nicaragua	700	74	.....	341	.....	157	341
Peru	62,465	6,297	1,654	37	128	201	9,160
San Salvador	12,000	1,000	.....	.....	.....	.....	1,000
Sandwich Islands	154,100	15,856	33,670	5,191	5,109	19,257	109,085
Other places	27,220	2,634	182	48	.....	40	2,972
Total	10,450,335	1,910,537	46,976	10,250	9,413	224,013	2,263,908

TEHAMA COUNTY.

This county is near the head waters of the Sacramento River, which flows through it. Late in the fall some attention is given to taking salmon; gill nets and haul seines are used, and the catch is shipped fresh to San Francisco. The fish taken are usually of a poor quality

and bring but a small price. They are probably the fish that, having escaped the many nets of the lower river, finally reached the spawning grounds and later fell into the nets of the fishermen of the upper river. The amount and value of the catch of late years have been as follows:

Years.	Pounds.	Value.
1889.....	118, 145	\$2, 1
1890.....	125, 860	3, 1
1891.....	115, 623	2, 6
1892.....	128, 389	3, 2

HUMBOLDT COUNTY.

Of the four years covered by this report the fisheries of Humboldt County were most important in 1889, in the matter of products and capital invested, owing to the fact that in that year a salmon cannery was operated which was idle during the three following years. This is one of the most important fishing counties in California. Over 300 fishermen are regularly employed during the fishing season and the value of the catch is from \$45,000 to \$80,000 annually. The most prominent product is the salmon. The catch of salt-water fish and clams and crabs is also important. The principal fishing center is Eureka, situated near Eel River, in which most of the salmon are taken. The salt-water fish are obtained at the mouth of the river, off Trinidad, located a few miles to the north, and in Humboldt Bay. The local demand for fish in Eureka and vicinity takes a large part of the catch, the surplus fish being sent to San Francisco by steamer. The yield of salmon during the four years named was over 1,000,000 pounds annually, and that of other fish aggregated several hundred thousand pounds. About 1,000 bushels of clams and 2,400 to 3,000 dozen crabs were taken and sold each year. The number of cases of canned salmon prepared at the cannery during 1889 was 11,652.

DEL NORTE COUNTY.

Up to the present time the fisheries of this county have been limited to the taking of salmon at and near the mouths of Smith and Klamath rivers. A small salmon cannery on each river consumes the bulk of the catch, a part of which is also used for local consumption, and part salted and shipped to San Francisco.

Nearly all the persons employed in the fishing industry of these two rivers are Indians, native to the section, there being a strong objection to the employment of Chinese laborers in this county.

The following is a statement of the quantities of salmon packed in this county in the years 1889 to 1892, inclusive. The fish utilized in canning consist of chinooks and silversides in about equal proportions:

Year.	Klamath River.	Smith River.	Total.
	Cases.	Cases.	Cases.
1889.....	2, 660	3, 000	5, 660
1890.....	5, 000	2, 500	7, 500
1891.....	4, 500		4, 500
1892.....	1, 200	3, 050	4, 250

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Pounds.	Value
118, 145	\$2.1
125, 860	3.1
115, 623	2.4
128, 389	3.2

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Smith River.	Total
Cases.	Cases
3, 000	5.0
2, 500	7.5
.....	4.5
3, 050	4.5

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OREGON.

GENERAL EXTENT AND FEATURES OF THE FISHERIES.

From the first settlement of the State the fisheries of Oregon have early been of increasing interest. The abundance of salmon first attracted the fishermen, and their capture has continued the leading branch of the business. While natural causes, often unaccountable, largely govern the migrations of fish and are chiefly responsible for the uncertain character of their movements and the fluctuations in the catch, there is no room for doubt that the preservation of the supply in the rivers is largely dependent on man. During recent years a large increase is annually shown in the various appliances of capture in the salmon fisheries of the Columbia River, which yields the bulk of the salmon caught in the State. From an increase in fishing appliances a gain in the catch might be expected, but such is generally not the case. In the years of largest production a much less amount of fishing gear was used than at present. As the fish were depleted, the fishermen, eager to keep up the amount of their catch, increased the number of their gill nets, pound nets, wheels, etc., often only to find a yet smaller catch, which would again be followed by more fishing appliances.

Artificial propagation, which has been carried on so far as means would permit, has in a measure made good the losses from increased fishing gear. The naturally favorable conditions of the Columbia and most of the other rivers of the State for abundance of desirable food-fish continue nearly, if not quite, as favorable as in the early days of the fisheries, when the only fish caught were those taken by the native Indians for their own use. The waters remain unpolluted by the sewage of large cities and the refuse of manufactories, and from the topography of the country through which the rivers flow they may be expected to remain unimpaired for many years.

The salmon fishery and the dependent canning business are vastly more important than all other branches of the fisheries of this State, the only other fishery of any prominence being that for sturgeon. Only very limited quantities of other food-fish are taken, and the general fisheries are much less developed than in California or Washington. Oysters and fur seals contribute to the income of the fishermen.

The following tables show the extent of the fisheries of this State. In the last year covered by the statistics, 4,332 persons were engaged in the industry, \$2,272,351 was invested, and 28,521,105 pounds of products were taken, having a value of \$872,405.

Persons employed in the fisheries of Oregon.

How engaged.	1889.	1890.	1891.	1892.
On vessels fishing.....	11	25	55	60
On vessels transporting.....	40	40	38	57
On shore fisheries.....	2,234	2,112	2,452	2,705
On shore, in canneries, etc.....	1,334	1,282	1,242	1,510
Total.....	3,619	3,459	3,887	4,332

Vessels, boats, apparatus, shore property, and cash capital used in fisheries of Oregon.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels fishing.....	1	\$18,000	1	\$10,000	3	\$15,000	4	\$17,300
Tonnage.....	71.17		148.97		231.90		247.63	
Outfit.....		4,600		3,150		7,450		8,300
Vessels transporting.....	10	42,900	10	42,900	10	53,740	20	73,000
Tonnage.....	443.91		443.91		458.31		555.20	
Outfit.....		9,530		9,530		9,010		11,300
Boats.....	1,164	125,885	1,113	125,010	1,552	112,583	1,494	154,000
Apparatus:								
Gill nets.....	1,404	181,055	1,274	178,320	1,302	201,625	1,396	212,000
Pound nets.....	101	74,700	108	76,500	112	100,500	217	173,000
Selnes.....	23	7,425	18	4,825	32	11,350	32	12,000
Whees.....	31	120,052	29	107,552	30	108,152	40	132,000
Dip nets.....	95	475	85	425	60	300	50	250
Lines.....		4,487		6,530		7,416		10,000
Tongs and hoes.....		145		150		151		150
Other apparatus.....				850		2,050		2,000
Shore property.....		648,245		596,445		582,950		660,200
Cash capital.....		620,900		707,000		610,000		800,000
Total.....		1,850,290		1,809,217		1,885,311		2,272,200

Products of the fisheries of Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black cod.....	25,000	\$1,250			1,000	\$8		
Blueback salmon.....	1,117,090	34,961	3,543,943	897,961	871,392	24,127	3,140,397	883,700
Chinook salmon, fresh.....	12,478,087	536,120	16,596,301	535,484	17,108,968	643,710	15,577,282	579,000
Chinook salmon, salted.....	70,000	2,186	87,100	2,338	97,450	2,860	54,700	1,600
Cultus cod.....	101,112	3,555	27,120	1,356	28,415	1,389	26,304	1,300
Flounders.....							10,000	
Hallbut.....	487,250	11,125	16,450	1,015	13,830	2,093	18,870	1,500
Rockfish.....	84,010	4,200	82,300	4,113	83,220	4,161	86,115	4,300
Shad.....	29,500	2,950	50,100	4,008	70,500	4,230	100,000	
Silver salmon, fresh.....	4,125,540	91,564	2,168,399	33,573	1,175,620	18,640	3,025,451	64,000
Silver salmon, salted.....	359,100	11,048	313,100	5,521	299,550	5,638	252,100	4,400
Steelhead salmon.....	814,080	18,837	1,802,989	29,573	1,122,340	16,956	2,586,771	48,000
Sturgeon.....	741,730	8,821	1,441,416	16,279	1,456,619	17,311	2,513,490	28,000
Crabs.....	6,628	265	4,200	168	3,521	141	4,125	300
Crawfish.....	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Oysters.....	150,000	3,125	132,360	2,758	146,010	3,043	147,000	3,000
Clams.....	48,720	812	46,500	775	45,600	760	49,500	800
Fur seals.....			15,000			26,480		41,000
Sea otter.....								1,000
Total.....	20,719,237	739,867	26,337,268	754,305	22,614,165	777,247	28,521,105	872,400

In the following supplementary table the quantities of certain products are designated by the unit by which they are usually sold:

Products.	1889.	1890.	1891.	1892.
Crabs.....	number.....	2,209	1,400	1,173
Oysters.....	bushels.....	1,666	1,470	1,622
Clams.....	do.....	696	661	651
Fur seals.....	number.....		1,250	1,730
Sea otters.....	do.....			

BEAM-TRAWL FISHING.

Several attempts have been made on the Atlantic coast to introduce the beam trawl, a form of apparatus that is so largely and successfully used by the fishermen of England; but on account of the rough, rocky bottom on which most of the trials were made, the results have been unfavorable and its further use has been discontinued. An account

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Table showing

Counties.

Benton
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Clatsop
Columbia
Gilliam
Grant
Lincoln
Multnomah
Tillamook
Wasco

Total.....

Fishes of Oregon

1892.	
No.	Value.
4	\$17.5
247.63	8.5
30	73.3
555.20	11.5
1,494	154.3
1,396	212.2
247	173.4
32	42.8
40	132.3
50	2
	10.9
	1
	2.5
	660.
	803.
	2,472.2

1892.	
Pounds.	Value.
3,140,397	\$83.7
15,577,282	529.6
54,700	1.7
26,304	1.3
10,000	1.3
18,870	1.5
86,115	4.5
109,000	5
3,925,451	61.5
252,100	4.8
2,586,771	43.5
2,513,490	28.5
4,125	4
20,000	3
147,000	3.8
49,500	3
	43.5
	1.5
28,521,105	\$72.4

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y sold:

1891.	
No.	Value.
1,173	1.5
1,022	1.5
651	1.5
1,730	2.8

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An account

of a similar experiment on the Pacific coast has been furnished by Captain Exon, now a pilot on the Columbia River, whose father was lost while engaged in beam-trawling. During 1884 Capt. John Exon, of East Portland, Oreg., was in the employ of a fishing firm known as the Portland Deep-Sea Fishing Company, with headquarters at Portland. Captain Exon at the time was master of the schooner *Carrie B. Lake*, of about 36 tons burden, engaged in line fishing just outside the mouth of the Columbia River. The numerous varieties of bottom fish were very abundant, and the ground fished over had an even and smooth sandy bottom. Captain Exon had formerly been engaged in the beam-trawl fishery from Grimsby, England, and sent there for two beam-trawls, which were brought out by his brother in 1884 and at once put to use.

The trawls were operated near the mouth of the Columbia and off Grays Harbor with equally good success, the catch comprising large hauls of sole, flounders, orange and red rockfish, and many other varieties of bottom fish. This fishery was successfully carried on during 1885. Unfortunately for the enterprising promoter of this fishery and his well laid plans, on January 3, 1886, while on a fishing trip, the vessel and its master, mate, and cook were lost. The firm soon after gave up the fishing business, and no later attempts at beam-trawl fishing on the Pacific coast have been reported. With the growth of the fish business of the Pacific States, some enterprising firms may yet take advantage of the experiments of the pioneer in this mode of fishing, the success of which he demonstrated. The United States Fish Commission steamer *Albatross* has also made frequent use of the beam-trawl in extensive investigations along the Pacific coast.

DETAILED STATISTICAL DATA.

The following tables, relating to each of the years 1889 to 1892, inclusive, show the extent of the fishing industry in each county of Oregon. The scope of the tables is such that but little explanation is necessary, and they are to be consulted in conjunction with the descriptive notes on each county which follow.

Table showing by counties the number of persons employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties.	1889.				Total.	1890.				Total.
	On vessels fishing.	On vessels trans- port- ing.	In shore fish- eries.	On shore, in can- neries, etc.		On vessels fishing.	On vessels trans- port- ing.	In shore fish- eries.	On shore, in can- neries, etc.	
Benton			112	34	146			48		48
Clackamas			38		38			38		38
Clatsop		13	1,361	688	2,062		13	1,472	768	2,253
Columbia			35	4	39			40	4	41
Coos			131	85	216			68	6	71
Curry			74	105	200		27	70	78	175
Deane		27						4		4
Eschscholtz			78	19	127					
Lebanon			52	50	102			48	32	80
Linn			183	169	363	25		159	207	391
Polk			50	56	106			50	59	109
Tillamook			120	94	214			115	128	243
Wasco										
Total	11	40	2,231	1,334	3,319	25	40	2,112	1,282	3,450

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Table showing by counties the number of persons employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties.	1891.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Benton			85	22	107			83	22	105
Clackamas			40		40			40		40
Clatsop	32	11	1,764	811	2,648	35	21	1,821	792	2,679
Columbia			43	6	49			40	12	52
Coos			88	37	125			113	35	148
Curry			83	72	155			76	61	137
Douglas			4		4			56	51	107
Lane			42	36	78			103	91	194
Multnomah	24		133	176	332	25	9	157	252	443
Tillamook			50	45	95			62	63	125
Wasco			120	107	227			124	129	253
Total	55	38	2,452	1,342	3,887	50	57	2,705	1,510	4,262

Table showing by counties the nativity of persons employed in the fisheries of Oregon in 1891.

Counties.	Countries.											
	United States.	Sweden.	Norway.	Russia.	Great Britain.	Italy.	Austria.	Greece.	Germany.	France.	China.	Denmark.
On vessels fishing:												
Clatsop	11	6	6		8							
Multnomah	12	2	1		9							
Total	23	8	7		17							
On vessels transporting:												
Clatsop	21											
Curry	27											
Multnomah	9											
Total	57											
In shore or boat fisheries:												
Benton	59	12	10	2								
Clackamas	40											
Clatsop	207	330	189	684	86	68	184	48	15		6	
Columbia	40											
Coos	53	30	25	30					4			
Curry	55	1			2				4			
Douglas	32	5	1	1	3	1	1		1		5	6
Lane	32	20	20	15							10	
Multnomah	70	34	16	34				4				
Tillamook	36	7					19					
Wasco	30	6						3			3	82
Total	654	445	261	765	91	62	201	48	27	4	9	117
On shore, in canneries, etc.:												
Benton	4										18	
Clackamas	113	20	7	20	6			2		592	2	
Clatsop	12											
Columbia	10										25	
Coos	27										36	
Curry	9										42	
Douglas	21										53	
Lane	46	6	2	6	4						14	
Multnomah	6										57	
Tillamook	17										95	17
Total	298	26	9	26	10			2		1,100	2	31

Table showing

Counties.	On vessels fishing.	On vessels transporting.	Total.
Clatsop			
Multnomah			
Total			
On vessels transporting.			
Clatsop			
Multnomah			
Total			

In shore or boat

Counties.	On shore, in canneries, etc.	Total.
Benton		
Clackamas		
Clatsop		
Columbia		
Coos		
Curry		
Douglas		
Lane		
Multnomah		
Tillamook		
Wasco		
Total		

On shore, in can

Counties.	On shore, in canneries, etc.	Total.
Benton		
Clatsop		
Columbia		
Coos		
Curry		
Douglas		
Lane		
Multnomah		
Tillamook		
Wasco		
Total		

Table showing

Years and con

Counties.	1889.	Total.
Benton		
Clackamas		
Clatsop		
Columbia		
Coos		
Curry		
Douglas		
Lane		
Multnomah		
Tillamook		
Total		

of Oregon Table showing by counties the nationality of persons employed in the fisheries of Oregon in 1892.

		Countries.																	
On shore, in canneries, etc.	Total.	Counties.	United States.	Sweden.	Norway.	Russia.	Great Britain.	Italy.	Austria.	Greece.	Germany.	France.	China.	Denmark.	United States Indians.	Japan.	Portugal.	Others.	Total.
22	1																		
792	2	On vessels fishing:																	
12	1	Clatsop	32	2	4		3										4		35
35	1	Multnomah	17	1	1		5									1			25
61	1	Total	39	3	5		8									1	4		60
51	1																		
91	1	On vessels transporting:																	
252	4	Clatsop	21																21
63	1	Curry	27																27
120	1	Multnomah	9																9
1,510	4	Total	57																57
		In shore or boat fisheries:																	
		Benton	75	4	4														83
		Clackamas	40																40
		Clatsop	1,621	28	23	99	11	4	35										1,821
		Columbia	40																40
		Coos	108	9	11	11						3					1		143
		Curry	62												14				76
		Douglas	51												5				56
		Lane	75	5	4	3									16				101
		Multnomah	157																157
		Tillamook	62																62
		Wasco	37	2						1				2	82				124
		Total	2,328	48	42	113	11	4	35		1	3		2	117		1		2,705
		On shore, in canneries, etc.:																	
	4	Benton	4											38					22
		Clatsop	178	8	2	10								592	2				792
		Columbia	12																12
		Coos	19																35
		Curry	27																63
		Douglas	9																51
		Lane	24												11				91
		Multnomah	59	2		3													252
		Tillamook	6																63
		Wasco	17																120
		Total	346	10	2	13							1,106	2	31				1,510

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889.										
Benton									67	\$1,710
Clackamas									29	700
Clatsop					5	24	\$12,000	\$1,500	702	97,675
Columbia									35	2,625
Coos									76	3,925
Curry					5	458.71	30,000	6,440	41	3,250
Douglas									38	3,275
Lane									20	650
Multnomah									125	9,575
Tillamook	1	71.17	\$12,000	\$1,600					25	2,500
Total	1	71.17	18,000	1,600	10	413.91	42,900	9,530	1,164	125,885

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Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.—Continued.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1890.										
Benton									30	\$0
Clackamas									29	70
Clatsop					5	85.23	\$12,900	\$3,075	739	102,32
Columbia									52	2,38
Coos									31	1,47
Curry					5	358.71	30,000	0,455	41	3,25
Douglas									2	15
Lane									24	60
Multnomah	1	148.97	\$10,000	\$3,150					110	10,00
Tillamook									25	2,50
Total	1	148.97	10,000	3,150	10	443.94	42,900	9,530	1,113	125,000
1891.										
Benton									45	1,17
Clackamas									30	70
Clatsop	2	82.93	5,000	3,450	5	99.60	24,365	2,840	853	119,22
Columbia									60	3,00
Coos									38	1,63
Curry					5	358.71	29,375	0,130	43	3,33
Douglas									2	15
Lane									21	53
Multnomah	1	148.97	10,000	4,000					132	9,85
Tillamook									26	2,57
Wasco									2	4
Total	3	231.90	15,000	7,450	10	458.31	53,740	9,010	1,272	142,58
1892.										
Benton									50	1,33
Clackamas									39	78
Clatsop	3	98.66	7,300	4,350	12	151.06	30,900	3,725	966	127,47
Columbia									98	3,37
Coos									60	2,35
Curry					5	358.71	29,200	5,820	40	3,15
Douglas									28	2,10
Lane									58	1,90
Multnomah	1	148.97	10,000	4,000	3	42.43	13,000	2,400	157	10,13
Tillamook									7	10
Wasco										
Total	4	247.63	17,300	8,350	20	555.20	73,100	11,945	1,494	154,13

Apparatus of capture.

Years and counties.	Gill nets.		Pound nets.		Seines.		Wheels.		Dip nets.		Value of lines.	Value of tongs and hooks.	Value of guns, etc.
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.			
1889.													
Benton.....	55	\$3,300											\$120
Clackamas.....	117	2,930											
Clatsop.....	568	144,925	99	\$73,900	8	\$4,875							
Columbia.....	41	5,590									\$1,750		
Coos.....	140	4,700			5	750					87	25	
Curry.....	1	3,500			10	1,200							
Douglas.....	45	6,190	2	800	10	1,200							
Lane.....	26	1,500											
Multnomah.....	194	5,450					15	\$44,552			2,050		
Tillamook.....	50	3,750											
Wasco.....							16	75,500	95	\$475			
Total.....	1,404	181,955	101	74,700	23	7,425	31	120,052	95	475	4,487	145	
1890.													
Benton.....	18	1,080										125	
Clackamas.....	118	2,945											
Clatsop.....	601	152,825	108	70,500	7	2,775							
Columbia.....	43	5,620									2,240		
Coos.....	56	2,050			1	250					90	25	
Curry.....	168	3,500			10	1,800							
Douglas.....	2	150											
Lane.....	24	1,440											
Multnomah.....	151	4,900					13	37,052			4,200		\$80
Tillamook.....	50	3,750											
Wasco.....							16	70,500	85	425			
Total.....	1,234	178,320	108	70,500	18	4,825	29	107,552	85	425	0,530	150	\$80

employed in the fish.

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Boats.			Apparatus of capture.												
No.	Value.	Years and counties.	Gill nets.		Pound nets.		Scales.		Wheels.		Dip nets.		Value of lines.	Value of long lines and hooks.	Value of guns, etc.
No.	Value.		No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.			
75	30	1891.													
75	30	Benton.....	40	\$2,400			1	\$300						\$128	
75	30	Clackamas.....	118	2,950											
75	30	Clatsop.....	667	175,100	142	\$100,500	18	10,750							\$1,000
75	30	Columbia.....	45	5,650									\$2,800		
75	30	Coos.....	70	2,470			2	500					96	25	
75	30	Curry.....	164	3,480			0	2,100							200
75	30	Douglas.....	2	150											
75	30	Lane.....	21	1,260											
75	30	Multnomah.....	125	4,415			1	300	12	\$31,052			4,550		850
75	30	Tillamook.....	50	3,750			1	400	18	77,100	60	\$300			
75	30	Wasco.....													
75	30	Total.....	1,302	201,625	142	100,500	32	14,350	30	108,152	60	\$300	7,446	153	2,050
75	30	1892.													
75	30	Benton.....	37	2,220			1	300							124
75	30	Clackamas.....	120	3,000											
75	30	Clatsop.....	677	181,800	245	172,400	13	7,550							1,000
75	30	Columbia.....	45	5,650									4,680		
75	30	Coos.....	197	4,000			6	1,500					100	25	
75	30	Curry.....	169	3,400			8	2,000							200
75	30	Douglas.....	28	3,710											
75	30	Lane.....	58	3,480			1	150							
75	30	Multnomah.....	164	5,000					10	40,752			5,740		850
75	30	Wasco.....			2	1,000	3	1,100	21	92,100	50	250			
75	30	Total.....	1,306	212,260	247	173,400	32	12,600	40	112,852	50	250	10,520	140	2,050
Years and counties.			Value of shore and accessory property.	Cash capital.	Total value of investment.	Years and counties.			Value of shore and accessory property.	Cash capital.	Total value of investment.				
1891.						1891.									
Benton.....			\$14,000	\$25,000	\$44,130	Benton.....			\$14,000	\$11,000	\$28,078				
Clackamas.....			290		3,020	Clackamas.....			300		3,980				
Clatsop.....			428,900	358,000	1,121,265	Clatsop.....			393,700	469,000	1,305,070				
Columbia.....			2,500	3,000	15,465	Columbia.....			2,500	6,000	19,950				
Coos.....			10,000	40,000	55,487	Coos.....			10,700	10,000	25,460				
Curry.....			33,300	55,000	133,350	Curry.....			31,100	71,000	127,935				
Douglas.....			15,000	30,000	55,265	Douglas.....					300				
Lane.....			13,000	30,000	45,210	Lane.....			13,000	7,000	21,785				
Multnomah.....			53,755	31,900	147,882	Multnomah.....			61,000	55,000	180,732				
Tillamook.....			21,000	20,000	69,850	Tillamook.....			21,000	10,000	37,625				
Wasco.....			50,500	28,000	154,475	Wasco.....			35,650	20,000	133,490				
Total.....			618,245	620,900	1,859,299	Total.....			582,950	610,000	1,885,311				
1892.						1892.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1893.						1893.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1894.						1894.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1895.						1895.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1896.						1896.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1897.						1897.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1898.						1898.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700	20,000	39,050				
Curry.....			31,300	52,000	128,265	Curry.....			30,900	35,000	109,985				
Douglas.....					300	Douglas.....			15,000	20,000	40,810				
Lane.....			11,000	10,000	25,040	Lane.....			24,000	35,000	64,530				
Multnomah.....			60,075	110,000	270,297	Multnomah.....			88,100	170,000	350,292				
Tillamook.....			21,000	20,000	54,250	Tillamook.....			60,050	50,000	205,250				
Wasco.....			60,500	28,000	154,475	Wasco.....			60,050	50,000	205,250				
Total.....			501,445	707,000	1,860,217	Total.....			660,150	803,000	2,272,351				
1899.						1899.									
Benton.....			4,000		5,835	Benton.....			14,000	10,000	27,904				
Clackamas.....			300		3,945	Clackamas.....			300		4,050				
Clatsop.....			402,900	400,000	1,154,300	Clatsop.....			413,600	442,000	1,399,600				
Columbia.....			2,500	4,000	17,100	Columbia.....			2,500	11,000	20,780				
Coos.....			1,800	4,000	9,480	Coos.....			11,700						

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Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon.....	428,428	\$5,968	71,160	\$1,343	260,359	\$3,117	284,290	\$3,360
Silver salmon.....	444,709	7,269	85,400	1,668	135,383	2,018	88,710	1,360
Crabs.....	6,628	265	4,200	168	3,521	141	4,425	60
Oysters.....	150,000	3,125	132,360	2,758	146,040	3,043	147,000	3,060
Total.....	1,029,765	16,627	293,120	5,937	545,303	8,319	524,425	8,830
Clackamas:								
Blackback salmon.....	15,220	609	22,340	894	21,140	816	27,225	1,190
Chinook salmon.....	90,114	3,605	124,114	4,964	88,750	3,550	111,112	4,390
Steelhead salmon.....	20,070	413	30,206	604	18,112	302	24,211	610
Total.....	126,004	4,627	176,660	6,462	128,002	4,758	165,551	6,250
Clatsop:								
Black-cod.....					1,000	8		
Blackback salmon.....	185,015	3,775	263,715	5,275	126,040	3,191	620,495	15,390
Chinook salmon.....	9,121,935	443,518	12,047,880	405,528	14,216,780	565,354	12,107,759	494,720
Cultus-cod.....					800	8		
Flounders.....							10,000	300
Halibut.....					28,000	1,490	2,000	100
Rockfish.....							5,000	200
Shad.....	23,990	2,999	50,100	4,068	70,500	4,230	109,000	3,250
Silver salmon.....	497,990	9,619	441,890	5,470	132,580	1,325		
Steelhead salmon.....	654,740	13,513	766,550	7,661	699,380	7,392	1,316,120	13,850
Fur-seal pelts.....						8,480		18,500
Total.....	10,399,670	479,454	13,570,135	427,954	15,275,880	591,388	14,176,365	537,620
Columbia:								
Blackback salmon.....	17,000	519	25,000	750	15,000	550	20,000	700
Chinook salmon.....	116,000	4,640	187,000	7,480	115,000	4,600	150,000	6,000
Steelhead salmon.....	21,000	528	38,000	1,140	22,000	560	30,000	700
Sturgeon.....	314,730	3,395	358,620	3,996	471,987	5,170	960,795	10,390
Total.....	468,730	9,073	608,620	13,366	623,987	10,880	1,100,795	17,750
Coos:								
Chinook salmon, fresh.....	138,841	3,286	17,500	188	29,110	320	52,500	890
Chinook salmon, salted.....	47,500	1,250	40,000	454	36,250	412	32,500	360
Cultus-cod.....	26,112	1,305	27,120	1,356	27,615	1,381	26,301	1,300
Halibut.....	17,250	1,725	16,450	1,641	15,930	1,593	16,870	1,690
Rockfish.....	84,010	4,200	82,260	4,111	89,220	4,461	84,115	4,200
Silver salmon, fresh.....	967,000	25,651	126,000	1,890	293,770	3,054	292,500	4,300
Silver salmon, salted.....	332,500	9,984	280,000	4,203	254,750	3,876	227,500	3,500
Clams.....	48,720	812	46,500	775	45,600	730	49,500	820
Total.....	1,681,942	47,613	635,830	14,621	605,215	15,489	748,789	16,710
Curry:								
Chinook salmon, fresh.....	942,382	26,974	1,100,252	32,353	1,162,313	34,870	685,897	19,810
Chinook salmon, salted.....	23,400	936	47,100	1,881	61,200	2,448	22,200	880
Silver salmon, fresh.....	554,358	10,965	238,808	4,662	135,087	2,762	200,353	3,840
Silver salmon, salted.....	26,600	1,064	33,100	1,324	45,800	1,832	24,600	880
Sea-otter pelts.....							1,750	
Total.....	1,546,740	39,939	1,419,260	40,223	1,404,400	41,852	933,050	27,380
Douglas:								
Chinook salmon.....	271,345	5,426	7,000	350	8,000	400	105,000	1,300
Silver salmon.....	536,655	10,733	13,000	650	14,000	700	754,600	11,100
Total.....	808,000	16,159	20,000	1,000	22,000	1,100	859,600	12,400
Lane:								
Chinook salmon.....	168,420	3,368	114,969	862	110,000	825	144,100	1,100
Silver salmon.....	842,210	21,054	291,621	4,375	223,270	3,350	1,198,309	17,500
Total.....	1,010,630	24,422	406,590	5,237	333,270	4,175	1,342,409	18,600
Multnomah:								
Black-cod.....	25,000	1,250						
Blackback salmon.....	330,240	12,619	1,613,978	45,897	267,610	8,497	1,234,405	33,000
Chinook salmon.....	387,789	16,012	1,485,339	40,981	491,054	16,728	824,548	28,400
Cultus-cod.....	75,000	2,250						
Halibut.....	470,000	9,400						
Steelhead salmon.....	99,080	3,156	326,823	7,470	126,208	3,482	437,093	11,200
Sturgeon.....	427,000	5,420	1,082,826	12,283	984,632	12,141	1,532,695	17,500
Fur-seal pelts.....								
Crabfish.....	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Total.....	1,834,109	53,043	4,563,966	131,321	1,900,104	63,048	4,068,741	118,000

Table showing by

Counties and species

Counties and species

Blackback salmon
Chinook salmon
Silver salmon
Steelhead salmon

Total.....

Counties:

Black-cod
Blackback salmon
Chinook salmon
Cultus-cod
Flounders
Halibut
Rockfish
Shad
Silver salmon
Steelhead salmon
Sturgeon
Fur-seal pelts
Sea-otter pelts
Crabfish
Crabs
Clams
Oysters

Grand total.

Table showing by

Counties and species

Benton:
Chinook salmon
Silver salmon
Crabs
Oysters

Total.....

Clackamas:

Blackback salmon
Chinook salmon
Steelhead salmon

Total.....

Clatsop:

Black-cod
Blackback salmon
Chinook salmon
Cultus-cod
Flounders
Halibut
Rockfish
Shad
Silver salmon
Steelhead salmon
Sturgeon
Fur-seal pelts
Sea-otter pelts
Crabfish
Crabs
Clams
Oysters

Grand total.

Table showing by

Counties and species

Coos:
Chinook salmon, fresh
Chinook salmon, salted
Cultus-cod
Halibut
Rockfish
Silver salmon, fresh
Silver salmon, salted
Clams

Total.....

Curry:

Chinook salmon, fresh
Chinook salmon, salted
Silver salmon, fresh
Silver salmon, salted
Sea-otter pelts

Total.....

Douglas:

Chinook salmon
Silver salmon

Total.....

Lane:

Chinook salmon
Silver salmon

Total.....

Multnomah:

Black-cod
Blackback salmon
Chinook salmon
Cultus-cod
Halibut
Steelhead salmon
Sturgeon
Fur-seal pelts
Crabfish

Total.....

on in 1889, 1890,

Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

1892.	Pounds.	Value.	Counties and species.	1889.		1890.		1891.		1892.	
				Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
284,200	\$3.76		Malheur:								
88,710	1.36		Chinook salmon.....	190,000	\$7,840	297,500	\$2,975	309,458	\$3,705	280,000	\$3,360
4,125	4.00		Silver salmon.....	285,115	5,702	808,800	13,032	218,500	3,277	1,049,500	15,742
147,000	3.00		Total.....	775,115	13,542	1,106,300	16,007	527,958	6,982	1,329,500	19,102
524,125	8.30		Tasco:								
27,225	1.50		Blueback salmon.....	599,615	17,518	1,588,910	45,205	410,702	11,043	1,232,272	32,542
111,112	4.30		Chinook salmon.....	322,833	9,453	1,143,587	32,460	377,644	10,241	832,085	25,084
24,211	6.00		Silver salmon.....	67,194	1,170	102,880	1,817	114,030	2,212	371,488	9,835
165,551	6.30		Steelhead salmon.....	48,590	1,227	941,410	12,695	256,640	5,160	779,344	21,837
			Total.....	1,038,532	29,368	3,470,787	92,177	1,188,016	28,056	3,215,189	89,298
629,495	15.30		Clatsop:								
12,107,759	484.30		Blueback.....	25,000	1,250			1,000	8		
10,000	40		Blueback salmon.....	1,147,090	34,901	3,543,943	97,901	871,392	24,127	3,140,397	83,370
2,000	10		Chinook salmon, fresh.....	12,478,087	536,129	16,596,391	535,484	17,168,968	643,710	15,577,282	579,007
5,000	20		Chinook salmon, salted.....	70,900	2,189	57,100	2,338	97,450	2,860	54,700	1,407
109,900	3.20		Galins red.....	101,112	3,555	27,120	1,356	28,415	1,389	26,304	1,315
			Humboldt.....							10,000	460
1,310,120	13.30		Habitat.....	187,250	11,125	10,459	1,615	43,920	2,993	18,870	1,787
13,300	18.30		Beckwith.....	84,610	4,200	82,260	4,113	83,220	4,161	80,115	4,255
14,176,965	537.00		Salmon.....	20,590	2,999	50,100	4,008	70,500	4,230	109,000	3,270
			Silver salmon, fresh.....	4,125,740	91,603	2,168,399	33,573	1,175,620	18,640	3,025,451	64,180
			Silver salmon, salted.....	359,100	11,048	313,100	5,524	299,550	5,038	252,100	4,484
			Steelhead salmon.....	814,089	18,837	1,802,989	29,573	1,122,340	16,956	2,586,771	48,552
			Sturgeon.....	741,730	8,821	1,441,446	10,279	1,456,610	17,311	2,513,490	28,001
			Pat and pelts.....				15,000		26,480		43,206
20,000	700		Seal and pelts.....								1,729
150,000	6,000		Crab.....	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
30,000	600		Oysters.....	4,628	265	4,200	168	3,521	141	4,125	495
969,795	10.30		Clams.....	48,720	812	40,500	775	45,600	760	49,500	825
1,160,795	17.30		Oysters.....	150,000	3,125	132,360	2,758	146,040	3,043	147,000	3,062
			Grand total.....	20,719,237	733,867	26,337,268	751,305	22,614,105	777,247	28,521,105	872,405

Table showing by county, species, and apparatus of capture the yield of the fisheries of Oregon in 1889.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Malheur:								
Chinook salmon.....	428,428	\$5,908						
Silver salmon.....	441,709	7,269						
Chinook.....	6,628	265						
Total.....	879,765	13,502						
Tasco:								
Blueback salmon.....	15,220	600						
Chinook salmon.....	90,114	3,605						
Steelhead salmon.....	20,670	413						
Total.....	126,004	4,627						
Clatsop:								
Blueback salmon.....	655	13	166,860	\$3,281	17,500	\$481		
Chinook salmon.....	6,315,960	309,811	2,187,175	108,994	618,800	30,743		
Salmon.....			29,800	2,980	190	19		
Steelhead salmon.....	330,577	8,071			77,413	1,548		
Head salmon.....	103,569	2,071	383,980	7,724	167,200	3,718		
Total.....	6,750,752	319,966	2,767,815	122,979	881,103	36,509		
Clatsop:								
Blueback salmon.....	17,000	510						
Chinook salmon.....	110,000	4,640						
Steelhead salmon.....	27,990	524						
Sturgeon.....	50,000	848					236,048	\$2,547
Total.....	202,682	6,522					236,048	2,547

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Coos:								
Chinook salmon, fresh.	103,394	\$2,353			35,447	\$933		
Chinook salmon, salted.	47,500	1,250						
Cultus cod.							26,112	\$1.30
Halibut.							17,250	1.30
Rockfish.							84,010	4.50
Silver salmon, fresh.	809,773	19,734			177,236	5,317		
Silver salmon, salted.	332,500	9,984						
Total	1,293,107	33,321			212,683	6,250	127,372	7.10
Curry:								
Chinook salmon, fresh.	689,280	20,391			253,102	6,583		
Chinook salmon, salted.	4,000	100			19,400	770		
Silver salmon, fresh.	7,509	150			546,858	10,815		
Silver salmon, salted.	9,000	360			17,600	704		
Total	709,789	21,061			836,960	18,878		
Douglas:								
Chinook salmon.	238,345	4,766	33,000	\$660				
Silver salmon.	506,655	10,133	30,000	600				
Total	745,000	14,899	63,000	1,260				
Lane:								
Chinook salmon.	108,420	3,308						
Silver salmon.	842,210	21,054						
Total	1,010,630	24,422						
Multnomah:								
Black cod.							25,000	1.50
Blueback salmon.	144,905	5,130						
Chinook salmon.	273,789	11,452						
Cultus cod.							75,000	2.50
Halibut.							470,000	9.40
Steelhead salmon.	72,930	2,111					427,000	5.30
Sturgeon.								
Total	401,624	18,699					997,000	18.70
Tillamook:								
Chinook salmon.	400,000	7,810						
Silver salmon.	285,115	5,702						
Total	775,115	13,542						
All counties:								
Black cod.	177,780	6,268	166,680	3,281	17,500	481	25,000	1.50
Blueback salmon.	8,913,730	374,194	2,220,175	109,654	967,349	38,259		
Chinook salmon, fresh.	8,913,730	374,194	2,220,175	109,654	967,349	38,259		
Chinook salmon, salted.	51,500	1,410			19,400	776		
Cultus cod.							101,112	3.50
Halibut.							457,250	11.10
Rockfish.							84,010	4.50
Shad.			20,800	2,980	190	19		
Silver salmon, fresh.	3,220,538	72,113	30,000	600	801,507	17,680		
Silver salmon, salted.	341,500	10,344			17,600	704		
Steelhead salmon.	218,160	5,123	383,980	7,724	167,200	3,718		
Sturgeon.	78,682	818					663,018	5.50
Crabs.	6,628	265						
Grand total	13,014,519	470,565	2,830,815	124,239	1,930,746	61,637	1,360,420	28.80

Table showing by

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of the fisheries Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

Lines.	Counties and species.	Wheels.		Minor nets.		Tongs and bucs.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
	Clatsop:					150,000	\$4,125
	Oysters.....					48,720	812
	Clams.....						
	Clatsop and:						
	Blueback salmon.....	185,325	\$7,413				
	Chinook salmon.....	114,000	4,500				
	Steelhead salmon.....	26,150	1,045				
	Crawfish.....			20,000	\$4,000		
	Total.....	325,485	13,018	20,000	3,000		
	Wasco:						
	Blueback salmon.....	515,115	15,677	84,500	1,841		
	Chinook salmon.....	265,550	8,307	57,281	1,146		
	Silver salmon.....	31,500	630	35,904	510		
	Steelhead salmon.....	37,140	998	11,450	229		
	Total.....	849,305	25,012	189,227	3,756		
	McKenzie:						
	Blueback salmon.....	700,450	23,090	84,500	1,841		
	Chinook salmon.....	379,530	12,867	57,281	1,146		
	Silver salmon.....	31,500	630	35,904	510		
	Steelhead salmon.....	63,290	2,043	11,450	229		
	Crawfish.....			20,000	3,000		
	Clams.....					150,000	3,125
	Oysters.....						
	Grand total.....	1,174,790	38,630	200,227	6,756	198,720	3,937

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1890.

Lines.	Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
	Clatsop:								
	Chinook salmon.....	71,160	\$1,343						
	Silver salmon.....	85,400	1,068						
	Clams.....	4,200	168						
	Total.....	160,760	3,179						
	Clatsop and:								
	Blueback salmon.....	22,340	894						
	Chinook salmon.....	124,114	4,964						
	Steelhead salmon.....	30,206	604						
	Total.....	176,660	6,462						
	Wasco:								
	Blueback salmon.....	9,176,635	303,143	252,465	\$5,050	11,250	\$225		
	Chinook salmon.....			2,602,475	93,385	268,750	9,000		
	Steelhead salmon.....			49,570	3,965	530	43		
	Silver salmon.....	364,556	3,932			77,334	1,547		
	Steelhead salmon.....	166,420	1,604	516,000	5,159	90,130	901		
	Total.....	9,701,631	308,679	3,420,510	107,559	447,994	11,716		
	McKenzie:								
	Blueback salmon.....	25,000	750						
	Chinook salmon.....	187,000	7,480						
	Steelhead salmon.....	38,000	1,140						
	Sturgeon.....	89,650	998					268,961	\$2,998
	Total.....	339,650	10,368					268,961	2,998
	Wasco and:								
	Chinook salmon, fresh.....	14,000	148			3,500	40		
	Chinook salmon, salted.....	40,000	454					27,120	1,356
	Cutthroat.....							16,450	1,645
	Halibut.....							82,260	4,113
	Rockfish.....	101,000	1,515			25,000	375		
	Silver salmon, fresh.....	280,000	4,200						
	Silver salmon, salted.....								
	Total.....	435,000	6,317			28,500	415	125,830	7,114

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1899—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Curry:								
Chinook salmon, fresh.	981,450	\$29,504			110,802	\$2,849		
Chinook salmon, salted.	11,400	450			35,700	1,428		
Silver salmon, fresh.					238,808	4,662		
Silver salmon, salted.	6,000	210			27,160	1,084		
Total	1,000,850	30,290			418,416	10,023		
Douglas:								
Chinook salmon.	7,000	350						
Silver salmon.	13,000	650						
Total	20,000	1,000						
Lane:								
Chinook salmon	114,969	862						
Silver salmon.	291,621	4,375						
Total	406,590	5,237						
Multnomah:								
Blueback salmon.	420,093	9,148						
Chinook salmon.	423,339	15,122						
Steelhead salmon.	145,843	2,044						
Sturgeon							1,082,826	\$12,122
Total	990,175	20,311					1,082,826	12,122
Tillamook:								
Chinook salmon.	297,500	2,975						
Silver salmon.	868,800	17,632						
Total	1,166,300	10,607						
All counties:								
Blueback salmon.	468,333	10,792	252,465	\$5,050	11,250	225		
Chinook salmon, fresh.	11,399,187	365,891	2,602,475	94,385	389,052	11,889		
Chinook salmon, salted.	51,400	910			35,700	1,428		
Cultus cod.							27,120	1,084
Halibut.							16,450	658
Rockfish.							82,260	3,290
Shad.			49,570	3,905	530	43		
Silver salmon, fresh.	1,724,377	25,172			311,142	6,584		
Silver salmon, salted.	280,000	4,400			27,100	1,084		
Steelhead salmon.	374,469	5,389	510,000	5,159	90,130	901		
Sturgeon	89,659	208					1,351,787	13,518
Crabs.	4,200	168						
Grand total	14,397,625	419,700	3,420,510	107,559	894,904	22,154	1,477,017	22,154
Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spear, guns.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters.					132,360	\$2,758		
Coos:								
Clams.					46,500	775		
Multnomah:								
Blueback salmon.	1,222,985	\$36,689						
Chinook salmon.	1,062,000	31,859						
Steelhead salmon.	180,980	5,429						
Fur-seal pelts.								
Crawfish.			25,000	\$3,750				
Total	2,465,965	73,977	25,000	3,750				
Wasco:								
Blueback salmon.	1,425,170	42,735	163,740	2,450				
Chinook salmon.	1,018,053	30,502	125,534	1,958				
Silver salmon.	31,620	749	71,260	1,068				
Steelhead salmon.	531,410	11,045	110,000	1,650				
Total	3,006,253	85,051	470,534	7,126				
All counties:								
Blueback salmon.	2,648,155	79,444	163,740	2,450				
Chinook salmon.	2,080,053	62,361	125,534	1,958				
Silver salmon.	31,620	749	71,260	1,068				
Steelhead salmon.	712,390	16,474	110,000	1,650				
Fur-seal pelts.								
Crawfish.			25,000	3,750				
Clams.					46,500	775		
Oysters.					132,360	2,758		
Grand total	5,472,218	159,028	495,534	10,876	178,360	3,533		

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891.

County.	Lines.	Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
			Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:										
410		Chinook salmon.....	182,359	\$2,337			78,000	\$780		
428		Silver salmon.....	72,183	1,388			63,000	630		
662		Trout.....	3,521	141						
984		Total.....	258,263	3,866			141,000	1,410		
923										
		Clatsop:								
		Blueback salmon.....	21,140	840						
		Chinook salmon.....	84,750	3,550						
		Steelhead salmon.....	18,112	362						
		Total.....	124,002	4,758						
		Clatsop:								
		Black cod.....							1,000	\$8
		Blueback salmon.....			115,080	\$2,806	11,200	295		
		Chinook salmon.....	11,064,180	430,252	2,740,325	109,613	412,175	16,489		
		Callosa cod.....							800	
		Halibut.....							28,000	1,400
		Shad.....			62,000	3,720	8,500	510		
		Silver salmon.....	132,580	1,325						
		Steelhead salmon.....	102,800	971	548,600	5,503	47,920	858		
		Total.....	11,290,560	441,548	3,400,965	121,792	479,855	18,152	29,800	1,416
		Clatsop:								
		Blueback salmon.....	15,000	550						
		Chinook salmon.....	115,000	4,600						
		Steelhead salmon.....	22,000	569						
		Sturgeon.....	118,001	1,292					353,086	3,878
		Total.....	270,001	7,002					353,086	3,878
		Clatsop:								
		Chinook salmon, fresh.....	14,000	148			15,110	172		
		Chinook salmon, salted.....	36,250	412					27,615	1,381
		Callosa cod.....							15,930	1,503
		Halibut.....							83,220	4,161
		Rockfish.....								
		Silver salmon, fresh.....	101,000	1,515			102,770	1,541		
		Silver salmon, salted.....	253,750	3,806						
		Total.....	405,000	5,881			117,880	1,713	126,765	7,135
		Clatsop:								
		Chinook salmon, fresh.....	1,117,285	33,510			45,028	1,351		
		Chinook salmon, salted.....	12,500	500			48,700	1,948		
		Silver salmon, fresh.....					135,087	2,702		
		Silver salmon, salted.....	2,500	100			43,300	1,732		
		Total.....	1,132,285	34,119			272,115	7,733		
		Clatsop:								
		Chinook salmon.....	8,000	400						
		Silver salmon.....	14,000	700						
		Total.....	22,000	1,100						
		Clatsop:								
		Chinook salmon.....	110,000	825						
		Silver salmon.....	223,270	3,350						
		Total.....	333,270	4,175						
		Clatsop:								
		Blueback salmon.....	151,215	4,945						
		Chinook salmon.....	325,754	11,561						
		Steelhead salmon.....	78,208	2,044						
		Sturgeon.....							984,632	12,141
		Total.....	555,237	18,550					984,632	12,141
		Clatsop:								
		Chinook salmon.....	250,598	3,115			49,800	500		
		Silver salmon.....	178,500	2,077			40,000	600		
		Total.....	438,098	5,792			89,800	1,100

IMAGE EVALUATION TEST TARGET (MT-3)

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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Silver salmon.....					6,000	\$100		
Steelhead salmon.....					3,000	90		
Total.....					9,000	280		
All counties:								
Black-cod.....							1,000	\$6
Blueback salmon.....	187,355	\$0,341	115,680	\$2,896	11,260	295		
Chinook salmon, fresh.....	13,284,920	499,307	2,740,325	109,613	600,173	19,382		
Chinook salmon, salted.....	48,750	912			48,700	1,948		
Cultus cod.....							28,415	1.50
Halibut.....							43,930	2.90
Rockfish.....							83,220	4.10
Shad.....			62,000	3,720	8,500	510		
Silver salmon, fresh.....	721,733	10,955			346,857	5,663		
Silver salmon, salted.....	256,250	3,906			43,300	1,732		
Steelhead salmon.....	221,180	3,937	548,660	5,563	50,920	948		
Sturgeon.....	118,001	1,292					1,338,618	16.09
Crabs.....	3,521	141						
Grand total.....	14,841,716	526,791	3,406,665	121,792	1,109,710	30,478	1,495,183	24.50
Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Denton:								
Oysters.....					146,040	\$3,043		
Clatsop:								
Fur-seal pelts.....								\$8.40
Coos:								
Clams.....					45,600	760		
Multnomah:								
Blueback salmon.....	116,395	\$3,552						
Chinook salmon.....	165,900	5,107						
Steelhead salmon.....	47,940	1,438						
Fur-seal pelts.....								18.00
Crawfish.....			30,000	\$4,800				
Total.....	330,235	10,157	30,000	4,800				18.00
Wasco:								
Blueback salmon.....	288,520	8,055	152,182	2,388				
Chinook salmon.....	304,053	9,122	73,591	1,119				
Silver salmon.....	34,440	933	72,590	1,089				
Steelhead salmon.....	179,010	3,950	74,600	1,140				
Total.....	800,053	22,640	372,963	5,736				
All counties:								
Blueback salmon.....	404,015	12,207	152,182	2,388				
Chinook salmon.....	409,953	14,260	73,591	1,119				
Silver salmon.....	34,440	933	72,590	1,089				
Steelhead salmon.....	226,980	5,368	74,600	1,140				
Fur-seal pelts.....								26.40
Crawfish.....			30,000	4,800				
Clams.....					65,600	760		
Oysters.....					146,040	3,043		
Grand total.....	1,130,288	32,797	402,963	10,536	191,640	3,803		26.40

Table showing

Counties and s

Denton:
Chinook salmon
Silver salmon
Crabs.....

Total.....

Clackamas:
Blueback salmon
Chinook salmon
Steelhead salmon

Total.....

Clatsop:
Blueback salmon
Chinook salmon
Flounders.....
Halibut.....
Rockfish.....
Shad.....
Steelhead salmon

Total.....

Columbia:
Blueback salmon
Chinook salmon
Steelhead salmon
Sturgeon.....

Total.....

Coos:
Chinook salmon
Chinook salmon
Cultus cod.....
Halibut.....
Rockfish.....
Silver salmon
Silver salmon

Total.....

Curry:
Chinook salmon
Chinook salmon
Silver salmon
Silver salmon

Total.....

Douglas:
Chinook salmon
Silver salmon

Total.....

Lane:
Chinook salmon
Silver salmon

Total.....

Multnomah:
Blueback salmon
Chinook salmon
Steelhead salmon
Sturgeon.....

Total.....

Tillamook:
Chinook salmon
Silver salmon

Total.....

the fisheries of

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892.

Lines.		Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:									
Blueback salmon	246,700	\$3,021				37,500	\$375		
Silver salmon	76,710	1,464				12,000	120		
Crabs	4,125	495							
Total	327,625	4,980				49,500	495		
Clackamas:									
Blueback salmon	27,225	1,080							
Chinook salmon	114,112	4,564							
Steelhead salmon	24,214	630							
Total	165,551	6,283							
Clatsop:									
Blueback salmon			404,210	\$12,360	132,285	3,620			
Chinook salmon	8,314,650	332,622	3,153,025	126,127	639,175	25,567			
Flounders								10,000	\$400
Halibut								2,000	100
Rockfish								5,000	200
Shad			94,000	2,820	15,000	450			
Steelhead salmon	46,480	460	1,132,400	11,411	137,240	2,005			
Total	8,361,130	333,121	4,874,535	152,718	924,700	31,702		17,000	700
Columbia:									
Blueback salmon	20,000	700							
Chinook salmon	150,000	6,000							
Steelhead salmon	30,000	750							
Sturgeon	120,283	1,287						840,512	8,003
Total	320,283	8,737						840,512	8,993
Coos:									
Chinook salmon, fresh	25,000	398			27,500	438			
Chinook salmon, salted	32,500	517							
Cultus cod								26,304	1,315
Halibut								16,870	1,687
Rockfish								81,115	4,055
Silver salmon, fresh	137,500	2,114			125,000	1,923			
Silver salmon, salted	227,500	3,500							
Total	422,500	6,529			152,500	2,361		124,289	7,057
Curry:									
Chinook salmon, fresh	583,570	17,507			102,327	2,404			
Chinook salmon, salted	2,000	80			20,200	810			
Silver salmon, fresh					200,353	3,874			
Silver salmon, salted	3,000	120			21,600	804			
Total	588,570	17,707			344,480	7,052			
Douglas:									
Chinook salmon	105,000	1,312							
Silver salmon	754,600	11,314							
Total	859,600	12,626							
Lane:									
Chinook salmon	136,950	1,711			4,150	52			
Silver salmon	1,186,140	17,612			12,160	182			
Total	1,323,090	19,323			16,310	234			
Multnomah:									
Blueback salmon	488,195	10,073							
Chinook salmon	372,898	14,915							
Steelhead salmon	140,983	2,477							
Sturgeon								1,552,695	17,721
Total	1,002,076	28,065						1,552,695	17,721
Tillamook:									
Chinook salmon	280,000	3,360							
Silver salmon	1,049,599	15,742							
Total	1,329,599	19,102							

228 REPORT OF COMMISSIONER OF FISH AND FISHERIES.

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892.—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seine.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Blueback salmon.....			5,100	\$150	105,450	\$1,164		
Chinook salmon.....			51,180	2,140	49,540	1,511		
Silver salmon.....					10,000	300		
Steelhead salmon.....			3,000	45	48,112	962		
Total.....			59,180	2,335	213,102	5,037		
All counties:								
Blueback salmon.....	535,420	\$12,462	400,210	12,510	237,735	6,784		
Chinook salmon, fresh.....	10,328,970	385,410	3,205,105	128,267	890,192	30,347		
Chinook salmon, salted.....	34,500	597			20,200	810		
Cultus cod.....							26,304	\$1.23
Flounders.....							10,000	48
Hallbut.....							18,870	1.76
Rockfish.....							86,115	4.23
Shad.....			94,000	2,820	15,000	450		
Silver salmon, fresh.....	3,204,450	48,246			359,513	6,409		
Silver salmon, salted.....	230,500	3,620			21,600	864		
Steelhead salmon.....	241,677	4,356	1,135,400	11,450	185,352	3,027		
Sturgeon.....	120,283	1,287					2,393,207	26.76
Crabs.....	4,125	495						
Grand total.....	14,699,025	456,473	4,033,715	155,053	1,600,592	48,681	2,534,496	34.47

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters.....					117,000	\$3,062		
Clatsop:								
Fur seals.....								\$18.78
Coos:					49,500	825		
Clams.....								
Curry:								
Sea-otter pelts.....								1.73
Multnomah:								
Blueback salmon.....	740,210	\$22,380						
Chinook salmon.....	461,650	13,550						
Steelhead salmon.....	290,110	8,883						
Fur-seal pelts.....								21.05
Crawfish.....			20,000	\$3,000				
Total.....	1,493,970	44,810	20,000	3,000				24.48
Wasco:								
Blueback salmon.....	826,713	24,801	295,100	4,427				
Chinook salmon.....	697,465	20,024	33,900	509				
Silver salmon.....	274,785	8,234	86,703	1,301				
Steelhead salmon.....	660,430	19,813	67,802	1,017				
Total.....	2,459,393	73,772	483,514	7,254				
All counties:								
Blueback salmon.....	1,572,923	47,187	295,100	4,427				
Chinook salmon.....	1,149,115	34,474	33,900	509				
Silver salmon.....	274,785	8,234	86,703	1,301				
Steelhead salmon.....	950,540	28,606	67,802	1,017				
Fur-seal pelts.....								43.20
Sea-otter pelts.....								1.73
Crawfish.....			20,000	3,000				
Clams.....					49,500	825		
Oysters.....					147,000	3,002		
Grand total.....	3,953,393	118,691	593,514	10,254	106,500	3,887		41.90

Counties and years.

Benton:	
1890.....	
1891.....	
1892.....	
Clatsop:	
1890.....	
1891.....	
1892.....	
Coos:	
1890.....	
1891.....	
1892.....	
Curry:	
1890.....	
1891.....	
1892.....	
Douglas:	
1890.....	
1891.....	
1892.....	
Lane:	
1890.....	
1891.....	
1892.....	

Counties and years.

Benton:	
1890.....	
1891.....	
1892.....	
Clatsop:	
1890.....	8
1891.....	11
1892.....	13
Coos:	
1890.....	
1891.....	
1892.....	
Curry:	
1890.....	
1891.....	1
1892.....	1
Douglas:	
1890.....	
1891.....	
1892.....	
Lane:	
1890.....	
1891.....	
1892.....	
Multnomah:	
1890.....	
1891.....	
1892.....	
Tillamook:	
1890.....	
1891.....	
1892.....	
Wasco:	
1890.....	
1891.....	
1892.....	
Total:	
1890.....	1
1891.....	1
1892.....	1

of the fisheries of Table showing by counties the extent of the salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892.

Lines.	Counties and years.	No. of employees.	Canneries.			Counties and years.	No. of employees.	Canneries.		
			No.	Value.	Cash capital.			No.	Value.	Cash capital.
	Benton:					Lane—cont'd.				
	1889.....	34	1	\$10,000	\$25,000	1891.....	32	1	\$13,000	\$7,000
	1890.....	22	1	10,000	11,000	1892.....	91	2	24,000	35,000
	1891.....	22	1	10,000	10,000	Multnomah:				
	1889.....	684	11	370,500	354,500	1889.....	157	2	40,000	20,000
	1890.....	737	10	347,500	300,500	1890.....	191	2	46,000	135,000
	1891.....	830	10	385,000	464,900	1891.....	158	2	46,000	46,000
	1892.....	838	10	365,000	465,000	1892.....	225	3	71,000	150,000
	Clatsop:					Tillamook:				
	1889.....	87	2	14,500	40,000	1889.....	56	1	21,000	20,000
	1890.....	37	1	9,000	10,000	1890.....	59	1	21,000	27,000
	1891.....	35	1	9,000	20,000	1891.....	45	1	21,000	10,000
	1892.....	35	1	9,000	20,000	1892.....	63	1	21,000	30,000
	Cook:					Wasco:				
	1889.....	105	2	32,300	55,000	1889.....	69	1	30,000	28,000
	1890.....	78	1	30,000	52,000	1890.....	80	2	55,000	70,000
	1891.....	72	1	30,000	52,000	1891.....	69	1	30,000	20,000
	1892.....	63	1	30,000	35,000	1892.....	122	2	55,000	70,000
	Douglas:					Total:				
	1889.....	49	1	15,000	30,000	1889.....	1,281	22	552,300	611,500
	1890.....	51	1	13,000	20,000	1890.....	1,190	17	512,500	688,500
	1891.....	40	1	13,000	30,000	1891.....	1,265	18	544,000	620,000
	1892.....	36	1	13,000	10,000	1892.....	1,510	22	598,000	835,000

Spears, guns, etc.

Salmon utilized in canning.

Pounds.	Value.	Counties and years.	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
			Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
		Benton:										
		1889.....	520,740	\$3,840					300,260	\$4,639	630,000	\$8,488
		1890.....	193,000	1,930					55,800	558	248,800	2,488
		1891.....	224,000	2,800					14,000	180	238,000	2,780
		1892.....										
		Clatsop:										
		1889.....	8,866,085	430,614	213,378	\$10,669	681,846	\$20,455	331,940	8,007	10,093,240	469,835
		1890.....	11,298,416	342,237	242,352	4,847	869,088	8,691	372,890	5,059	12,782,746	361,434
		1891.....	13,074,042	555,874	145,800	2,017	802,164	10,428	141,680	1,417	15,093,746	570,636
		1892.....	12,328,418	483,635	629,244	14,160	1,383,954	22,143	574,000	5,740	14,915,616	525,687
		Cook:										
		1889.....	32,500	437					455,000	9,100	487,500	9,587
		1890.....	29,100	320					158,770	2,381	187,870	2,701
		1891.....	52,500	830					202,500	4,037	315,000	4,873
		1892.....										
		Douglas:										
		1889.....	871,757	25,667					500,483	10,190	1,381,240	35,877
		1890.....	1,048,927	31,441					193,533	3,871	1,241,560	35,312
		1891.....	1,102,113	34,870					115,087	2,702	1,297,200	37,572
		1892.....	632,637	17,507					147,323	2,940	779,960	20,453
		Lane:										
		1889.....	270,000	5,418					534,100	10,632	805,000	16,160
		1890.....	105,000	1,312					754,000	11,314	859,000	12,628
		1891.....										
		1892.....										
		Multnomah:										
		1889.....	322,475	12,899	350,860	14,395	62,240	2,499			744,575	29,793
		1890.....	1,303,815	41,814	2,084,645	62,409	345,350	10,300			3,821,810	114,673
		1891.....	877,234	20,316	331,855	9,955	210,060	6,482			1,225,149	36,753
		1892.....	1,313,300	39,400	2,079,855	60,639	960,370	24,011			4,353,525	128,950
		Tillamook:										
		1889.....	400,000	7,810					252,000	5,040	742,000	12,880
		1890.....	297,500	2,975					840,000	12,000	1,137,500	15,575
		1891.....	309,610	3,715					147,000	2,205	456,610	5,920
		1892.....	280,000	3,360					1,015,000	13,225	1,295,000	18,585
		Wasco:										
		1889.....	201,732	8,179	488,032	14,041	31,500	631			781,264	23,451
		1890.....	070,871	20,126	1,391,880	41,756	400,000	0,318			2,552,751	71,201
		1891.....	226,660	0,806	253,820	7,015	192,220	4,324			672,700	16,739
		1892.....	540,120	16,443	768,210	23,045	704,185	13,530			2,395,710	60,508
		Total:										
		1889.....	11,604,609	498,341	1,061,270	39,705	775,586	23,585	3,000,593	64,118	16,448,058	625,740
		1890.....	14,815,720	439,396	3,718,877	109,102	1,704,438	28,309	1,584,044	24,805	21,823,688	601,672
		1891.....	16,621,459	624,108	731,535	20,487	1,210,444	21,294	737,107	10,745	19,300,545	676,664
		1892.....	15,615,875	566,729	3,477,809	97,853	3,048,519	64,590	4,291,008	64,000	26,432,711	798,238

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Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Cases of salmon packed.									
	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:										
1889.....	4,582	\$25,201					4,418	\$19,881	9,000	\$15,000
1890.....	2,800	14,700					800	3,600	3,600	14,300
1891.....	3,200	16,800					200	900	3,400	17,700
Clatsop:										
1889.....	136,129	811,174	3,238	\$18,467	10,331	\$43,906	4,742	19,468	154,440	693,053
1890.....	170,938	985,041	3,672	20,100	13,168	52,672	5,330	19,655	193,108	1,077,560
1891.....	211,621	1,211,105	2,210	12,151	9,750	39,000	2,024	7,084	225,005	1,299,340
1892.....	180,673	1,079,163	9,534	62,437	20,069	83,870	8,200	28,700	225,376	1,254,119
Cook:										
1889.....	500	2,750					0,560	20,250	7,000	32,000
1890.....	413	2,271					2,208	11,140	2,681	13,429
1891.....	750	3,750					7,350	15,937	4,500	19,687
Curry:										
1889.....	13,360	80,100					7,836	34,802	21,196	115,002
1890.....	16,125	90,289					2,081	12,060	19,166	102,349
1891.....	17,882	100,139					2,078	9,641	19,960	109,759
1892.....	9,733	54,505					2,267	9,034	12,009	64,138
Douglas:										
1889.....	3,870	20,317					7,620	34,335	11,500	54,002
1892.....	1,500	7,500					10,780	43,120	12,280	50,020
Lane:										
1889.....	2,406	13,054					8,783	44,788	11,189	58,742
1890.....	1,530	8,032					2,547	12,353	4,077	20,385
1891.....	710	3,727					1,411	6,878	2,121	10,666
1892.....	1,870	9,817					16,420	73,433	18,290	81,523
Multnomah:										
1889.....	4,613	27,678	5,412	30,020	911	3,843			10,936	61,561
1890.....	19,912	115,489	29,795	163,872	6,440	25,760			56,147	305,121
1891.....	0,868	57,234	5,023	27,026	3,088	12,352			17,079	67,219
1892.....	21,292	123,403	29,169	160,429	13,913	55,652			64,374	339,511
Tillamook:										
1889.....	7,000	31,500					3,000	14,400	10,000	45,900
1890.....	4,250	21,250					12,000	18,000	16,250	69,250
1891.....	4,423	22,115					2,163	8,400	6,525	30,513
1892.....	4,000	20,000					14,500	58,000	18,500	78,000
Wasco:										
1889.....	3,739	22,434	7,329	42,141	450	2,650			11,518	66,023
1890.....	9,691	55,707	19,881	81,070	7,000	28,000			36,575	167,633
1891.....	3,236	17,809	3,620	19,036	2,746	10,884			0,610	47,723
1892.....	8,060	49,904	12,403	65,118	10,521	42,064	4,176	20,880	35,706	177,868
Total:										
1889.....	176,190	1,035,168	15,979	90,628	11,092	49,899	43,590	196,984	247,370	1,372,671
1890.....	222,440	1,275,898	53,351	298,104	26,008	106,432	22,858	92,077	325,203	1,743,111
1891.....	250,955	1,420,100	10,859	58,816	15,584	62,236	10,681	46,752	288,079	1,596,994
1892.....	247,684	1,364,872	51,106	287,984	45,403	181,612	60,293	250,004	394,436	2,065,672

Counties and years.	Quantity of salmon salted.						Barrels salted.					
	Chinook.		Silver.		Total.		Chinook.		Silver.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:												
1889.....			15,000	\$225	15,000	\$225			50	\$400	50	\$400
1891.....			13,200	132	13,200	132			44	352	44	352
1892.....			15,000	175	15,000	175			50	400	50	400
Clatsop:												
1889.....			30,000	600	30,000	600			100	800	100	800
1890.....	240,000	\$6,600	31,500	630	271,500	6,015	800	\$7,200	105	840	905	8,040
1891.....			28,500	285	28,500	285			95	760	95	760
1892.....			30,000	300	30,000	300			102	816	102	816
Curry:												
1889.....	12,000	340	4,500	90	16,500	430	40	360	15	120	55	480
1891.....			16,500	330	16,500	330			55	440	55	440
Lane:												
1889.....			227,400	4,684	227,400	4,684			758	6,064	758	6,064
1890.....	7,860	59	113,400	1,700	121,260	1,750	26	208	378	3,000	404	3,208
1891.....	60,300	452	124,500	1,898	184,800	2,320	201	1,608	415	3,320	617	4,928
1892.....	10,200	127	48,900	654	59,100	781	34	272	163	1,304	167	1,576
Tillamook:												
1889.....			33,000	660	33,000	660			112	896	112	896
1890.....			27,900	418	27,900	418			93	745	93	745
1891.....			31,500	472	31,500	472			105	840	105	840
1892.....			34,500	517	34,500	517			115	920	115	920
Total:												
1889.....	12,000	340	310,500	6,259	322,500	6,599	40	360	1,035	8,280	1,075	8,640
1890.....	247,869	6,659	172,800	2,433	420,669	9,092	826	7,408	576	4,585	1,402	11,993
1891.....	60,300	452	214,200	3,087	274,500	3,539	201	1,608	714	5,712	915	7,326
1892.....	10,200	127	129,000	1,652	139,200	1,779	34	272	430	3,440	464	3,712

Extent of salmon

Counties and years.

Benton:

Clatsop:

Cook:

Curry:

Douglas:

Lane:

Multnomah:

Tillamook:

Wasco:

Total:

1889.....

1890.....

1891.....

1892.....

1889.....

1890.....

1891.....

1892.....

The fishes to be caught species are numerous on the stream is prosecuted described as Rogue River and its fish shows considerable amount on the river

ERIES

392—Continued.

Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Total quantity of fresh salmon utilized.

Total.		Chinook.		Blueback.		Steelhead.		Silver.		Total.	
No.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:											
1889	9,600	320,740	\$3,840					324,260	\$4,864	645,000	\$8,713
1890	3,600	193,000	1,930					68,600	680	252,000	2,620
1891	3,400	224,000	2,600					29,000	355	263,000	2,955
Clatsop:											
1889	154,440	8,806,085	430,614	213,378	\$10,660	681,846	\$20,455	361,940	8,697	10,123,249	470,435
1890	193,108	11,538,416	348,837	242,352	4,817	809,088	8,691	404,390	5,974	13,054,240	168,340
1891	225,605	13,974,042	555,874	145,800	2,917	802,164	10,428	170,180	1,702	15,092,240	570,921
1892	225,376	12,328,418	483,635	629,244	14,160	1,383,954	22,143	604,600	6,046	14,946,210	525,963
Cowlitz:											
1889	7,000	32,500	487					455,000	9,100	487,500	9,587
1890	2,681	29,100	320					158,770	2,381	187,870	2,701
1891	4,500	52,500	830					262,500	4,037	315,000	4,773
Curry:											
1889	21,106	883,757	26,027					513,983	10,280	1,397,740	36,307
1890	19,166	1,048,027	31,441					193,533	3,871	1,241,560	35,312
1891	19,960	1,162,113	34,870					151,587	3,032	1,313,700	37,902
1892	12,000	632,037	17,507					147,323	2,946	779,900	20,453
Douglas:											
1889	11,500	270,900	5,418					534,100	10,682	805,000	16,100
1890	12,280	105,000	1,312					754,600	11,314	859,600	12,626
Lane:											
1889	11,180	168,420	3,368					842,210	21,054	1,010,630	24,422
1890	4,077	114,960	862					201,621	4,375	406,590	5,237
1891	2,121	110,000	825					223,270	3,350	333,270	4,175
1892	18,250	141,100	1,761					1,108,300	17,794	1,339,400	10,557
Multnomah:											
1889	10,000	322,475	12,809	350,860	14,395	62,240	2,409			744,575	29,703
1890	50,147	1,303,815	41,814	2,084,645	62,490	345,350	10,360			3,823,810	114,673
1891	17,970	677,234	20,316	331,855	9,955	216,060	6,482			1,225,149	30,753
1892	64,374	1,314,300	30,400	2,079,855	60,039	960,370	28,911			4,553,525	128,950
Tillamook:											
1889	10,000	490,000	7,840					285,600	5,700	775,600	13,540
1890	10,250	297,500	2,975					867,000	13,018	1,165,400	15,993
1891	6,523	309,610	3,715					178,500	2,677	488,110	6,392
1892	18,500	280,000	3,160					1,049,500	15,742	1,329,500	19,102
Wasco:											
1889	11,518	261,732	8,179	488,032	14,641	31,500	631			781,264	23,451
1890	30,575	670,871	20,126	1,301,880	41,756	490,000	9,318			2,552,751	71,200
1891	9,610	226,660	6,800	253,820	7,615	192,220	4,324			672,700	18,730
1892	35,766	549,120	443	708,210	23,045	704,195	13,536	374,185	7,484	2,995,710	60,508
Total:											
1889	247,379	11,616,600	43,681	1,061,270	39,705	775,586	23,585	3,317,093	70,377	16,770,558	632,348
1890	325,263	15,063,508	440,655	3,718,877	109,102	1,704,438	28,369	1,757,444	27,238	22,244,357	316,704
1891	288,079	10,681,759	624,650	731,535	20,487	1,210,444	21,234	951,307	13,832	19,575,045	680,203
1892	394,486	15,626,075	500,850	3,477,309	97,853	3,048,519	64,590	4,420,008	65,718	20,571,911	795,017

salted.

Total.		er.	
No.	Value.	No.	Value.
400	50	400	50
800	100	800	100
840	905	840	905
700	95	700	95
810	102	810	102
120	55	120	55
440	55	440	55
6,064	758	6,064	758
3,000	494	3,000	494
3,320	616	3,320	616
1,304	197	1,304	197
806	112	806	112
745	93	745	93
810	105	810	105
920	115	920	115
3,280	1,075	3,280	1,075
4,585	1,402	4,585	1,402
5,712	915	5,712	915
3,440	464	3,440	464

CURRY COUNTY.

The fisheries of this, the most southern county of the State, continue to be confined to the taking of salmon, although other anadromous species are, in their season, found entering some of the rivers, while numerous other fish are found in the ocean just outside the mouths of the streams. The five rivers of the county in which commercial fishing is prosecuted (Rogue, Windchuck, Chetco, Sikhs, and Elk) have been described in a former report. The Sikhs and Elk are of little importance as fishing streams except to the ranchers living near them.

Rogue River.—This, next to the Columbia, is the largest and longest coast river in Oregon. It has spring and fall runs of chinook salmon, and its fisheries continue of great importance. The catch of salmon shows considerable fluctuation, which is, in a measure, dependent on the amount of artificial propagation carried on at the private hatchery on the river. The marked decrease in the yield in 1892 was thought

to be due to some unknown natural causes. The catch represents about the productive capacity of the river and, as it is all used for canning, a statement of the salmon pack will show the abundance of the fish. The number of canned salmon prepared on the river in each of the ten years ending in 1892 was as follows:

Years.	Cases.	Years.	Cases.
1883.....	16,156	1888.....	21,082
1884.....	12,576	1889.....	20,586
1885.....	9,310	1890.....	19,194
1886.....	12,147	1891.....	19,900
1887.....	17,216	1892.....	12,000

Salmon fishing on the Rogue River is limited by State law; the open season is from April 1 to November 15. By far the largest part of the catch is made during what is known as the spring run, between April 1 and June 30. The summer catch is taken between July 1 and August 30, and the fall catch represents the remainder of the open season.

Winchuck River.—A few salmon run up this small stream in spring, but the supply is too limited to warrant special operations, and the only fishing is done in September and October, when the regular run is in progress. Two haul seines are here used, and the catch is salted or sold fresh. The catch in the four years ending 1892 was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	Pounds.	Pounds.
1889.....	16,000	16,000	16,000
1890.....	10,000	85,000	95,000
1891.....	10,000	75,000	85,000
1892.....	30,000	30,000	30,000

The fish sold fresh were sent to a salmon cannery on Smith River, California. In 1889 and 1892, when that cannery was idle, the catch was much reduced and had to be salted owing to lack of a market and absence of facilities for shipping. The few fishermen living on this small but beautiful stream take much interest in the fisheries, and in their primitive way have made some attempts at propagating salmon.

Chetko River.—This small stream has its mouth near the State line of California and Oregon. Twelve fishermen, using two haul seines, represent the full extent of the fisheries. In September chinook salmon are taken, and in October the run consists mostly of silver salmon. When the cannery on Smith River is open, most of the catch finds a market there, otherwise it must be salted. The quantity of the catch in 1889 to 1892, inclusive, was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	Pounds.	Pounds.
1889.....	73,000	33,000	106,000
1890.....	10,000	108,000	118,000
1891.....	30,000	93,000	123,000
1892.....	50,000	50,000	50,000

Sikhs River.
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Fresh.	Total.
Pounds.	Pounds.
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75,000	95,000
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Fresh.	Total.
Pounds.	Pounds.
33,000	103,000
108,000	118,000
93,000	123,000
	56,000

Sikhs River.—This river is of some importance to the ranchers living near by, who depend on it for their supply of fish food, and some years a small quantity of fish is salted for market. In 1888, 20,000 pounds of fresh salmon were sold to a cannery on Coquille River, and in 1889 20,000 pounds to a cannery on Elk River. In 1891-92 no fish were taken except those consumed locally by ranchers. The output of this stream in recent years has been as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	Pounds.	Pounds.
1887	45,000		45,000
1888	12,000	20,000	32,000
1889	20,000	60,000	80,000
1890	30,000		30,000

Elk River.—For a short time each year this stream is fished by a few ranchers living near its mouth. The river has only a small run of salmon, and is so inconveniently situated that its fisheries will probably never have very much importance. In recent years the catch of the ranchers has amounted to only about 50 barrels of salt fish. In 1889 a cannery was established in connection with a steam sawmill at the mouth of the river. Some 900 cases of salmon were canned, but the business proved unsatisfactory and was not resumed. The output of the Elk River since 1887 has been as follows:

Years.	Salted.	Fresh.	Canned.	Total.
	Pounds.	Pounds.	Pounds.	Pounds.
1887	45,000			45,000
1888	12,000	20,000		32,000
1889	15,000	20,000	58,500	93,500
1890	15,000			15,000
1891	15,000			15,000

Sea-otter hunting.—In 1891 the high price of sea-otter pelts led to the formation of two bands of hunters in Curry County. Twelve men, armed with rifles and using two sail and three row boats, skirted the coast from Cape Blanco to Rogue River, weather permitting, during March and April and August and September. At night the men camp at some desirable point. Some of their camping stations are located near high bluffs that have a fringe of timber along the ridge overlooking the sea. Such a spot near the feeding-grounds of the otter is a favorite place for a camp, for in the branches of some tall pine the hunter has his lookout station. A few boughs are chopped off and made into a comfortable resting-place up among the branches, and here one of the hunters will lie for hours, concealed by the thick foliage from view of shore or sea animal. His lofty location gives him an uninterrupted sea view for miles. His boat is close at hand. In case an otter shows up within range of a rifle, it is shot, and the hunter or

one of his companions in hiding is quickly in the boat and going for the game. While some of the men are thus engaged, others may be miles away sailing along the coast with a sharp lookout for otters.

The number of otters killed is small, but they are of large size and have very fine fur, the pelts bringing from \$150 to \$200 each, and in some cases much more. During 1891, 20 otters were secured, and in one week in September, 1892, when the writer visited one of these unique tree-top stations, 8 otters were killed, the total catch for the year being 13, valued at \$133 each. In 1893 the number taken was 17, having an average value of \$157.

COOS COUNTY.

When contrasted with the last investigation, the fisheries of this county present few new features. Coquille River and Coos River and Bay are the fishing-grounds. The only catch of the rivers is salmon. A little more attention is given to the bay fisheries near Bandon and Empire City, where some halibut, perch, and cultus-cod are taken; these fish, with flounders and other varieties of salt-water fish, are found abundantly, but the demand is limited to local use and only small quantities are taken.

Coquille River.—Owing to a number of causes the fisheries of the Coquille have not been up to the average during the past few years. Only one cannery was packing during 1889, 1891, and 1892, and none during 1890. The run of fish was good in 1889, and the single cannery in operation packed 9,115 cases, of which one-sixth were chinook and five-sixths silver salmon; 50 barrels were also salted. The fishermen received 50 cents each for chinook and 30 cents each for silver salmon. Prices of canned salmon were low during the fall and winter, and gave little encouragement to canners; in consequence, during 1890, for the first season in a number of years, no salmon were canned on the river. A light catch was made and 200 barrels were salted. In 1891 the one cannery once more packed, but the run was light and only 2,684 cases were canned and 150 barrels salted, the fishermen receiving 25 cents each for chinook and 15 cents for silver salmon. In 1892 salmon were very abundant, more so than for a number of years. The run of the previous year having been so light, a large run was not expected and preparations had only been made for a small pack. The result of the year's work was 4,500 cases. On account of a scarcity of cans the surplus catch was salted, and 650 barrels were thus prepared. The fishermen received 35 cents each for chinook and 20 cents for silver salmon, the catch consisting of one-eighth chinook and seven-eighths silver salmon. A few fishermen of Bandon, near the mouth of the river, fished outside with hook and line, their catch in 1892 being 10,250 pounds of halibut, 9,112 pounds of cultus-cod, and 36,010 pounds of rockfish.

Coos River and Bay.—The one salmon cannery at Empire City being idle in 1890, 1891, and 1892, the fisheries were not given so much attention as in past years. The salmon catch had to be salted, and

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amounted to 900, 800, and 1,400 barrels, respectively, in the years named. A few fishermen fished outside the bay for salt-water fish that they disposed of locally, their catch being 17,000 pounds of cultus-cod, 7,000 pounds of halibut, and 48,000 pounds of rockfish, all taken with hand lines. In addition to the above, the fisheries of Coos Bay and River produced 50,000 pounds of salmon that were sold fresh for local use or shipped to San Francisco.

DOUGLAS COUNTY (UMPQUAH RIVER).

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The fishing business of Douglas County is confined to the Umpquah River, and the catch consists only of salmon. Numerous other fish, however, come in from the ocean, among which are herring, sardines, smelt, and just outside the mouth of the river are halibut, cultus-cod, flounders, and rockfish. The section is remote from railroad or steamboat lines, and no attention is given to any fish except salmon, the catch of which is utilized at a cannery at Gardner. In 1889 a good run of salmon entered the Umpquah River. The fishermen disposed of their entire catch at the cannery at Gardner, near the mouth of the river, receiving 45 cents each for chinook salmon and 25 cents each for silver salmon. The cannery packed 11,500 cases. From some unknown cause very few salmon entered the river in 1890 or 1891, during which years the cannery remained closed. Only enough fish to supply the local demand were taken, the catch being 20,000 pounds in 1890 and 22,000 pounds in 1891. During 1892 salmon entered the river in great abundance, and the run in September was very heavy. The pack was only limited by the number of cans on hand and could have been doubled with proper facilities. As it was, 12,280 cases were packed. The fishermen received 25 cents each for chinook and 15 cents each for silver salmon, the latter constituting the bulk of the catch. No salmon was salted during the years mentioned.

LANE COUNTY (SIUSLAW RIVER).

The fisheries of Lane County are confined to the Siuslaw River and the catch consists only of salmon for canning purposes. This river is the dividing line between Lane and Douglas counties. One cannery, located at Florence, near the mouth of the river, was in operation in 1889, 1890, 1891, and 1892; one other cannery, 2 miles above, was idle during the first three years mentioned, but was run in 1892. The salmon pack during these years was 11,189 cases in 1889; 4,077 cases in 1890; 2,121 cases in 1891, and 18,290 cases in 1892.

It will be noticed by the amount packed that the run of fish is uncertain. In common with the other rivers of this State, salmon were very abundant during the fall of 1889, but only a few entered the stream in 1890 and 1891. In the fall of 1892 the run was again heavy and the fish were of good size and quality. The catch in 1892 amounted to 6,018 chinook salmon and 103,410 silver salmon, the average gross

weight of the former being 20 pounds, and of the latter 103 pounds. In addition to the quantity canned in 1892, 34 barrels of chinook and 163 barrels of silver salmon were salted. The salmon are mostly caught with gill nets, only one haul seine being used. The fishermen comprise various nationalities, one-third of them being native-born, one-half Europeans, and twelve Indians. The cannery employees are Chinese, with the exception of a few Indian women.

This stream has no spring run of salmon. The first fish to enter the river are the chinooks, which arrive about the middle of July; most of the run of this species is in the river by the middle of September, a few also being found up to October 1. Silver salmon first enter the river about the time the run of the chinooks is dropping off, or from the first to the middle of September. In 1892 the first silver salmon were taken September 16. A good run at that time was followed the first week in October by a very large body of fish. When the river was visited by the writer on October 5 silver salmon were very abundant.

Large and small sardines are very abundant between June and September, and other varieties of good food-fish are found in the river at certain seasons, and at all times just outside of the river. From its isolated location, with indirect transportation facilities, no attention is paid to any branch of the fisheries except the salmon.

BENTON COUNTY.

This comparatively small county has two rivers whose fisheries are of considerable prominence, namely, the Alseya and the Yaquina. Each of these near its mouth expands into a long, narrow bay, which takes the name of its respective river. Outside the rivers the fisheries are of no importance, although there is an abundance of salt-water fish on the outlying banks in the near vicinity.

Alseya River.—The run of salmon on this stream was quite large in 1889, and 9,000 cases and 50 barrels were packed at the only cannery in operation. Prices of canned salmon ruled low, and on that account and the poor prospects for satisfactory results the cannery was idle during the following year. Fish were scarce in 1890; the cannery was closed, and besides a few salmon taken for local use only 50 barrels were salted and 6,000 pounds shipped fresh to Portland. In 1891 the fish were not abundant, and only 3,500 cases were canned, 50 barrels salted, and 16,000 pounds shipped away fresh. In 1892 a very large run of salmon entered the river for the first time in three years. The cannery, not looking for the great increase, were prepared for only a light catch, and were obliged to close down early in the season as soon as all the cans had been filled. At the time the river was visited by the writer, on October 8, 1892, it was full of salmon, but no fishing was carried on. With only a limited number of cans to fill and a large run of fish to draw from, the fish packed consisted almost entirely of chinooks, although, as in the other coast rivers, silver salmon comprised fully three-fourths of the run.

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Yaquina River.—Since the closing of the small canneries located on this stream in 1889 the fishing business has greatly decreased. A few barrels of salmon are annually packed for their own use by the ranchers living near by, and about 100,000 pounds are shipped fresh to Portland, Salem, and Albany. In the fall of 1892 one man from Oakland, Cal., was engaged in salting salmon. At the time the river was visited by the writer a few hundred barrels had been salted. The fish are mostly silver salmon, averaging 12 pounds each. The fishermen receive only 8 cents apiece for them.

The shipments of fresh salmon from the Yaquina River to Portland and other places in Oregon are quite large, and during the years 1889-1892 were as follows:

Years.	Pounds.	Value.
1889.....	208,137	\$4,163
1890.....	113,060	2,361
1891.....	102,742	2,055
1892.....	125,000	2,500

The Yaquina is noticeable as being the only river on the Pacific Coast in which any considerable quantities of oysters are found. The oysters are natives, having the small size and peculiar flavor of those taken in Willapa Bay and Puget Sound. The quantity of oysters marketed, prices received, and persons employed in the business, etc., show few changes since the last inquiry, although the oystermen report that at present they can not tong and cull more than 2 or 3 bushels a day as against 5 or 6 bushels in past years. By State law the native oyster beds are apportioned out to citizens desiring to work them. No one is permitted to have over 2 acres. The aggregate acreage is small and the available land is all taken up. Oysters are tonged in water 12 to 15 feet deep at low tide. The tongs have handles 15 to 18 feet long, some being 26 feet long.

The price commanded by the oysters remains about the same from year to year, \$2.50 a sack when shipped away, or \$3 a sack for local use being the ruling prices. A sack weighs 105 pounds, and is known as 2 unshels, but is somewhat short of that amount.

The oyster output of the Yaquina River from 1889 to 1892, inclusive, was as follows:

Years.	Sacks.	Value.
1889.....	1,250	\$3,125
1890.....	1,103	2,758
1891.....	1,217	3,043
1892.....	1,225	3,062

Crabs enter the river in considerable quantities. They are picked from the salmon nets and are gathered by the oystermen. The catch, which is small, is mostly shipped to Albany, Salem, and Portland.

The yearly shipments have been as follows:

Years.	Pounds.	Value.
1889.....	6,028	\$25
1890.....	4,200	108
1891.....	3,521	111
1892.....	4,125	165

TILLAMOOK COUNTY.

This county has a frontage of over 50 miles on the Pacific Ocean and is traversed by a number of rivers, chief among which are the Siletz, Nestuggah, Tillamook, and Nehalem, the latter forming the boundary between Tillamook and Clatsop counties. The Nestuggah and Tillamook rivers empty into bays of the same name. The fisheries of the county are restricted to the capture of salmon, which enter the rivers in large quantities during the fall months. The relative abundance of chinook salmon in the streams of this county is greater than farther south. Some seasons the catch of chinooks will be fully equal in weight to that of silver salmon; at other times, as in the year 1892, the catch is often three-fourths silver salmon. Both fish run in greatest abundance about the same time, although the chinooks are the first to arrive, during August, while the silver salmon come in September. The movement of both species is over in November, when the fishing operations cease. A few fish continue to enter the river in the winter, in company with very large numbers of steelheads, but no attention is paid to them.

The entire salmon catch of Tillamook River is utilized at a cannery located near the mouth of that stream. The number of cases packed during each of the four years 1889 to 1892 were as follows:

Species.	1889.	1890.	1891.	1892
	Cases.	Cases.	Cases.	Cases.
Chinook salmon	7,000	4,250	4,423	4,000
Silver salmon	3,600	12,000	2,100	14,500
Total	10,600	16,250	6,523	18,500

The Siletz River flows through an Indian reservation and the entire catch is obtained by Indians, who cure the fish for winter use. The annual quantity of salmon thus prepared is about 60,000 pounds.

CLATSOP COUNTY (NEHALEM RIVER).

The fisheries of the ocean side of this county are carried on only in the Nehalem River. Those in the Columbia River will be included in the general remarks on that river which follow. The Nehalem is a small stream rising in the Coast Range, in Clatsop County, and flowing southwesterly to the Pacific, which it enters at the southern end of the county, whose boundary it forms. Its fisheries, which are of some importance, are carried on in the fall, when there is a run of chinook and silver salmon in the river. With the exception of a few salmon

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Pounds.	Value.
6,628	\$25
4,200	108
3,521	141
4,125	165

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salted, the entire catch is utilized at the cannery located on the river. Fishing is done by 44 Indian, Russian, and Austrian fishermen, using gill nets. The chinooks taken average about 20 pounds in weight, being somewhat lighter than those of the Columbia; the silver salmon average 10 pounds. The abundance of salmon varies a great deal from year to year; in 1891 the fish were very scarce, while in 1892 the run of silver salmon was phenomenally large; chinooks were less numerous in 1891 and 1892 than during the two preceding years. The catch of each kind of salmon during the four years named was as follows, the figures representing the number of fish taken:

Years.	Chinook salmon.	Silver salmon.	Total.
1889	13,093	29,194	42,287
1890	14,445	33,430	47,884
1891	6,174	17,108	23,342
1892	7,000	57,400	64,400

The quantity and value of the salmon packed and salted in the same years are given in the following table:

Years.	Salmon canned.						Salmon salted.		Total value.
	Chinook.		Silver.		Total.		Barrels.	Value.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.			
1883.....	3,740	\$16,830	3,742	\$14,968	7,482	\$31,798	100	\$800	\$32,598
1884.....	4,127	17,539	4,327	15,144	8,454	32,683	105	840	33,523
1885.....	1,764	7,056	2,024	7,084	3,788	14,140	100	800	14,940
1886.....	2,000	9,030	8,200	32,800	10,200	41,800	102	816	42,616

THE COLUMBIA RIVER.

1891. 1892
Cases. Cases.
4,423 4,000
2,100 14,500
6,523 18,500

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The fisheries of this river are more extensive than those of any other stream in the United States, and the canning industry dependent thereon is more important than any other similar business connected with the fisheries. The annual output of fish in the Columbia River is greater than from any other river in the country, and no other stream as in the aggregate yielded such large quantities of fish.

The importance of the fishing industry of this river and the increased attention now being given to its condition warrant and make desirable the consideration of the stream as a unit, regardless of the separate interests of the two States whose boundary it forms and whose fisheries are given in detail, by counties, in the tables elsewhere presented.

Reference is seldom made to the fisheries of Washington and Oregon which the Columbia is not mentioned, although the fishing industry comprises but one of the many branches of commerce connected with this important stream. In the previous report of this Commission on the fisheries of the west coast, the history and methods of the fisheries of the Columbia were discussed at considerable length. It only remains this time to record such changes as have taken place in the industry during the past three or four years. In the investigation on which this

report is based it was feasible to visit only that part of the Columbia basin within the States of Washington and Oregon. For hundreds of miles east and northeast of that section, however, salmon and other fish in more or less abundance are found, the catch being mostly utilized by ranchers and Indians living near the stream.

The following counties of Washington and Oregon, bordering on the Columbia River and its tributaries, maintain commercial fisheries, the full extent of which is exhibited in the tables elsewhere presented:

Oregon: Clatsop, Columbia, Multnomah, and Wasco counties.

Washington: Pacific, Wahkiakum, Cowlitz, Clarke, Skamania, and Klickitat counties.

Clatsop and Pacific counties, which are at the mouth of Columbia River, have fishing interests on their ocean sides as well as in the river.

Through the courtesy of the numerous firms engaged in the fishing business of the river, the agent was able to obtain from their well-kept records detailed statistics showing the results of the fishery and canning industry of the river in a more comprehensive, useful, and reliable form than have heretofore been obtained.

THE SALMON INDUSTRY.

This branch of the fisheries completely overshadows all others, and is the only one entitled to mention with the exception of the sturgeon fishery, which is of recent development.

In the early years of the salmon-packing business on the Columbia chinook salmon were extremely abundant, comprising the bulk of the run and all of the pack; other varieties were unutilized. With the beginning of a decrease in the abundance of chinook salmon the small blueback salmon was brought more into notice. When the run of chinooks began to fail some of the packers made cautious experimental packs of small quantities of bluebacks to help out their annual pack, although few were willing to concede the advisability of utilizing any fish except chinooks. The bright red color and fine flavor of the bluebacks at once gave the fish a firm hold on the trade and resulted in an active demand, which has continued to the present time. Singular as it may seem, the utilization of the bluebacks and the increasing quantities consumed annually have been attended by an apparent increase in the abundance of the fish.

The accompanying figures will show that while the blueback is found in the Columbia River every year it has of late had its years of abundance and scarcity, thus resembling in its migrations the humpback salmon of Puget Sound. For the past six or eight seasons the even years have witnessed the larger run of bluebacks. Up to a comparatively recent date the steelhead, which has always occurred abundantly in the Columbia, was considered wholly unsuitable for packing. The same cause, however, which brought the blueback into use has led to the utilization of the steelhead. Recently the demand for canned

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salmon in certain sections of the country has called for a cheaper grade of fish, which has brought the neglected steelhead into prominence. The silver salmon, which does not enter the river until most of the canneries are closed, has also been canned in some quantities, and both it and the steelhead have met with a ready sale that has yearly shown tendencies to greatly increase.

Fishermen, prices, etc.—Under the laws of Oregon and Washington all fishermen must be naturalized citizens of the United States. Reference to the previous report on the fisheries of this river will show that in 1888 a very large proportion of the fishermen, especially those employed in the gill-net fishery, were aliens. The law is said to be very fully complied with, and the men now profess to be citizens and voters. They represent many nationalities.

The gill-net fishermen belong chiefly to the Latin races. They are united under the name of the Columbia River Fishermen's Protective Union, with headquarters at Astoria, Oreg. The pound-net fishermen are mostly native-born Americans or Scandinavians. These have combined for mutual protection under the name of the Washington Fishermen's Association, with headquarters at Ilwaco, Pacific County, Wash., near which place most of the pound nets employed in the Columbia River are located. These two associations are to some extent antagonistic. Each legislature usually finds representatives from both associations advocating their claims and portraying their supposed grievances. The object of the association of pound-net fishermen is said to be:

To promote and foster the fishing industry of the State of Washington; to assist in building and maintaining fish-hatcheries; to induce legislation, by petition or other lawful means, to protect the industry and those engaged in it; to extend to its members aid and assistance, pecuniary or otherwise, when necessary.

By an agreement between the canners and fishermen, the price to be paid for the catch during the ensuing year is usually agreed upon before the beginning of fishing operations. The failure to agree on a price in 1890 resulted in a strike that was disastrous to the fishermen. For several years prior to 1890 the men had been receiving \$1 each for chinook salmon, which comprised nearly all of the gill-net catch. The men demanded \$1.25 each for their fish, which, being refused, a general strike was begun which lasted throughout the month of April. After losing one month of the short salmon season, the men agreed to the price first offered, but refused to contract at that price for the entire season. One dollar per fish was paid up to June 1, after which the canners would give only 75 cents for chinooks. The most serious outcome of the strike was the attempt of the association fishermen to destroy the nets of a few non-union men. A large body of fishermen belonging to the gill-net association embarked in their boats at Astoria and proceeded several miles up the river, where the nets of the non-union men were set. On beginning their work of destruction, they were met with a volley of rifle balls from the fishermen on the shore,

and the attacking party hastily withdrew to Astoria, leaving several of their number killed and wounded. No further attempt was made to interfere with the non-union fishermen.

The fishing apparatus and methods.—The various appliances employed in the Columbia River for the catching of fish and the manner of operating the same present few changes as compared with the previous investigation. No new method of capture has been devised, although there has been a very marked increase in the number of traps, wheels, nets, etc., operated.

Gill-net fishing is by far the most important branch of the salmon fishery of the Columbia River. More money is invested in the fishery than in any other, and larger quantities of fish are thus taken than by any other means. The number of men interested also outnumbers those employed in all other branches of the salmon fishery. The fishing-grounds covered by the fleet of gill-net boats are mostly near Astoria, extending about 10 miles above that place, and the same distance below. Several hundred boats cruise upstream and as many more descend the river.

The boats are mostly owned by the salmon-packers, but the nets are made and owned by the fishermen. Before the opening of the fishing season the men contract with the cannery, who have supplied their boats, for the entire catch during the year. Fishing is done more or less during the entire twenty-four hours. The best hauls, however, are usually made at night, at which time the fish are less able to see and avoid the drifting net.

The boats drift up and down stream with the tide. If the morning finds a fisherman near the cannery at which he has contracted to deliver his catch, he lands his fish there; if he has drifted to the mouth of the river, his fish are delivered on board a receiving scow of the cannery with which he is connected, an agent on board receipting for the fish, which later in the day are collected by a steam tug and taken to the cannery. The work of the night being over and the fish delivered the fisherman prepares his breakfast and rests during the time intervening between the tides. His boat is sailed to a quiet spot out of the channel, the anchor is dropped, the sail taken in, and his simple meal cooked over a small oil stove. The rudder is then unshipped and stuck up on deck at the stern, the mast is taken down, the sail removed, and the mast is placed lengthwise the boat, one end resting in the bow, the other end on the top of the unshipped rudder, forming a ridgepole for the extemporized tent formed by the sail. Often several hundred boats may be found within a small area, each containing the sleeping fisherman and his assistant.

While chinook salmon constitute the great bulk of the gill-net catch, the quantity of other fish thus taken is considerable and is increasing yearly. With the demand for cheaper grades of salmon the size of the mesh of the gill nets has been reduced.

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Seines are used at Sand Island, near the mouth of the river, and on the sand bars to a distance of 15 to 30 miles above the ocean. These bars as a rule are dry at low tide, at which time the seines are hauled. Up to a comparatively recent time the bars in the Columbia River were owned by the State and their fishing privileges were free. As they became valuable for seine fishing, and had no other use, private parties had them surveyed and bought them from the State at a low price. A title deed having been secured, the value of these bars at once increased from a few dollars to many thousands. The desirable seining-grounds are limited and have fallen into the hands of a few persons, which fact accounts for the relatively small number of seines used, and this form of apparatus is the only one which does not show an increase in recent years.

Fish-wheels are the most interesting form of apparatus used in the Columbia River. Their origin is comparatively recent, and the construction and method of operation are entirely different from any other appliances used for the capture of fish. Owing to their supposed very destructive powers they have been the subject of much antagonism on the part of the general public and the fishermen using other forms of apparatus. Since the first introduction of fish-wheels their number and use have steadily grown, and in 1892 more were employed than at any previous time. As compared with the number of gill nets and pound nets used the number of wheels is very small and has probably nearly reached its limit, as their use is confined to a few desirable places bordering the rapids of the Columbia River at the Cascades and The Dalles, and the favorable sites have passed into the hands of a few persons.

Pound nets are extensively employed in the lower Columbia, the largest number being set in Baker Bay near the mouth of the river. The nets are usually owned by the canners. Between 1889 and 1892 the increase in the number of these nets on the Columbia was 133 per cent. The pound net has almost completely superseded the old wooden trap that dates back to the early days of the salmon business, and has now almost passed out of existence.

The other minor forms of apparatus employed on the river, namely, dip nets, squaw nets, etc., which are mostly used by Indians, present no marked changes in numbers or in methods of use. The Indians continue to take large quantities of fish in this way for their own use and for sale.

Complete tables are elsewhere given showing the number and value of each different kind of apparatus employed in each county on this river and also showing the quantity and value of each kind of fish taken therein. Some general tables follow showing for the Columbia basin as a whole the quantities of apparatus used and the catch in each. The following table has been prepared to show the increase in the number of pound nets, haul seines, fish-wheels, and gill nets owned or used on the Washington and Oregon sides of the river respectively in 1889 to 1892, inclusive.

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Apparatus employed on the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus.	Years.	Oregon.	Wash- ington.	Total.	Apparatus.	Years.	Oregon.	Wash- ington.	Total.
		No.	No.	No.			No.	No.	No.
Pound nets.....	1889	102	62	164	Fish-wheels.....	1889	31	9	40
	1890	98	70	168		1890	29	12	41
	1891	140	96	236		1891	30	14	44
	1892	247	131	378		1892	40	17	57
Haul seines.....	1889	7	33	40	Gill nets.....	1889	757	436	1,193
	1890	6	20	25		1890	760	432	1,192
	1891	19	30	49		1891	790	472	1,262
	1892	12	20	38		1892	861	453	1,314

General statistics of the industry.—In the following tables the extent of the salmon fishery and salmon-canning industry of the Columbia basin for the years 1889 to 1892, inclusive, are given:

Number of persons engaged in the salmon industry of Columbia River from 1889 to 1892.

How engaged	Oregon.				Washington.				Total.			
	1889.	1890.	1891.	1892.	1889.	1890.	1891.	1892.	1889.	1890.	1891.	1892.
Fishermen.....	1,806	1,648	1,929	2,064	1,535	1,510	1,575	1,677	3,141	8,194	3,504	3,741
Shoremen and cannery employees.....	870	1,028	1,057	1,100	564	602	654	704	1,464	1,630	1,711	1,804
Total.....	2,476	2,712	2,986	3,164	2,129	2,112	2,229	2,381	4,605	4,824	5,215	5,545

Number and value of boats and apparatus and the value of shore property and cash capital employed in the salmon industry of the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus and capital.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Oregon:								
Boats.....	751	\$99,850	776	\$104,400	876	\$120,815	988	\$131,500
Pile-drivers and scows.....	21	5,900	23	6,300	30	8,300	29	7,400
Pound nets.....	102	72,300	98	76,500	140	98,900	247	173,400
Trap nets.....	2	1,600	.....	.....	2	1,600	2	1,600
S seines.....	7	4,800	6	2,700	19	11,150	12	5,400
Gill nets.....	757	152,000	760	159,450	790	181,265	861	192,000
Wheels.....	31	120,052	29	107,552	30	108,152	40	130,000
Dip nets and squaw nets.....	95	475	85	425	60	300	50	250
Shore property.....	.....	502,955	.....	486,355	.....	455,205	.....	507,000
Cash capital.....	.....	395,000	.....	581,000	.....	520,000	.....	614,000
Total.....	.....	1,354,932	.....	1,524,682	.....	1,505,687	.....	1,761,000
Washington:								
Boats.....	475	60,340	468	59,780	534	67,280	538	64,000
Pile-drivers and scows.....	39	9,050	37	9,050	42	10,750	45	13,500
Pound nets.....	62	48,200	70	55,200	98	77,000	131	103,400
Trap nets.....	2	1,400	2	1,400	2	1,400	1	700
S seines.....	23	18,700	20	16,400	30	16,900	26	16,400
Gill nets.....	436	88,775	432	89,480	472	101,780	453	90,000
Wheels.....	9	25,000	12	48,500	14	45,000	17	49,000
Dip nets and squaw nets.....	15	75	18	60	23	115	25	125
Shore property.....	.....	245,950	.....	247,280	.....	321,050	.....	282,000
Cash capital.....	.....	304,000	.....	331,000	.....	332,000	.....	330,000
Total.....	.....	801,490	.....	850,080	.....	973,275	.....	952,700
Total for river:								
Boats.....	1,226	160,190	1,244	164,180	1,410	188,095	1,526	195,500
Pile-drivers and scows.....	60	14,950	60	16,250	72	19,050	74	20,900
Pound nets.....	164	120,500	168	131,700	238	175,900	378	276,800
Trap nets.....	4	8,000	2	1,400	4	3,000	3	2,300
S seines.....	40	23,500	35	19,100	49	28,050	38	15,000
Gill nets.....	1,193	240,775	1,192	248,930	1,262	283,045	1,314	288,000
Wheels.....	40	145,052	41	156,052	44	153,152	57	181,000
Dip nets and squaw nets.....	110	550	103	515	83	415	75	375
Shore property.....	.....	748,905	.....	733,635	.....	776,255	.....	790,000
Cash capital.....	.....	699,000	.....	912,000	.....	852,000	.....	944,000
Total.....	.....	2,156,422	.....	2,363,762	.....	2,478,962	.....	2,717,000

Table showing

Apparatus and species.

1889.
Pound nets:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Imp nets:
Chinook.....
Steelhead.....
Total.....

Sines:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Wheels:
Chinook.....
Blueback.....
Steelhead.....
Silver.....
Total.....

Dip nets and squaw nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....
Total.....

Apparatus:
Chinook.....
Blueback.....
Steelhead.....
Silver.....
Total.....

1890.
Pound nets:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Trap nets:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Sines:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Total.....

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892.

Wash- ington.			Oregon.			Washington.			Total.		
No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1889.											
Found nets:											
Chinook.....	86,777	2,169,425	\$108,460	40,323	1,008,075	\$50,853	127,100	3,177,500	\$158,822		
Blueback.....	33,372	166,890	8,342	24,199	120,995	5,904	57,571	287,855	14,246		
Steelhead.....	37,958	379,545	11,286	22,460	224,600	6,737	60,418	604,145	18,123		
Total.....	158,107	2,715,830	128,197	80,982	1,353,670	62,994	245,089	4,069,500	191,191		
Trap nets:											
Chinook.....	710	17,750	887	2,275	56,875	2,844	2,985	74,825	3,731		
Steelhead.....	440	4,400	132	803	8,030	241	1,243	12,430	373		
Total.....	1,150	22,150	1,019	3,078	64,905	3,085	4,228	87,055	4,104		
Sines:											
Chinook.....	24,752	618,800	30,940	63,782	1,504,550	79,727	88,534	2,213,350	110,607		
Blueback.....	3,500	17,500	875	2,444	12,225	911	5,944	29,725	1,480		
Steelhead.....	10,720	167,200	4,816	43,978	439,780	13,193	60,698	606,980	18,009		
Total.....	44,972	803,500	36,631	110,204	2,046,555	93,591	155,178	2,850,055	130,102		
Gull nets:											
Chinook.....	252,044	6,301,325	312,593	228,053	5,759,050	281,470	478,007	12,060,375	504,093		
Blueback.....	27,623	130,115	4,751	17,218	86,090	3,044	44,841	225,205	7,795		
Steelhead.....	10,472	164,720	5,000	15,970	159,700	4,785	32,442	324,420	9,875		
Total.....	290,139	6,605,160	322,404	250,241	6,004,840	280,209	555,380	12,810,000	611,703		
Wheels:											
Chinook.....	15,182	379,550	12,867	6,876	171,900	6,978	22,058	551,450	19,845		
Blueback.....	140,090	700,450	23,090	51,064	230,322	9,260	191,154	930,772	32,350		
Steelhead.....	8,329	63,290	2,043	1,480	14,800	484	7,809	78,090	2,527		
Silver.....	4,500	31,500	630	2,540	16,780	503	7,040	48,260	1,133		
Total.....	166,101	1,174,790	38,630	61,960	433,802	17,225	228,061	1,608,592	55,855		
Dip nets and squaw nets:											
Chinook.....	2,291	57,283	1,148	1,360	34,000	510	3,651	91,283	1,656		
Blueback.....	10,910	84,550	1,841	8,112	40,560	808	25,022	125,110	2,449		
Steelhead.....	1,145	11,450	229	509	5,090	77	1,654	16,540	300		
Silver.....	5,142	35,994	540	3,175	22,225	333	8,317	58,219	873		
Total.....	25,488	189,277	3,756	13,156	101,875	1,528	38,644	201,152	5,284		
Apparatus:											
Chinook.....	381,756	9,544,133	468,872	340,669	8,624,450	421,882	722,425	18,168,583	888,754		
Blueback.....	221,495	1,108,475	38,899	103,037	490,192	19,427	324,532	1,598,667	58,328		
Steelhead.....	79,064	790,805	23,606	85,200	852,000	25,517	104,264	1,042,603	49,213		
Silver.....	9,642	67,494	1,170	5,715	39,065	830	15,357	106,499	2,000		
Total.....	691,957	11,510,707	530,637	534,621	10,005,647	467,682	1,226,578	21,510,354	998,299		
1890.											
Found nets:											
Chinook.....	104,099	2,602,475	78,491	71,348	1,783,659	53,510	175,445	4,380,125	132,001		
Blueback.....	50,493	252,463	5,048	42,097	210,485	4,200	92,590	462,950	9,257		
Steelhead.....	51,600	516,000	5,160	41,412	414,120	4,140	93,012	930,120	9,300		
Total.....	206,192	3,370,940	88,699	154,855	2,408,255	61,850	361,047	5,779,105	150,558		
Trap nets:											
Chinook.....				3,629	90,725	2,721	3,629	90,725	2,721		
Blueback.....				303	1,515	30	303	1,515	30		
Steelhead.....				2,979	29,790	298	2,979	29,790	298		
Total.....				6,911	122,030	3,049	6,911	122,030	3,049		
Sines:											
Chinook.....	10,750	268,750	8,063	53,752	1,400,800	41,402	64,502	1,612,550	49,465		
Blueback.....	2,250	11,250	225	14,292	71,460	1,425	16,542	82,710	1,050		
Steelhead.....	9,013	90,130	901	36,701	367,010	3,669	45,714	457,140	4,570		
Total.....	22,013	370,130	9,180	104,743	1,782,270	40,496	126,758	2,152,400	55,685		
Gull nets:											
Chinook.....	369,196	9,229,700	288,730	211,675	5,366,675	166,187	580,871	14,596,375	454,897		
Blueback.....	81,909	409,545	8,440	25,718	139,590	2,884	107,627	548,135	11,324		
Steelhead.....	29,593	295,935	2,819	18,635	186,350	2,467	48,228	482,285	6,268		
Total.....	480,698	9,935,180	300,989	256,028	5,691,615	171,518	736,728	15,626,795	472,507		

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Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1890.									
Wheels:									
Chinook.....	83,202	2,080,053	\$62,401	27,972	609,317	\$20,970	111,174	2,779,370	\$83,369
Blueback.....	529,646	2,648,155	79,444	207,298	1,036,465	30,431	736,944	3,684,620	109,875
Steelhead.....	71,239	712,390	16,474	13,801	138,010	2,322	85,040	850,400	18,796
Silver.....	4,660	31,612	749	1,500	10,500	210	6,160	42,112	939
Total.....	688,747	5,472,210	159,068	250,571	1,884,292	53,942	939,318	7,356,502	213,019
Dip nets and squaw nets:									
Chinook.....	5,021	125,534	1,958	2,242	56,068	841	7,263	161,602	2,799
Blueback.....	32,748	163,740	2,450	7,717	38,585	579	40,465	202,325	3,029
Steelhead.....	11,000	110,000	1,650	1,402	14,025	210	12,402	124,025	1,860
Silver.....	10,180	71,290	1,068	4,500	31,500	472	14,680	102,780	1,540
Total.....	58,949	470,534	7,126	15,861	140,178	2,102	74,810	610,712	9,228
All apparatus:									
Chinook.....	572,268	14,300,512	439,643	370,616	9,340,235	285,020	942,884	23,640,747	725,263
Blueback.....	697,046	3,485,155	95,007	297,425	1,497,100	39,558	994,471	4,982,255	135,165
Steelhead.....	172,445	1,724,455	28,004	114,980	1,149,305	13,106	287,975	2,873,700	41,110
Silver.....	14,840	102,872	1,617	6,000	42,000	682	20,840	144,872	2,439
Total.....	1,456,599	19,618,994	565,071	789,021	12,028,640	338,066	2,245,570	31,647,634	904,007
1891.									
Pound nets:									
Chinook.....	108,983	2,724,575	108,983	94,624	2,365,600	94,594	203,607	5,090,175	203,577
Blueback.....	22,988	114,940	2,298	52,164	260,840	5,330	75,152	375,780	7,634
Steelhead.....	54,080	540,800	7,020	44,448	444,464	6,308	98,528	985,204	13,267
Total.....	186,051	3,380,315	118,310	191,236	3,070,904	106,238	377,287	6,451,219	224,548
Trap nets:									
Chinook.....	630	15,750	630	712	17,800	712	1,342	33,550	1,342
Blueback.....	148	740	15				148	740	15
Steelhead.....	786	7,860	118	501	5,010	75	1,287	12,870	193
Total.....	1,564	24,350	763	1,213	22,810	787	2,777	47,160	1,550
Selnes:									
Chinook.....	16,480	412,225	16,480	48,506	1,214,900	36,884	65,085	1,627,125	53,770
Blueback.....	2,252	11,260	225	8,325	41,025	1,221	10,577	52,885	1,446
Steelhead.....	5,092	50,920	919	27,469	274,090	5,467	32,561	325,010	6,364
Silver.....	857	5,999	190				857	5,999	190
Total.....	24,680	480,404	17,823	84,300	1,531,215	43,572	109,080	2,011,619	61,369
Gill nets:									
Chinook.....	448,500	11,212,500	447,031	208,633	5,341,525	208,593	657,133	16,554,025	655,624
Blueback.....	25,679	131,395	4,102	15,208	76,340	2,589	40,947	207,735	6,691
Steelhead.....	17,274	172,740	3,541	20,581	205,815	3,408	37,855	378,555	7,000
Silver.....	285	1,905	60	694	4,658	145	979	6,853	200
Total.....	491,738	11,518,630	454,734	245,116	5,628,538	214,736	736,014	17,147,108	669,315
Wheels:									
Chinook.....	23,645	591,153	17,735	9,021	240,540	7,216	33,266	831,693	24,951
Blueback.....	80,004	400,020	12,000	30,675	153,375	5,502	110,679	563,395	17,500
Steelhead.....	27,053	270,530	6,075	11,536	115,360	3,400	38,569	385,890	10,131
Silver.....	4,920	34,440	933	2,730	19,110	573	7,650	53,550	1,300
Total.....	135,622	1,296,143	37,343	60,562	558,385	16,751	100,164	1,854,528	54,000
Dip nets and squaw nets:									
Chinook.....	2,943	73,591	1,119	403	10,083	151	3,346	83,074	1,250
Blueback.....	30,430	152,182	2,388	13,887	60,318	914	44,323	213,100	3,300
Steelhead.....	7,459	74,590	1,149	2,016	20,164	302	9,475	94,754	1,430
Silver.....	10,370	72,591	1,089	4,260	27,820	447	14,630	102,411	1,380
Total.....	51,208	372,954	5,745	20,566	120,085	1,814	71,774	493,939	7,360
All apparatus:									
Chinook.....	601,190	15,329,794	501,087	362,586	9,100,448	348,156	963,779	24,220,242	940,137
Blueback.....	161,507	810,537	21,028	126,319	623,008	15,562	287,826	1,433,635	36,500
Steelhead.....	111,744	1,117,440	19,431	106,551	1,065,508	19,080	218,295	2,182,943	38,510
Silver.....	16,432	115,025	2,272	7,684	53,788	1,165	24,110	168,813	3,430
Total.....	890,873	17,072,796	634,718	603,143	10,832,837	383,957	1,404,016	28,005,633	1,018,577

Table showing

Apparatus and species.

1892.

Pound nets:
Chinook.....
Blueback.....
Steelhead.....

Total.....

Trap nets:
Chinook.....
Blueback.....
Steelhead.....

Total.....

Selnes:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Wheels:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Dip nets and squaw nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

All apparatus:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Selnes:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Wheels:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Dip nets and squaw nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

All apparatus:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Selnes:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Wheels:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Dip nets and squaw nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

All apparatus:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Selnes:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

Gill nets:
Chinook.....
Blueback.....
Steelhead.....
Silver.....

Total.....

of salmon taken
and.

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Total.			Oregon.			Washington.			Total.		
	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1892.											
Pound nets:											
Chinook.....	127,027	3,191,675	127,027	89,852	2,246,300	89,852	217,479	5,537,975	217,479	5,537,975	\$217,479
Blueback.....	99,602	496,019	10,010	191,232	156,110	10,122	290,824	1,454,120	290,824	1,454,120	29,132
Steelhead.....	112,061	1,120,610	10,899	76,998	769,980	11,549	189,050	1,890,590	189,050	1,890,590	28,418
Total.....	339,690	4,816,295	154,536	358,072	3,072,390	120,523	697,002	8,788,685	697,002	8,788,685	275,050
Trap nets:											
Chinook.....	530	13,250	530	20	500	20	550	13,750	550	13,750	550
Blueback.....	240	1,200	24	150	1,500	150	240	1,200	240	1,200	24
Steelhead.....	879	8,790	132	150	1,500	150	1,029	10,290	1,029	10,290	282
Total.....	1,649	23,240	686	170	2,000	170	1,819	25,240	1,819	25,240	850
Seine:											
Chinook.....	27,707	689,535	20,686	27,582	689,550	20,687	55,299	1,379,085	55,299	1,379,085	41,373
Blueback.....	48,347	237,735	7,132	75,031	375,165	11,256	123,378	612,920	123,378	612,920	18,398
Steelhead.....	18,544	185,352	3,707	34,843	348,430	6,969	53,387	533,782	53,387	533,782	16,076
Silver.....	1,428	10,000	300	1,428	10,000	300	1,428	10,000	1,428	10,000	300
Total.....	96,026	1,122,622	31,825	137,456	1,413,165	38,012	233,482	2,535,787	233,482	2,535,787	70,747
Gill nets:											
Chinook.....	355,715	8,892,870	355,715	223,197	5,715,675	223,197	578,912	14,008,545	578,912	14,008,545	578,882
Blueback.....	94,141	407,705	9,714	21,021	110,165	3,303	115,162	580,810	115,162	580,810	13,017
Steelhead.....	37,043	370,430	5,866	33,428	334,280	5,090	70,471	704,710	70,471	704,710	10,956
Silver.....	714	5,600	150	714	5,600	150	714	5,600	714	5,600	150
Total.....	486,899	9,734,005	371,295	278,360	6,165,060	231,710	765,259	15,890,065	765,259	15,890,065	603,005
Wheels:											
Chinook.....	45,964	1,149,115	34,474	16,705	417,630	12,529	92,669	1,566,745	92,669	1,566,745	47,003
Blueback.....	314,585	1,572,923	47,187	145,760	728,892	21,805	400,351	2,391,755	400,351	2,391,755	69,052
Steelhead.....	95,654	956,540	28,090	45,050	450,500	13,517	140,710	1,407,100	140,710	1,407,100	42,213
Silver.....	39,255	274,785	8,234	4,872	34,104	1,023	44,127	308,869	44,127	308,869	9,257
Total.....	495,458	3,953,363	118,591	212,399	1,631,126	48,934	707,857	5,584,489	707,857	5,584,489	167,525
Dip nets and squaw nets:											
Chinook.....	1,356	33,900	509	578	14,450	217	1,934	48,350	1,934	48,350	7
Blueback.....	59,023	295,100	4,427	15,380	76,900	1,154	74,403	372,009	74,403	372,009	5,552
Steelhead.....	6,780	67,802	1,017	2,890	28,900	434	9,670	96,702	9,670	96,702	1,451
Silver.....	12,389	86,703	1,301	4,850	33,950	510	17,236	120,653	17,236	120,653	1,811
Total.....	79,548	483,514	7,254	23,698	154,200	2,315	103,241	637,714	103,241	637,714	9,560
All apparatus:											
Chinook.....	558,899	13,970,345	539,541	357,934	9,084,105	340,472	916,833	23,054,450	916,833	23,054,450	886,013
Blueback.....	615,938	3,075,682	78,494	448,420	2,247,132	50,700	1,064,358	5,322,814	1,064,358	5,322,814	135,194
Steelhead.....	271,561	2,715,524	56,317	163,365	1,633,650	37,709	464,926	4,649,174	464,926	4,649,174	94,026
Silver.....	53,093	371,188	9,835	10,436	73,054	1,083	63,505	444,642	63,505	444,642	11,518
Total.....	1,499,491	20,133,039	684,187	1,010,155	13,337,941	442,561	2,509,622	33,470,980	2,509,622	33,470,980	1,126,751

Number and location of the salmon canneries operated on the Columbia River, 1889-92.

Location.	1889.	1890.	1891.	1892.	Location.	1889.	1890.	1891.	1892.
Oregon:					Washington:				
Astoria.....	8	8	8	8	Ilwaco.....	1	1	1	1
Clifton.....	1	1	1	1	Knappton.....	1	1	1	1
Maple Dell.....	1	1	1	1	Chico.....	1	1	1	1
Warrendale.....	1	1	1	1	Pillar Rock.....	1	1	1	1
Dalles.....	1	1	1	1	Brookfield.....	1	1	1	1
Cello.....	1	1	1	1	Waterford.....	1	1	1	1
Portland.....	1	1	1	1	Enreka.....	1	1	1	1
Total.....	12	12	12	14	Cathlamet.....	1	1	1	1
					Bay View.....	1	1	1	1
					Eagle Cliff.....	1	1	1	1
					Total.....	9	9	10	10
					Grand total.....	21	21	22	24

a This cannery, on the Willamette River, received its fish from the Columbia River.

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Table showing by species the salmon pack of the Columbia River from 1889 to 1892.

States and species.	1889.		1890.		1891.		1892.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.	Cases.	Value.
Oregon:								
Chinook	140,741	\$844,446	196,414	\$1,138,787	222,963	\$1,279,092	214,631	\$1,244,500
Blueback	15,979	90,628	53,351	268,104	10,859	58,816	51,106	287,994
Steelhead	11,692	49,899	26,608	106,432	15,584	62,286	45,401	181,512
Silver							4,176	20,869
Total	168,412	\$944,973	276,873	1,513,323	249,406	1,400,144	315,316	1,734,376
Washington:								
Chinook	125,956	755,736	139,190	807,300	130,944	759,474	129,636	751,898
Blueback	1,818	10,423	3,994	21,983	4,628	25,420	15,441	84,923
Steelhead	13,899	58,688	16,217	64,868	13,986	55,920	26,945	107,280
Silver								
Total	141,473	\$824,847	159,401	\$94,133	149,547	\$840,620	172,022	\$944,093
Total for river:								
Chinook	266,697	1,600,182	335,604	1,946,087	353,907	2,038,566	344,267	1,996,398
Blueback	17,797	101,051	57,345	290,089	15,482	84,242	66,547	372,902
Steelhead	25,391	108,587	42,825	171,300	29,564	118,156	72,348	288,892
Silver							4,176	20,869
Total	309,885	1,809,820	435,774	2,407,456	399,053	2,240,964	487,338	2,679,069

In 1893 the pack of chinook salmon amounted to 290,000 cases.

Table showing by months the number and weight of each species of salmon for canning purposes on the Columbia River in 1889, 1890, 1891, and 1892.

Years and months.	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.
1889.										
April	89,266	2,231,650	36,676	183,380	9,408	94,080			135,350	2,509,110
May	156,117	3,902,925	70,517	382,585	14,790	147,090			247,343	4,432,606
June	168,959	4,223,975	82,453	412,265	62,695	626,950			314,107	5,263,196
July	361,254	7,535,350	36,717	183,585	76,166	761,060			414,137	8,480,365
Total	715,596	17,893,900	232,363	1,161,815	162,978	1,629,780			1,110,937	20,685,066
1890.										
April	32,727	818,175	63,180	315,800	11,005	110,050			106,912	1,244,125
May	236,776	5,919,400	292,580	1,012,900	22,983	229,830			462,349	7,162,135
June	252,754	6,318,850	297,234	1,486,170	87,567	875,670			637,555	8,680,665
July	357,183	8,932,575	150,299	751,495	139,596	1,395,960			647,078	11,080,630
August	13,941	348,525	22,107	110,535	15,535	155,350			51,583	614,110
Total	893,381	22,337,525	735,490	3,677,000	276,686	2,766,860			1,905,467	29,781,385
1891.										
April	82,413	2,060,325	17,437	87,185	5,178	51,780			105,028	2,199,290
May	184,060	4,502,250	55,229	276,145	13,814	138,140			252,053	4,911,535
June	223,964	5,606,100	83,743	418,715	52,676	526,760			360,383	6,544,575
July	398,247	9,956,175	32,369	161,945	97,000	970,000			528,536	11,067,120
August	58,670	1,466,750	3,701	18,505	21,286	212,860			83,657	1,668,111
Total	947,364	23,584,600	192,499	962,495	190,854	1,903,540			1,830,237	26,450,636
1892.										
April	55,021	1,375,525	86,449	432,245	10,503	105,030			151,973	1,912,800
May	187,492	4,687,300	308,916	1,544,730	32,795	327,950			529,213	6,559,980
June	239,498	5,987,450	330,558	1,652,700	141,194	1,411,940			711,250	9,052,180
July	343,421	8,585,525	128,043	640,215	199,313	1,993,310			700,797	11,212,670
August	84,124	2,103,100	19,110	95,550	52,901	529,010			156,225	2,728,560
September					11,293	112,930	10,489	136,423	30,782	248,560
October					22,629	226,290	31,906	237,702	56,505	464,490
Total	909,556	22,738,900	873,106	4,365,530	470,738	4,707,380	53,455	374,185	2,306,855	32,185,940

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Year.	Gross weight of salmon in pounds.
1886	2,509,110
1887	4,432,606
1888	5,263,196
1889	20,685,066
1890	29,781,385
1891	26,450,636
1892	32,185,940
1893	32,185,940
1894	32,185,940
1895	32,185,940
1896	32,185,940
1897	32,185,940
1898	32,185,940
1899	32,185,940
1900	32,185,940

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1882 to 1892.

1892.	
Cases.	Value.
214,631	\$1,244,500
51,106	267,984
45,403	181,612
4,170	20,660
315,310	1,734,976
129,636	751,888
15,441	84,825
26,945	107,280
172,022	944,093
944,267	1,096,388
66,547	372,909
72,348	268,892
4,176	20,660
487,338	2,679,069

Salmon and 1892.

Total.	
No. of fish.	Gross weight.
135,350	2,509,110
247,343	4,432,660
314,107	5,264,100
414,137	8,480,360
1,110,087	20,685,460
106,912	1,244,120
402,310	7,162,130
637,555	8,680,660
647,078	11,080,630
51,583	614,410
1,905,407	28,781,380
105,028	2,199,280
252,633	4,911,570
360,383	6,544,370
528,536	11,097,130
83,657	1,698,110
1,330,237	20,450,630
151,973	1,912,840
529,233	6,550,940
711,250	9,052,180
070,797	11,219,070
156,225	2,728,560
23,300	249,350
62,500	464,000
2,306,855	32,185,960

Scarcely any attention is given to the refuse at the salmon canneries. On the Columbia River this waste yearly averages over 7,000,000 pounds, or 3,500 tons, nearly all of which is emptied into the river. The only efforts to save and utilize this valuable waste product are at Astoria, and there but a small part of the refuse is collected, as will be seen by the following statement of the oil and fertilizer prepared from salmon waste at a small factory:

Years.	Oil.		Scrap.	
	Gallons.	Value.	Tons.	Value.
1890.....	15,000	\$3,600	.....	.....
1891.....	12,000	2,880	25	\$500
1892.....	20,000	6,240	35	700
1893.....	30,000	6,750	40	800

Summary of the salmon industry.—From 1866, the year in which salmon canning began on the Columbia River, to 1893, inclusive, the gross weight of the salmon utilized for canning was over 658,000,000 pounds, and the value of the pack was over \$59,000,000. The annual results of this industry are shown in the following table:

Summary of salmon-canning industry of the Columbia River from 1866 to 1893.

Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.	Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.
	<i>Pounds.</i>					<i>Pounds.</i>			
1866....	200,000	4,000	\$64,000	\$16.00	1881....	35,750,000	550,000	\$2,475,000	\$4.50
1867....	1,170,000	18,000	288,000	16.00	1882....	35,184,500	541,300	2,600,000	4.80
1868....	1,620,000	28,000	302,000	14.00	1883....	40,911,000	620,400	3,147,000	5.00
1869....	6,500,000	100,000	1,357,000	13.50	1884....	40,300,000	620,000	2,915,000	4.70
1870....	9,750,000	150,000	1,800,000	12.00	1885....	35,997,000	553,800	2,500,000	4.51
1871....	13,000,000	200,000	2,100,000	10.50	1886....	29,152,000	448,500	2,115,000	4.70
1872....	16,250,000	250,000	2,325,000	9.30	1887....	23,140,000	350,000	2,124,000	5.97
1873....	10,250,000	250,000	2,250,000	9.00	1888....	24,211,005	372,477	2,327,981	6.25
1874....	22,750,000	350,000	2,625,000	7.50	1889....	20,685,495	309,885	1,800,820	5.84
1875....	24,375,000	375,000	2,250,000	6.00	1890....	28,781,385	435,774	2,407,450	5.52
1876....	20,250,000	450,000	2,475,000	5.50	1891....	26,450,635	398,953	2,240,084	5.62
1877....	24,700,000	380,000	2,052,000	5.40	1892....	32,185,905	487,338	2,679,060	5.50
1878....	20,000,000	400,000	2,300,000	5.00	1893....	24,050,000	370,000	2,107,500	5.70
1879....	31,200,000	480,000	2,640,000	5.50					
1880....	34,450,000	530,000	2,650,000	5.00	Total....	658,424,515	10,098,427	50,020,790	5.85

In addition to the salmon used for canning, very large quantities have been salted, consumed fresh locally, or shipped fresh to other parts of the country. The fish thus utilized have aggregated about 192,000,000 pounds, giving 850,000,000 pounds as the total salmon output of the Columbia River since 1866, the value of which, as sold fresh, canned, or salted, was \$66,000,000. As a matter of interest it may be stated that if the total salmon catch of the Columbia River could be loaded into railroad cars, 42,500 ordinary freight cars would be required to contain the fish, which would make a solid train over 280 miles long.

Exportations of canned salmon from Astoria.—Queries are often made as to where the enormous quantities of salmon prepared in the lower Columbia River and elsewhere on the Pacific Coast are sold. In the early days of the canning industry, and for several years after, nearly

the entire product was sold in foreign countries, and there is still a large export trade with England, Australia, and other countries. Reference is made to the table of exports from San Francisco for a statement of the destination of the canned salmon sent from that port. Much the largest part of the canned salmon exported from Astoria is consigned to England. The shipments are made exclusively in sailing vessels, which clear from Astoria deeply laden with no other merchandise than canned salmon.

The following is a statement of the shipment by months from 1887 to September, 1892, inclusive:

Year and month.	Destination.	Cases.	Net weight of fish.	Value.
<i>Pounds.</i>				
1887—July	England	41,582	1,095,936	\$218,268
August	do	78,750	3,780,000	406,631
1888—August	do	61,226	2,938,848	436,824
September	do	12,869	617,712	90,856
1889—May	do	8,650	415,200	59,785
July	do	23,475	1,126,800	161,125
August	do	74,011	3,553,488	501,838
September	do	20,334	976,032	121,834
November	do	8,124	389,952	44,864
1890—March	do	7,000	336,000	35,000
November	do	20,701	993,642	102,265
1891—May	do	700	33,600	4,200
June	do	1,200	57,600	7,430
July	do	47,015	2,256,720	217,997
August	do	35,263	1,602,024	183,734
1892—February	Chile	3,000	144,000	1,140
March	do	500	24,000	2,200
June	England	300	10,800	2,450
August	do	27,107	1,320,336	160,651
September	do	46,972	2,254,656	264,518

THE STURGEON FISHERY.

For many years the fishermen of the Columbia River gave scarcely any attention to any fish caught in their nets except salmon. Sturgeon were very plentiful and were caught incidentally in the salmon nets in considerable quantities. A few were saved and sent to the Portland market, and during the winter months some were also shipped by steamer in a round or undressed state to San Francisco, but as a rule the sturgeon was looked upon as a nuisance and in most cases was knocked in the head and set adrift in the river. This practice prevailed up to a comparatively recent date.

In 1888 an eastern firm established experimental fishing-camps at several points on the river with a view to determine the abundance and location of the sturgeon, and, by shipping a few carloads of frozen sturgeon, to demonstrate the feasibility of creating a market in the East. The undertaking proved a success from the outset, and the industry soon attracted other firms from the East, so that in 1892 there were four firms interested in the business. The catch increased from 960,705 pounds in 1889 to 3,006,757 pounds in 1892. The fishery has been of great importance to the fishermen in that it does not interfere in any way with their regular salmon operations, but is prosecuted after the close of the salmon season, and in 1892 added over \$41,000 to their income.

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Weight of fish.	Value.
Pounds.	
1,995,036	\$218,285
3,780,000	496,631
2,938,848	436,824
617,712	90,856
415,200	59,785
1,126,800	101,125
3,553,488	501,838
970,032	121,834
380,952	44,864
336,000	35,000
993,642	162,285
83,600	4,200
57,600	7,450
2,956,720	217,967
1,692,624	183,724
144,000	1,140
24,000	2,269
16,800	2,459
1,320,336	160,651
2,254,656	264,518

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The sturgeon fishery begins immediately at the close of the salmon fishery; that is, about the middle of August or the first of September, and is followed to the opening of the salmon season in the following April. Sturgeon are found in the river throughout the year, but are most abundant during the run of sardines, in July and August, and the run of smelt in January and February, the sturgeon feeding to a considerable extent on these fish. The spawning season appears to be in November and later, thus contrasting strongly with the sturgeon of the Atlantic Coast. Mature roe, suitable for the preparation of caviar, is not found in quantities before November. With the exception of the sturgeon taken incidentally in the salmon nets, which are sold for local use, the fish is neglected during the summer months.

The average gross weight of the sturgeon caught is 150 pounds, the market fish ranging from 40 to 500 pounds. Some fish of relatively small size are caught, and occasionally very large ones are taken. In 1891 a sturgeon taken near Kalama weighed 848 pounds, and one taken off Oak Point in 1892 weighed 800 pounds.

Fishing is prosecuted from the mouth of the river as far up as the Cascades, a few fish being taken above the latter point; but the bulk of the catch is obtained between Astoria and Kalama, a distance of 60 miles. During the early part of the season fishing is done nearer the mouth of the river. The fishermen meet the fish as they come into the stream and move along with them.

With the exception of a few gill nets employed in the lower river the fishing is carried on exclusively with set lines. Each line is provided with 200 to 400 hooks, the hooks being 1 foot apart, and 5 to 8 lines constituting the complement of each fishing boat. When the fishing was first inaugurated lampreys were used for bait, but in the following year the Chinese method of using baitless hooks was found successful and has since been universally practiced. The hooks differ from those used by the Chinese, however, in being barbed, but resemble them in being ground to a needle-like point. The lines, as a rule, are anchored across the bed of the river, in some cases diagonally, and also in the bays formed by the expansion of the river. At intervals of 7 feet a junk bottle or block of wood is fastened to the line to buoy it up and maintain it in position about 4 inches from the bottom. The fishermen closely study the movements and habits of the sturgeon and set their lines on the grounds most frequented. The fish swimming along the bottom of the stream in search of food, as is their habit, must necessarily cross the set lines, and are almost certain to be snagged by one or more of the sharp-pointed hooks. In attempting to free themselves more hooks are apt to be caught in their body and they are held fast. Occasionally fish are taken showing healed-up scars, evidence of previous capture and escape. The lines are tended on the slack tide and are usually visited only once in twenty-four hours.

In 1892 the business of buying, packing, and shipping sturgeon was carried on by two firms located at Portland, Oreg., one at Kal-

ama, Wash., and one at Ranier, Oreg. There were also numerous receiving stations located near the fishing-grounds. If, after tending his lines, the fisherman is near the head station or packing house, he delivers his catch there; but if some distance away he takes it to the nearest receiving station of the firm with which he has contracted to furnish his catch. The prices received by the fishermen are 1 cent per pound as the fish come from the water, or $1\frac{1}{2}$ cents per pound if the viscera have been removed. When the fish contain roe suitable for the manufacture of caviar, the fishermen remove it and receive 4 cents per pound for the same. As soon as the fish are landed at the packing-house a gang of employees dress them for market. In some cases the skin is removed, in others it is left intact. After dressing, the fish are cut into sizes to fit the freezing-pans, which are then placed in bins, covered with ice and salt, and frozen into solid cakes. After freezing, the blocks of sturgeon are removed from the pans and placed in boxes holding from 200 to 250 pounds, which are loaded into refrigerator cars and shipped to market. Most of the catch has been sent to Sandusky, Ohio, Chicago, Ill., and New York City, where it is smoked and finds a ready sale at good prices. The number of car loads of fresh sturgeon sent east was 25 in 1889, 77 in 1890, 102 in 1891, and 115 in 1892.

One product of the sturgeon is used entirely by the Chinese, namely, the spinal marrow. As soon as the fish are landed at the packing establishment a Chinaman, armed with a hook, pulls out enough of the marrow to furnish a good hold, then seizing it, draws the remainder of it out hand over hand. In the average-sized sturgeon the spinal cord is 4 or 5 feet long and consists of long, white connecting links resembling sausages. These are cut open and the jelly-like substance contained within is scraped off and thrown away. This marrow is known by the Chinese and the trade under the name of "bone." It is thoroughly dried, and if not sold to the Chinese in this country it is exported to China, where it is much prized for making soups. The Chinamen pay 4 cents a pound for this "bone" and remove it from the fish themselves.

Valuable as the sturgeon is, there seems to be a large waste that might be utilized for fertilizing purposes. Nearly half the gross weight of the fish is at present thrown away, the head, viscera, and skin being discarded. This refuse contains more or less oil and valuable fertilizing properties, and could, no doubt, be utilized to great advantage.

The sturgeon fishery of this river was investigated for the United States Fish Commission by the writer in 1889 and again in 1892, the various fishing camps and grounds and packing stations being visited each year, and the firms engaged in the business courteously furnished the desired statistical and general information. Up to the date of the last visit sturgeon had been found in ample abundance for the demands of the firms, but the fishermen were beginning to complain of a growing scarcity. As is usual in such cases, more apparatus was required, and this had to be moved from point to point more frequently in order

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or the United n in 1892, the being visited usly furnished he date of the r the demands n of a growing was required. ntly in order

to keep up the catch. Advices received from this river in 1893 reported a great scarcity of sturgeon, which was followed in 1894 by a still more marked decrease in the abundance of the fish, so that the persons interested were obliged to discontinue the business, and some moved their plants to Grays Harbor, Wash., and Fraser River, British Columbia. The absence of any protective laws or a close season during the spawning period, together with the avidity with which the fishing was prosecuted, have doubtless led to this destruction of a once valuable fishery. The failure of the States to take proper action for the preservation of the sturgeon has no doubt been due to the recent date at which the fishery was established and to the absence of accurate knowledge as to its destructive tendency. The extreme brevity of the existence of this fishery is very suggestive, although in keeping with other rivers of the Eastern States in which the sturgeon fishery has been entirely abandoned.

The extent of the sturgeon fishery of the Columbia River during the four years, 1889 to 1892, is shown in the following tables, relating to persons employed, apparatus, boats, etc., used, and quantity and value of products.

Persons employed in the sturgeon fishery of the Columbia River.

Years.	Fisher- men.	Shoreem- ployees.	Total.
1889	135	20	155
1890	183	20	212
1891	202	35	237
1892	287	53	340

Boats, apparatus, and other property employed in the sturgeon fishery of the Columbia River.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Boats	90	\$2,250	122	\$3,050	135	\$3,375	200	\$8,000
Set lines	630	6,300	854	8,540	945	9,450	1,322	13,220
Gill nets	15	1,500	15	1,500	15	1,500	15	1,500
Shore property		17,200		23,500		24,500		27,000
Cash capital		8,000		14,000		21,000		40,000
Total		30,150		50,500		59,825		90,410

Products of the sturgeon fishery of the Columbia River.

Products.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Flesh	921,945	\$10,094	1,627,434	\$17,275	1,868,902	\$20,447	2,915,428	\$30,964
Bone	21,275	851	36,650	1,346	47,680	1,907	47,200	1,890
Marrow	15,500	1,395	33,300	2,331	39,400	1,970	56,020	2,241
Skins	1,105	2,002	2,325	3,487	3,117	4,076	4,405	6,758
Total	960,705	15,242	1,699,709	24,439	1,959,090	20,960	3,006,757	41,743

THE FISH TRADE OF PORTLAND, OREGON.

The fish business of Portland is of considerable extent and is one of the most important branches of trade. In the wholesale trade, fresh, pickled, and canned salmon, and fresh sturgeon are handled in large quantities, the fresh fish being shipped in refrigerator cars to points east of the Missonri River. One salmon cannery is located within the city limits, and several others on the Columbia River and in other places are owned by persons having their business headquarters at Portland.

A good variety of fresh-water and salt-water fish may be found in the markets of the city at almost any time in the year. German carp, shad, and catfish, which were only recently introduced into that part of the country, have wonderfully increased and are found constantly in the markets. Their abundance is such that at times it is difficult to sell them at any price. Salmon is the favorite fish and is usually sold at a very reasonable price. Any recent decrease in the quantities of carp, shad, and catfish consumed in Portland may be attributed to the increased use of salmon. Carp and catfish are plentiful around the city docks and are also very abundant in the several streams adjacent to Portland.

The salt-water fish entering into the fresh-fish trade of Portland come largely from Puget Sound. Native oysters are brought from Willapa Bay and the Yaquina River in sacks holding about 100 pounds each. Crawfish are common and come from the sloughs of the Willamette River, a few miles from the city. The crabs and clams which are consumed locally are received from Willapa Bay and the mouth of the Columbia River.

In the following table the extent of the fresh-fish trade of Portland in the years 1889 to 1892 is shown. The values given represent the prices paid by the dealers to the fishermen.

Fresh-fish trade of Portland, Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Cultus-cod.....	20,109	\$1,005	22,320	\$1,116	28,260	\$1,413	30,119	\$1,500
Flounders.....	60,117	1,804	65,220	1,957	70,300	2,111	75,108	2,350
Halibut.....	55,000	2,750	61,108	3,055	75,320	3,766	122,500	6,125
Herring.....	55,214	1,656	60,512	1,815	64,670	1,940	71,870	2,150
Perch.....	90,212	2,700	95,317	2,860	98,230	2,947	110,160	3,300
Salmon.....	830,105	32,050	920,222	36,800	960,115	38,400	1,004,320	30,100
Shad.....	10,145	507	20,360	1,018	31,125	1,556	45,840	2,290
Smelt.....	198,480	4,962	101,115	2,528	140,870	3,746	300,422	7,510
Trout.....	13,319	1,098	14,270	2,140	16,180	2,427	19,430	2,940
Other fish.....	8,328	833	29,958	2,387	63,004	2,634	103,470	4,320
Clams.....	50,115	1,250	60,340	1,500	70,530	1,703	80,240	2,000
Oysters.....	200,000	5,000	210,000	5,250	260,000	6,500	316,000	7,900
Crabs.....	7,200	250	13,350	467	18,000	630	21,600	750
Crawfish.....	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Total.....	1,618,324	59,771	1,699,092	66,643	1,936,354	74,633	2,321,079	75,870

WASHINGTON.

GENERAL IMPORTANCE OF THE FISHERIES.

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The fisheries of this State are more valuable than those of Oregon, owing to a greater development of the oyster industry, the pelagic fur-seal fishery, and the general fisheries for salt-water fish, although the extent of the salmon fishery is considerably less than in Oregon.

The fishing industry of the State has witnessed a gratifying increase yearly. In the face of the depressed condition of trade during part of the time covered by this report the fisheries underwent a noteworthy development, and the continued increase in the State's population will no doubt lead to a still more important fishing business.

As at present prosecuted the fisheries of Washington of special prominence are the salmon and sturgeon fisheries of the Columbia River, Grays Harbor, and Whatcom County, the oyster industry of Willapa Bay, the general food-fish and fur-seal fisheries of Puget Sound and Strait of Fuca, and the cod fishery of Skagit County.

The fishing industry of Washington in 1892 gave employment to 4,310 persons; the capital invested was \$1,593,567; the value of the products was \$931,568. Statistics showing the aggregate of the business in 1892 and in the three preceding years are given in the following tables:

Persons employed in the fisheries of Washington.

How engaged.	1889.	1890.	1891.	1892.
On fishing vessels.....	103	95	217	331
On transporting vessels.....	28	27	40	45
On shore fisheries.....	2,528	2,479	2,818	3,082
On shore, in canneries, etc.....	704	652	778	852
Total.....	3,363	3,253	3,853	4,310

Vessels, boats, apparatus, shore property, and cash capital of the fisheries of Washington.

1892.		
Ac.	Pounds.	Value.
13	30, 119	\$1,366
11	75, 108	2, 251
96	122, 500	6, 125
940	71, 870	2, 156
947	110, 160	30, 130
1,000	1, 004, 320	2, 292
556	45, 840	7, 510
740	300, 422	2, 914
427	10, 430	4, 322
334	103, 470	2, 000
763	80, 240	7, 400
500	310, 000	750
430	21, 600	3, 000
900	20, 000	75, 853
933	2, 321, 079	

Items.	1880.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels fishing.....	8	\$30, 850	0	\$24, 550	19	\$45, 850	33	\$85, 730
Tonnage.....	319.10		254.57		588.83		1, 009.17	
Outfit.....		10, 245		8, 775		10, 305		27, 880
Vessels transporting.....	12	16, 050	12	11, 000	15	31, 300	18	28, 900
Tonnage.....	109.38		107.18		166.11		175.05	
Outfit.....		7, 820		1, 500		3, 700		5, 750
Boats.....	1, 277	108, 414	1, 280	106, 175	1, 474	123, 510	1, 690	132, 330
Apparatus—vessel fisheries:								
Seines.....	1	75	1	75	3	525	1	75
Gill nets.....							1	50
Lines.....		700		490		955		1, 765
Guns and spears.....		1, 400		1, 400		3, 153		4, 517
Apparatus—shore fisheries:								
Gill nets.....	638	98, 087	743	97, 830	871	112, 137	885	112, 550
Pound and trap nets.....	137	92, 300	74	58, 200	118	117, 200	157	124, 700
Seines.....	120	38, 050	126	36, 750	151	4, 777	162	43, 650
Reel nets.....					20	1, 000	10	500
Minor nets.....	15	75	18	90	23	115	20	100
Wheels.....	9	26, 000	12	48, 500	14	45, 000	17	40, 000
Lines.....		3, 320		3, 630		3, 071		4, 005
Tongs, rakes, and hoes.....		392		3, 492		4, 195		3, 505
Guns, spears, harpoons, etc.....		1, 050		1, 050		1, 222		1, 700
Shore property.....		363, 450		308, 280		442, 550		417, 800
Cash capital.....		401, 000		405, 000		495, 000		540, 000
Total.....		1, 261, 078		1, 117, 087		1, 486, 563		1, 593, 567

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Products of the fisheries of Washington.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod.....			4,700	\$141	13,500	\$405	15,000	445
Blueback salmon.....	490,192	\$10,427	1,487,100	39,558	1,145,858	26,704	2,513,932	62,437
Chinook salmon.....	10,207,756	455,013	9,547,343	291,333	9,723,073	358,123	9,847,027	363,360
Cod, salted.....	80,000	2,800			85,000	3,400	530,000	21,500
Cultus-cod.....	267,000	5,360	276,000	5,020	283,000	5,835	359,000	6,875
Dog salmon.....	413,327	4,180	918,773	8,328	1,021,051	9,060	3,310,115	22,190
Flounders.....	105,006	1,700	134,000	2,255	193,150	3,288	184,560	3,191
Hallbut.....	685,000	15,640	740,000	16,750	904,500	23,020	1,416,600	28,160
Herring.....	215,000	2,475	407,000	4,500	508,000	5,750	917,112	6,875
Humpback salmon.....	322,302	5,615			752,041	11,957		
Perch.....	23,000	400	44,000	880	60,000	1,500	95,140	1,300
Rockfish.....	102,000	2,910	110,000	3,075	150,000	4,275	163,000	4,500
Shad.....	21,010	2,055	44,167	3,519	59,000	3,590	103,350	3,100
Silver salmon.....	4,020,815	86,944	1,419,172	30,621	2,193,320	30,552	3,597,345	60,140
Smelt.....	208,000	3,750	230,000	4,500	272,000	5,160	321,720	6,130
Steelhead salmon.....	962,805	27,884	1,362,615	17,372	1,325,423	24,279	2,419,192	43,419
Sturgeon.....	218,985	2,300	255,203	2,871	503,327	5,468	543,023	5,735
Trout, black-spotted.....	12,060	1,800	15,000	2,700	16,000	2,850	20,000	3,000
Trout, salmon.....	13,000	390	15,000	450	18,000	540	20,000	600
Crabs.....	22,400	840	48,400	1,900	69,000	2,700	79,000	3,350
Shrimp.....	1,500	300	1,475	295	1,800	450	2,000	500
Clams.....	438,000	3,650	624,000	5,200	736,800	6,140	684,000	5,700
Oysters.....	7,547,400	128,604	8,889,000	147,030	9,985,080	154,961	9,895,440	147,900
Whales.....		800		600		2,400		600
Fur seals.....		30,190		58,900		70,179		121,300
Frogs.....	7,500	3,000	10,813	4,325	8,413	3,363	13,125	5,250
Dogfish oil.....	28,500	1,330	30,000	1,400	33,750	1,575	37,500	1,750
Total.....	26,407,582	810,326	26,019,821	655,119	30,154,666	777,282	36,757,287	931,560

The crabs, clams, oysters, frogs, oil, etc., specified by pounds in the foregoing table are, in the following supplementary table, reduced to the basis on which they are sold in the markets, and the number of whales and fur seals are shown:

Products.	1880.	1890.	1891.	1892.
Crabs.....	number.....	7,466	16,133	23,200
Clams.....	busbels.....	6,257	8,914	10,525
Oysters.....	do.....	125,700	148,150	160,428
Whales.....	number.....	4	3	12
Fur seals.....	do.....	2,875	4,620	4,267
Frogs.....	do.....	36,000	51,900	40,380
Dogfish oil.....	gallons.....	3,800	4,000	4,500

The follow
in the years
in detail.

Table showing

Counties.

Chehalis.....
Clallam.....
Clark.....
Cowlitz.....
Jefferson.....
King.....
Klickitat.....
Mason.....
Pacific.....
San Juan.....
Skagit.....
Thurston.....
Wahkiakum.....
Wahkiakum.....

Total.....

Counties.

Chehalis.....
Clallam.....
Clark.....
Cowlitz.....
Jefferson.....
King.....
Klickitat.....
Mason.....
Pacific.....
San Juan.....
Skagit.....
Thurston.....
Wahkiakum.....
Wahkiakum.....
Whatcom.....

Total.....

F. R.

DETAILED STATISTICS.

The following series of tables relates to the fisheries of Washington in the years 1889 to 1892, inclusive. Figures for each county are shown in detail.

Table showing by counties the number of persons employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels trans- porting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels trans- porting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis			66	8	74	.....	.....	45	6	51
Clallam			315	.....	315	.....	.....	322	.....	322
Clarke			20	.....	20	.....	.....	20	.....	20
Cowlitz			30	2	32	.....	.....	42	5	47
Jefferson	12	.....	17	.....	29	12	.....	17	.....	29
King	91	.....	235	142	468	76	.....	287	80	452
Klickitat			50	.....	50	.....	.....	55	.....	55
Mason			61	6	70	.....	.....	64	6	70
Pacific		23	576	184	783	.....	22	483	189	694
Pierce			118	3	121	7	.....	127	3	137
San Juan								6	5	11
Skamania			20	.....	20	.....	.....	22	.....	22
Thurston			12	.....	12	.....	.....	12	.....	12
Wahkiakum		5	1,065	359	1,369	.....	5	977	340	1,331
Total	103	28	2,528	704	3,363	65	27	2,479	652	3,253

Counties.	1891.					1892.				
	On vessels fishing.	On vessels trans- porting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels trans- porting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis	.....	.....	45	4	49	.....	.....	68	10	78
Clallam	66	.....	356	.....	422	92	.....	387	.....	479
Clarke	.....	.....	20	.....	20	.....	.....	20	.....	20
Cowlitz	.....	.....	32	7	39	.....	.....	38	11	49
Jefferson	20	.....	17	.....	37	20	.....	17	.....	43
King	90	5	323	82	506	155	4	363	83	605
Klickitat	.....	.....	68	.....	68	.....	.....	63	.....	63
Mason	.....	.....	64	6	70	.....	.....	64	.....	70
Pacific	.....	26	651	262	939	.....	32	726	299	1,057
Pierce	7	.....	139	5	151	20	.....	150	7	177
San Juan	.....	.....	6	.....	6	.....	.....	6	.....	11
Skagit	32	.....	.....	3	35	35	.....	.....	3	38
Skamania	.....	.....	22	.....	22	.....	.....	28	.....	28
Thurston	.....	.....	14	.....	14	.....	.....	14	.....	14
Wahkiakum	.....	5	857	332	1,194	.....	5	953	346	1,304
Whatcom		4	204	72	280	3	4	185	82	274
Total	221	40	2,818	778	3,857	331	45	3,682	852	4,310

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Table showing by counties the nativity of persons employed in the fisheries of Washington in 1892.

Counties.	Countries.												
	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.	Portugal.
On vessels fishing:													
Clallam	7												85
Jefferson	10												10
King	106		10	6					2	9			16
Pierce	20												
Skagit	24		3	3									2
Whatcom	3												3
Total	176		19	9					2	9			114
On vessels transporting:													
King	4												
Pacific	32												
Wahkiakum	5												
Whatcom	3									1			
Total	44									1			
In shore or boat fisheries:													
Chehalis	40	14	8	6									
Clallam	16		11										360
Clarke	20												
Cowlitz	38												
Jefferson	8			4									5
King	58		59	40	102	55	40						
Klickitat	23												40
Mason	45											8	11
Pacific	295	77	83	48	18		2	9	1	10			183
Pierce	25		50	41			5		2			7	20
San Juan	6												
Skamania	6	19	3										
Thurston													14
Wahkiakum	237	119	274	115	60	63	8	14	2	39	2		20
Whatcom	50		20	15									100
Total	867	229	508	278	180	118	55	23	5	49	2	8	753
On shore, in canneries, etc.:													
Chehalis	10												
Cowlitz	10											1	
King	20											46	17
Mason	6												
Pacific	63	4	1					1		1		229	
Pierce	7												
San Juan	5												
Skagit	3												
Wahkiakum	39		1					1				305	
Whatcom	17											50	15
Total	180	4	2					2		1		631	17

Table showing by counties the nationality of persons employed in the fisheries of Washington in 1892.

					Countries.																
China.	Portugal.	Japan.	American In- dian.	Total.	Counties.	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.	Portugal.	Japan.	American In- dian.	Total.
Vessels fishing:																					
			85		Challam	5		2												85	92
			16		Jederson	10														10	26
			10		King	91		23	13											16	155
			3		Pierce	29															20
					Skagit	22		5	3										2	3	35
					Whatcom.	3															3
	2		114		Total	157		30	16					2	10			2		114	331
Vessels transporting:																					
					King	4															4
					Pacific	32															32
					Wahkiakum	5															5
					Whatcom.	2									2						4
					Total	43									2						45
Shore or boat fisheries:																					
			360		Chelan	68															68
					Challam	27														300	327
					Clarke	20															20
			5		Cowlitz	38															38
					Jederson	12														5	17
					King	363															363
			40		Klickitat	23														40	63
8			11		Mason	45														11	64
			183		Pacific	543											8			183	726
	7		20		Pierce	130														20	150
					San Juan	6															6
					Skamania	28															28
			14		Thurston															14	14
			20		Wahkiakum	953															953
			100		Whatcom.	85														100	185
8	7		753		Total	2,341											8			733	3,082
Shore, in canneries, etc.:																					
	1				Chelan	10															10
40					Cowlitz	10															11
		17			King	20															83
29					Mason	6															6
					Pacific	66	4														299
					Pierce	7											220				7
					San Juan	5															5
					Skagit	3															3
05					Wahkiakum	41											305				346
50			15		Whatcom.	17											50			15	82
31		17	15		Total	185	4										631		17	15	852

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Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889.										
Chehalis.....									15	\$1,500
Clallam.....									174	10,125
Clarke.....									10	750
Cowlitz.....									45	2,250
Jefferson.....	2	11.60	\$950	\$215					8	1,390
King.....	6	307.50	20,900	10,030					97	7,885
Klickitat.....									9	140
Mason.....									118	3,560
Pacific.....					11	72.37	\$0,050	\$020	205	20,494
Pierce.....									92	3,430
Skamania.....									6	120
Thurston.....									30	1,000
Wahkiakum.....					1	37.01	7,000	6,900	378	55,800
Total.....	8	310.10	30,850	10,245	12	100.38	16,050	7,820	1,277	108,414
1890.										
Chehalis.....									25	1,750
Clallam.....									177	10,250
Clarke.....									14	1,050
Cowlitz.....									55	2,950
Jefferson.....	2	11.60	950	220					8	1,330
King.....	5	223.05	21,000	7,705					81	6,980
Klickitat.....									9	140
Mason.....									118	3,560
Pacific.....					11	70.17	4,900		281	18,850
Pierce.....	2	19.92	1,700	850					97	3,745
San Juan.....									4	250
Skamania.....									6	120
Thurston.....									30	1,000
Wahkiakum.....					1	37.01	7,000	1,500	355	54,200
Total.....	9	254.57	24,550	8,775	12	107.18	11,900	1,500	1,260	100,175
1891.										
Chehalis.....									25	1,750
Clallam.....	3	98.40	3,100	2,205					205	11,900
Clarke.....									11	825
Cowlitz.....									54	2,550
Jefferson.....	4	22.66	1,650	720					8	1,330
King.....	7	261.06	24,400	3,255	1	33.06	10,000	1,000	98	8,730
Klickitat.....									10	160
Mason.....									118	3,560
Pacific.....					12	83.55	10,800	300	385	31,647
Pierce.....	3	28.08	2,700	1,325					102	4,070
San Juan.....									4	250
Skagit.....	2	178.43	14,000	2,800						
Skamania.....									6	120
Thurston.....									31	1,018
Wahkiakum.....					1	37.01	7,000	1,500	357	52,000
Whatcom.....					1	11.89	3,500	900	60	3,000
Total.....	19	588.83	45,850	10,305	15	166.11	31,300	3,700	1,474	123,510
1892.										
Chehalis.....									40	3,025
Clallam.....	7	178.20	6,700	3,205					210	12,250
Clarke.....									13	975
Cowlitz.....									58	2,800
Jefferson.....	8	76.90	4,250	1,810					8	965
King.....	15	448.83	40,000	15,675	1	10.82	3,500	750	107	11,005
Klickitat.....									11	170
Mason.....									118	3,560
Pacific.....					15	113.04	12,400	2,100	508	40,195
Pierce.....	5	103.79	18,180	4,010					130	5,075
San Juan.....									4	250
Skagit.....	2	178.63	14,000	2,800						
Skamania.....									6	120
Thurston.....									31	1,015
Wahkiakum.....					1	37.01	7,000	1,500	367	48,175
Whatcom.....	1	22.73	2,000	80	1	14.18	6,000	1,400	40	2,750
Total.....	33	1,009.17	85,730	27,880	18	175.05	28,900	5,750	1,600	132,330

Fishes of Wash.

Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Boats.	No.	Value.	Apparatus—vessel fisheries.			Apparatus—shore fisheries.							
			Seines and gill nets.		Value of guns and apparatus.	Gill nets.		Pound and trap nets.		Seines.		Reef nets.	
			No.	Value.		No.	Value.	No.	Value.	No.	Value.	No.	Value.
15	15	\$1,500				50	\$3,250	28	\$10,400				
174	174	10,125				30	925						
10	10	750				20	3,075						
45	45	2,250								2	\$150		
8	8	1,360				103	2,312	0	5,500	20	11,300		
97	97	7,865				25	275						
9	9	140				50	11,650	91	61,800	2	1,000		
118	118	3,560						2	1,600	65	8,800		
285	285	20,494				29	300						
92	92	3,430				312	77,100	5	3,200	31	17,700		
6	6	120											
120	120	1,000											
378	378	55,800											
1,277	1,277	198,414	1	75	700	638	98,987	137	92,300	120	38,950		
25	25	1,750				70	2,600						
177	177	10,250				50	1,250						
14	14	1,050				30	4,500						
55	55	2,950								2	150		
8	8	1,330				210	4,000			22	10,200		
81	81	6,980				25	375	2	800				
9	9	140				22	7,500	68	51,400	2	1,000		
118	118	3,560						2	1,600	71	9,550		
281	281	18,850				20	300			2	450		
97	97	3,745				306	77,305	2	1,400	27	15,400		
4	4	250											
6	6	120											
30	30	1,000											
355	355	54,200	1	75	400	743	97,830	74	58,200	120	30,750		
1,260	1,260	106,175											
25	25	1,750				70	2,600						
205	205	11,900				43	1,025			2	200		
11	11	825				22	3,375						
54	54	2,550								2	150		
8	8	1,330				28	395	2	800	30	15,625		
98	98	8,730				70	21,100	107	108,600	2	1,000		
10	10	160						2	1,600	81	10,800		
118	118	3,560								2	450		
385	385	31,647				20	300						
102	102	4,070				304	76,905	5	3,200	28	15,900		
4	4	250				20	1,500	2	3,000	6	2,100	20	\$1,000
6	6	120											
31	31	1,018											
357	357	52,600	1	75	955	871	112,137	118	117,200	133	46,225	20	1,000
60	60	3,000											
1,474	1,474	123,510											
49	49	3,025				60	3,060						
210	210	12,250				49	1,000			5	500		
13	13	975				24	3,675						
58	58	2,800								2	150		
8	8	965				310	5,250	3	1,500	36	20,000		
107	107	11,065				32	410	2	800				
11	11	170				103	30,400	141	109,800	4	2,600		
118	118	3,560						2	1,000	91	12,050		
508	508	40,195								2	450		
130	130	5,075				20	300						
4	4	250				261	66,055	4	2,500	12	7,400		
6	6	120				20	1,500	5	8,500	10	3,500	10	500
31	31	1,015											
397	397	48,175											
40	40	2,750											
1,600	1,600	132,330	2	125	1,765	885	112,550	157	124,700	162	46,650	10	500

a Gill net.

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Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Minor nets.		Wheels.		Value of lines.	Value of tows, rakes, and hoes.	Value of guns, spears, harpoons, etc.	Value of shore property.	Cash capital.	Total investment.
	No.	Value.	No.	Value.						
1889.										
Chehalis.....								\$34,000	\$30,000	\$68,150
Clallam.....					\$825		\$1,050			12,000
Clarke.....			2	\$4,000				2,000		7,675
Cowlitz.....					2,100			7,000	3,000	17,425
Jefferson.....					305			2,000		5,125
King.....						\$50		41,500	45,000	155,507
Klickitat.....	15	\$75	3	11,500						12,890
Mason.....						172		1,000	5,000	9,732
Pacific.....								80,400	134,000	319,314
Pierce.....					90	130		5,000	5,000	21,050
Skamania.....			4	10,500						10,930
Thurston.....						40				1,040
Wahkiakum.....								100,550	230,000	507,250
Total.....	15	75	9	26,000	3,420	302	1,050	363,450	401,000	1,261,078
1890.										
Chehalis.....								1,000		5,350
Clallam.....					850		1,050			12,150
Clarke.....			2	4,000				2,000		8,300
Cowlitz.....					2,380			7,000	3,000	19,830
Jefferson.....					305			2,000		5,100
King.....						50		44,000	28,000	124,505
Klickitat.....	18	90	3	11,500						12,905
Mason.....						172		1,000	5,000	9,732
Pacific.....						3,100		55,400	114,000	259,150
Pierce.....					95	130		5,000	5,000	27,820
San Juan.....								1,000		1,700
Skamania.....			7	38,000						34,420
Thurston.....						40				1,040
Wahkiakum.....								189,880	250,000	506,685
Total.....	18	90	12	48,500	3,630	3,492	1,050	308,280	405,000	1,117,687
1891.										
Chehalis.....								1,000		5,350
Clallam.....						875	1,050			20,183
Clarke.....			2	4,000				2,000		7,850
Cowlitz.....					2,060			7,000	0,000	21,585
Jefferson.....					265			2,000		6,340
King.....					50			42,000	45,000	150,972
Klickitat.....	23	115	5	21,500						22,070
Mason.....						43	172	1,000	5,000	9,775
Pacific.....						3,100		140,650	177,000	494,197
Pierce.....					96	135		25,000	20,000	65,056
San Juan.....								1,000		1,700
Skagit.....								5,500	5,000	28,200
Skamania.....			7	19,500						19,920
Thurston.....						42				1,060
Wahkiakum.....								190,400	207,000	554,505
Whatcom.....								25,000	30,000	70,000
Total.....	23	115	14	45,000	3,071	4,195	1,222	442,550	495,000	1,486,503
1892.										
Chehalis.....								8,000	30,000	44,985
Clallam.....					900		1,700			26,447
Clarke.....			3	5,000				3,000		9,975
Cowlitz.....					2,800			7,500	6,000	22,775
Jefferson.....					265			2,000		9,860
King.....						50		45,000	50,000	196,725
Klickitat.....	20	100	6	23,000						24,480
Mason.....						172		1,000	5,000	9,732
Pacific.....								142,300	213,000	555,895
Pierce.....					100	143		25,000	25,000	91,608
San Juan.....								1,000		1,700
Skagit.....								5,500	5,000	28,500
Skamania.....			8	21,000						21,420
Thurston.....						40				1,055
Wahkiakum.....								147,500	172,000	452,130
Whatcom.....								30,000	40,000	96,280
Total.....	20	100	17	49,000	4,065	3,505	1,700	417,830	540,000	1,593,567

Table showing by species the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Species.	Total investment.
Blackback salmon.....	
Chinook salmon.....	
Cultus cod.....	
Dog salmon.....	
Hallbut.....	
Humpback salmon.....	
Rockfish.....	
Silver salmon.....	
Steelhead salmon.....	
Sturgeon.....	
Whales.....	
Total.....	
Species.....	
Blackback salmon.....	
Chinook salmon.....	
Cod, salted.....	
Cultus cod.....	
Dog salmon.....	
Flounders.....	
Herring.....	
Humpback salmon.....	
Perch.....	
Shad.....	
Silver salmon.....	
Snelt.....	
Steelhead salmon.....	
Crabs.....	
Clams.....	
Oysters.....	
Fur seals.....	
Frogs.....	
Total.....	
Species.....	
Blackback salmon.....	
Chinook salmon.....	
Cod, salted.....	
Cultus cod.....	
Dog salmon.....	
Flounders.....	
Hallbut.....	
Herring.....	
Humpback salmon.....	
Perch.....	
Rockfish.....	
Shad.....	
Silver salmon.....	
Snelt.....	
Steelhead salmon.....	
Sturgeon.....	
Tout, black.....	
Tout, white.....	
Trout, salmon.....	
Crabs.....	
Shrimp.....	
Clams.....	
Oysters.....	
Whales.....	
Fur seals.....	
Frogs.....	
Dogfish oil.....	
Total.....	

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Table showing by counties and species the yield of the fisheries of Washington in 1889.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					51,750	\$1,737	13,000	\$390
Chinook salmon	1,085,075	\$21,701			30,200	1,310	81,000	3,240
Cultus cod			150,000	\$2,500				
Dog salmon			47,210	965				
Halibut			300,000	4,500				
Humpback salmon			39,350	810				
Rockfish			66,000	1,450				
Silver salmon	1,282,200	32,044	86,440	2,095				
Steelhead salmon					5,020	203	26,075	667
Sturgeon							42,325	1,143
Whales				800			218,985	2,300
Total	2,307,275	53,745	663,000	13,020	90,870	3,310	381,985	7,740

Species.	Jefferson.		King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					172,817	\$5,808			111,850	\$5,580
Chinook salmon			80,248	\$1,322	112,925	3,007			1,032,953	71,500
Cod, salted			80,000	2,800						
Cultus cod	24,000	\$400	8,000	160						
Dog salmon	4,000	80	280,247	2,415						
Flounders			25,000	500						
Halibut	61,000	1,420	320,000	9,000						
Herring	15,000	300	35,000	525						
Humpback salmon			181,427	2,764						
Perch			23,000	460						
Shad									14,125	1,412
Silver salmon	14,000	580	1,080,060	13,922	39,065	830			1,108,000	29,950
Smelt	25,000	750	34,000	825						
Steelhead salmon			10,570	1,811	10,870	320			251,520	7,544
Crabs			14,400	600						
Clams			108,000	900						
Oysters							1,500,000	\$37,500	5,000,000	81,804
Fur seals			30,100							
Frogs			7,500	3,000						
Total	143,000	3,730	2,386,352	72,300	335,617	10,727	1,500,000	37,500	8,817,848	197,865

Species.	Pierce.		Skamania.		Thurston.		Wahklakunn.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Blueback salmon			133,315	\$5,443			7,460	\$373	490,192	\$10,427
Chinook salmon	15,980	\$480	99,275	4,001			7,070,100	348,117	10,207,756	455,913
Cod, salted									80,000	2,800
Cultus cod	105,000	2,100							267,000	5,360
Dog salmon	72,870	720							413,327	4,160
Flounders	80,000	1,200							105,000	1,700
Halibut	4,000	120							685,000	15,640
Herring	105,000	1,050							215,000	2,475
Humpback salmon	98,615	2,041							322,392	5,015
Perch	42,000	1,200							102,000	460
Rockfish									20,000	2,010
Shad	1,000	55					5,885	588	21,010	2,055
Silver salmon	287,535	6,250							4,020,815	86,944
Smelt	145,000	2,175							203,000	3,750
Steelhead salmon			5,010	190			553,560	16,607	962,805	27,884
Sturgeon									218,985	2,300
Trout, black-spotted			12,000	1,800					12,000	1,800
Trout, salmon	13,000	390							13,000	390
Crabs	8,000	240							22,400	840
Shrimp	1,500	300							1,500	300
Clams	330,000	2,750							438,000	3,650
Oysters	360,000	7,500			78,000	\$1,800			7,547,400	128,604
Whales										800
Fur seals										30,190
Frogs									7,500	3,000
Dogfish oil	28,500	1,330							28,500	1,330
Total	1,770,000	32,370	237,600	9,034	78,000	1,800	7,037,035	365,085	26,407,582	\$10,326

0,000	1,583,567
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Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Chehalis.		Clallam.		Clark.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					152,170	\$3,055	20,000	\$700		
Chinook salmon	75,000	\$1,875			75,300	2,259	137,000	5,480		
Cutlus-cod			120,000	\$2,350					28,000	\$710
Dog salmon			63,800	1,275					8,000	120
Halibut			280,000	4,200					80,000	1,900
Herring									17,000	340
Rockfish			65,000	1,725						
Silver salmon	150,000	3,750	90,200	3,000			37,150	743	16,000	680
Smelt									20,000	600
Steelhead salmon					24,680	247	70,850	1,717		
Sturgeon							255,263	2,871		
Whales				600						
Total	225,000	5,625	625,000	13,150	252,150	5,561	520,203	11,511	167,000	4,350

Species.	King.		Klickitat.		Mason.		Pacific.		Pierce.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod			357,535	\$9,913			213,515	\$4,270	4,700	\$141
Blueback salmon			212,410	5,531			2,119,975	63,002		
Chinook salmon	93,703	\$2,080							38,300	1,152
Cutlus-cod	11,000	220							117,000	2,340
Dog salmon	745,485	5,809							103,488	1,034
Flounders	49,000	980							85,000	1,275
Halibut	177,000	5,310							203,000	5,340
Herring	70,000	1,050							170,000	1,700
Perch	44,000	880								
Rockfish									45,000	1,350
Shad							20,125	2,060	9,237	724
Silver salmon	719,700	13,052	42,000	682					358,122	7,814
Smelt	60,000	1,650							150,000	2,250
Steelhead salmon	172,460	3,440	117,875	1,733			412,430	4,123		
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs	38,400	1,600							10,000	300
Shrimp									1,475	235
Clams	204,000	1,700							420,000	3,500
Oysters					1,524,000	\$38,100	0,808,200	100,598	590,000	7,312
Fur seals		58,906								
Frogs	10,813	4,325								
Dogfish oil									30,000	1,400
Total	2,461,651	102,607	729,820	17,859	1,524,000	38,100	9,670,245	174,083	2,165,412	41,077

Species.	San Juan.		Skamania.		Thurston.		Wahkiakum.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Black-cod									4,700	\$141
Blueback salmon			684,745	\$20,442			59,135	\$1,178	1,487,100	39,558
Chinook salmon			518,675	15,560			6,270,800	193,188	5,547,343	291,333
Cutlus-cod									276,000	5,620
Dog salmon									918,773	8,328
Flounders									134,000	2,255
Halibut									740,000	10,750
Herring	150,000	\$1,500							407,000	4,580
Perch									44,000	880
Rockfish									110,000	3,075
Shad							8,805	705	44,107	3,519
Silver salmon									1,419,172	30,621
Smelt									236,000	4,500
Steelhead salmon			20,080	752			535,240	5,351	1,352,015	17,372
Sturgeon									255,263	2,871
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs									48,400	1,600
Shrimp									1,475	235
Clams									420,000	3,500
Oysters					70,800	\$1,920			8,889,000	147,030
Whales										600
Fur seals										58,906
Frogs									10,813	4,325
Dogfish oil									30,000	1,400
Total	150,000	1,500	1,232,500	30,754	70,800	1,920	6,879,980	200,422	26,619,821	655,119

Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Pounds.	Value.
Blueback salmon		
Chinook salmon		
Cutlus-cod		
Dog salmon		
Flounders		
Halibut		
Herring		
Rockfish		
Silver salmon		
Smelt		
Steelhead salmon		
Sturgeon		
Whales		
Fur seals		

Species.	Pounds.	Value.
Black-cod		
Blueback salmon		
Chinook salmon		
Cutlus-cod		
Dog salmon		
Flounders		
Halibut		
Herring		
Humpback		
Perch		
Shad		
Silver salmon		
Smelt		
Steelhead salmon		
Crabs		
Clams		
Oysters		
Fur seals		
Frogs		

Species.	Pounds.	Value.
Black-cod		
Blueback salmon		
Chinook salmon		
Cutlus-cod		
Dog salmon		
Flounders		
Halibut		
Herring		
Humpback		
Perch		
Shad		
Silver salmon		
Smelt		
Steelhead salmon		
Crabs		
Clams		
Oysters		
Fur seals		
Frogs		

Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Pounds.	Value.
Black-cod		
Blueback salmon		
Chinook salmon		
Cod, salted		
Cutlus-cod		
Dog salmon		
Flounders		
Halibut		
Herring		
Humpback		
Rockfish		
Shad		
Silver salmon		
Smelt		
Steelhead salmon		
Trout, black-spotted		
Trout, salmon		
Crabs		
Shrimp		
Clams		
Oysters		
Fur seals		
Dogfish oil		

Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Pounds.	Value.
Black-cod		
Blueback salmon		
Chinook salmon		
Cod, salted		
Cutlus-cod		
Dog salmon		
Flounders		
Halibut		
Herring		
Humpback		
Rockfish		
Shad		
Silver salmon		
Smelt		
Steelhead salmon		
Trout, black-spotted		
Trout, salmon		
Crabs		
Shrimp		
Clams		
Oysters		
Fur seals		
Dogfish oil		

ington in 1890.

Table showing by counties and species the yield of the fisheries of Washington in 1891.

Jefferson.	
Pounds.	Value.
28,000	\$710
6,000	120
80,000	1,900
17,000	340
16,000	680
20,000	600
167,000	4,350

Pierce.	
Pounds.	Value.
4,700	\$141
38,390	1,152
117,000	2,340
103,488	1,034
85,000	1,275
203,000	5,340
170,000	1,700
45,000	1,350
0.237	724
358,122	7,614
150,000	2,250
15,000	2,700
15,000	450
10,000	300
1,475	295
420,000	3,500
390,000	7,312
30,000	1,400
2,105,412	41,077

Total.	
Lbs.	Value.
4,700	\$141
1,487,100	39,558
9,547,343	291,333
276,000	5,620
918,773	8,328
134,000	2,255
740,000	10,750
407,000	4,590
44,000	880
110,000	3,075
44,107	3,510
1,419,172	30,521
236,000	4,500
1,322,615	17,372
255,263	2,871
15,000	2,700
15,000	450
48,400	1,900
1,475	295
624,000	5,300
8,888,000	147,990
58,906	600
10,813	4,325
30,000	1,400
26,619,821	655,119

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					53,830	\$1,855	12,000	\$420		
Chinook salmon	60,000	\$1,500			35,500	1,275	82,500	3,300		
Culmus-cod			115,000	\$2,275					24,000	\$823
Dog salmon			55,140	1,000					13,000	290
Flounders			8,150	163						
Halibut			315,000	5,350					120,000	2,950
Herring			15,000	150					16,000	320
Humpback salmon			37,880	757						
Rockfish			100,000	2,775						
Silver salmon	130,000	3,150	103,980	3,163			53,400	1,068	23,500	905
Smelt									22,000	600
Steelhead salmon					9,300	254	68,000	1,537		
Sturgeon							503,327	5,468		
Whales					2,400					
Fur seals					14,947					
Total	190,000	4,950	750,150	33,040	98,630	3,384	719,827	11,793	218,500	5,775

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon			147,773	\$3,520			251,750	\$5,034
Chinook salmon	146,063	\$3,530	73,848	2,061			3,603,300	136,559
Culmus-cod	12,000	300						
Dog salmon	861,472	6,832						
Flounders	70,000	1,400						
Halibut	207,000	4,480						
Herring	102,000	1,530						
Humpback salmon	619,418	9,288						
Perch	60,000	1,500						
Shad							42,180	2,531
Silver salmon	931,081	17,220	48,330	1,020			443,000	4,730
Smelt	75,000	1,875						
Steelhead salmon	209,320	4,187	78,314	2,040			464,709	6,537
Crabs	57,000	2,400						
Clams	270,000	2,250						
Oysters					1,500,000	\$99,000	7,890,480	105,206
Fur seals		45,632						
Frogs	8,413	3,365						
Total	3,629,365	107,780	348,865	8,647	1,560,000	39,000	12,695,416	260,597

Species.	Pierce.		San Juan.		Skagit.		Skamania.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	13,500	\$405						
Blueback salmon							118,925	\$3,568
Chinook salmon	56,612	1,698					171,875	5,181
Cod, salted					85,000	\$3,400		
Culmus-cod	132,000	2,640						
Dog salmon	91,439	914						
Flounders	115,060	1,725						
Halibut	352,500	8,840						
Herring	175,000	1,750	200,000	\$2,000				
Humpback salmon	95,645	1,912						
Rockfish	50,000	1,500						
Shad	1,012	57						
Silver salmon	356,304	7,136						
Smelt	175,000	2,625						
Steelhead salmon							67,010	1,050
Trout, black-spotted	10,000	2,880						
Trout, salmon	18,000	540						
Crabs	12,000	300						
Shrimp	1,800	450						
Clams	466,800	3,890						
Oysters	420,000	7,875						
Fur seals					9,600			
Dogfish oil	33,750	1,575						
Total	2,582,362	48,772	200,000	2,000	85,000	13,000	357,810	10,690

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Table showing by counties and species the yield of the fisheries of Washington in 1891—Continued.

Species.	Thurston.		Wahklakum.		Whitcom.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod.....							13,500	\$405
Blueback salmon.....							1,145,858	26,764
Chinook salmon.....			38,820	\$1,105	522,760	\$11,202	9,723,673	358,123
Cod, salted.....			5,493,075	203,019			85,000	3,400
Cultus-cod.....							283,000	5,835
Dog salmon.....							1,021,051	9,066
Flounders.....							193,150	3,288
Hallbut.....							994,500	23,620
Herring.....							508,000	5,750
Humpback salmon.....							752,941	11,937
Perch.....							60,000	1,500
Rockfish.....							150,000	4,275
Shad.....			10,708	1,002			59,900	3,590
Silver salmon.....					109,125	1,100	2,193,320	39,552
Smelt.....							272,000	5,160
Steelhead salmon.....			428,170	7,708			1,325,423	24,279
Sturgeon.....							503,327	7,408
Trout, black-spotted.....							16,000	2,300
Trout, salmon.....							18,000	700
Crabs.....							69,000	700
Shrimp.....							1,800	450
Clams.....							26,800	6,140
Oysters.....	115,200	\$2,880					9,085,680	154,961
Whales.....								2,400
Fur seals.....								70,179
Frogs.....							8,413	3,365
Dogfish oil.....							33,750	1,555
Total.....	115,200	2,880	5,977,673	212,954	625,885	12,302	30,154,660	777,282

Table showing by counties and species the yield of the fisheries of Washington in 1892.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....					162,500	\$4,875	15,000	\$450		
Chinook salmon.....	398,738	\$7,043			65,825	2,215	110,000	4,400		
Cultus-cod.....			119,000	\$2,345					60,000	\$1,500
Dog salmon.....	322,000	1,610	93,600	1,805					4,000	80
Flounders.....			12,400	248						
Hallbut.....			350,000	6,135					355,000	6,650
Herring.....			25,000	250					12,000	240
Rockfish.....			123,000	3,315						
Silver salmon.....	751,477	13,307	152,310	4,215			27,600	552	11,000	470
Smelt.....									23,000	690
Steelhead salmon.....					35,400	972	40,400	863		
Sturgeon.....	38,000	190					505,023	5,507		
Whales.....										
Fur seals.....					10,237					
Total.....	1,510,215	22,240	884,400	36,150	263,725	8,092	707,623	11,832	501,000	10,020

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon.....			319,952	\$8,300			943,655	\$18,970
Chinook salmon.....	145,384	\$4,136	144,855	4,149			3,450	75,118
Cod, salted.....	175,000	7,000						
Cultus-cod.....	16,000	390						
Dog salmon.....	1,916,220	12,562					203,000	1,015
Flounders.....	72,160	1,443						
Hallbut.....	348,000	10,150						
Herring.....	105,112	1,577						
Perch.....	65,140	1,303						
Shad.....							62,400	1,872
Silver salmon.....	1,268,614	22,651	73,054	1,683			756,000	7,560
Smelt.....	98,720	2,408						
Steelhead salmon.....	261,142	5,222	280,870	4,993			50,130	11,274
Crabs.....	60,000	2,500					3,000	700
Oysters.....					1,576,800	32,850	7,500	101,179
Clams.....	300,000	2,800						
Fur seals.....		68,511						
Frogs.....	13,125	5,259						
Total.....	4,844,623	177,653	818,731	19,071	1,567,800	32,850	13,809,720	279,388

Table showing

Species

Black-cod.....
 Blueback salmon.....
 Chinook salmon.....
 Cod, salted.....
 Cultus-cod.....
 Dog salmon.....
 Flounders.....
 Hallbut.....
 Herring.....
 Rockfish.....
 Shad.....
 Silver salmon.....
 Smelt.....
 Steelhead salmon.....
 Trout, black.....
 Trout, salmon.....
 Crabs.....
 Shrimp.....
 Oysters.....
 Dogfish oil.....

Total

Species

Black-cod.....
 Blueback salmon.....
 Chinook salmon.....
 Cod, salted.....
 Cultus-cod.....
 Dog salmon.....
 Flounders.....
 Hallbut.....
 Herring.....
 Perch.....
 Rockfish.....
 Shad.....
 Silver salmon.....
 Smelt.....
 Steelhead salmon.....
 Sturgeon.....
 Trout, black.....
 Trout, salmon.....
 Crabs.....
 Shrimp.....
 Oysters.....
 Clams.....
 Whales.....
 Fur seals.....
 Frogs.....
 Dogfish oil.....

Total

Table showing

Year

County

1880

1889

King

ington in 1891—

Table showing by counties and species the yield of Washington fisheries in 1892—Cont'd.

Total.	Species.	Pierce.		San Juan.		Skagit.		Skumania.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
13,500	Black-cod	15,000	\$450						
145,858	Blueback salmon							432,280	\$12,968
723,873	Chinook salmon	140,400	4,212			364,000	\$14,560	257,400	7,762
85,000	Cod, salted								
283,000	Cultus-cod	128,000	2,560						
021,051	Dog salmon	165,880	1,659						
183,150	Flounders	100,000	1,500						
994,500	Halibut	348,000	5,890						
508,000	Herring	225,000	2,250	250,000	\$2,500				
752,941	Rock fish	40,000	1,200						
60,000	Shad	1,100	55						
150,000	Silver salmon	393,340	7,866						
59,900	Smelt	200,000	3,000						
272,000	Steelhead salmon							383,190	8,421
325,423	Trout, black-spotted	20,000	3,600						
503,327	Trout, salmon	20,000	600						
16,000	Crabs	10,000	300						
18,000	Shrimp	2,000	500						
69,600	Oysters	598,200	11,216						
1,800	Whales	384,000	3,200					3,780	
36,800	Fur seals								
985,680	Dogfish oil	37,500	1,750						
	Total	2,328,420	51,808	250,000	2,500	364,000	18,340	1,072,870	29,151

ington in 1892.

Total.	Species.	Thurston.		Wahkiakum.		Whitcom.		Total.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
154,680	Black-cod							15,000	\$450
	Blueback salmon			366,000	\$10,986	274,225	\$5,876	2,513,932	62,431
	Chinook salmon			5,124,250	193,298			9,843,627	367,363
	Cod, salted							539,000	5,500
	Cultus-cod							359,000	6,875
	Dog salmon					605,325	3,450	3,310,115	22,190
	Flounders							184,500	3,191
	Halibut					500	15	1,410,500	29,140
	Herring							617,112	6,817
	Perch							65,140	1,303
	Rock fish							163,000	4,515
	Shad			39,850	1,256			103,350	3,183
	Silver salmon					103,950	1,749	3,597,345	60,143
	Smelt							321,726	6,158
	Steelhead salmon			619,000	11,084			2,419,192	43,419
	Sturgeon							543,623	5,757
	Trout, black-spotted							20,000	3,600
	Trout, salmon							20,000	600
	Crabs							79,000	3,550
	Shrimp							2,000	500
	Oysters	132,000	\$2,750					9,895,440	147,995
	Whales							684,000	5,600
	Fur seals								121,528
	Frogs							13,125	5,250
	Dogfish oil							37,500	1,750
	Total	132,000	2,750	6,149,160	216,624	1,044,000	11,009	36,757,287	831,568

Pacific.

Pounds. Value.

943,655	\$24,970
450,750	108,118
293,000	1,015
62,400	1,872
756,000	7,560
36,130	11,974
3,000	750
568,400	101,179
809,720	279,388

Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892.

Year	Counties.	Species.	Lines.		Scales and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1889	Jefferson	Cultus-cod	5,000	\$100					5,000	\$100
		Dog salmon			4,000	\$80			4,000	80
		Halibut	20,000	600					20,000	600
		Silver salmon			8,000	280			8,000	280
		Total	25,000	700	12,000	360			37,000	1,060
1889	King	Cod, salted	60,000	2,800					89,000	2,800
		Cultus-cod	8,000	160					8,000	160
		Halibut	320,000	9,600					320,000	9,600
		Fur seals					2,875	\$30,190		30,190
		Total	408,000	12,560			2,875	30,190	408,000	42,750
		Grand total	433,000	13,260	12,000	360	2,875	30,190	445,000	43,810

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Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Year.	Counties.	Species.	Lines.		Seines and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1890	Jefferson	Cultus-cod.	7,000	\$140					7,000	\$140
		Dog salmon			6,000	\$120			6,000	120
		Halibut	30,000	900					30,000	900
		Silver salmon			9,000	330			9,000	330
		Total	37,000	1,040	15,000	450			52,000	1,490
1890	King	Cultus-cod.	11,000	220					11,000	220
		Halibut	177,000	5,310					177,000	5,310
		Fur seals					4,620	\$58,906		58,906
		Total	188,000	5,530			4,620	58,906	188,000	64,436
1890	Pierce	Cod	4,700	141					4,700	141
		Cod	2,000	40					2,000	40
		Herring	200,000	5,250					200,000	5,250
		Total	206,700	5,431					206,700	5,431
		Grand total.	431,700	12,001	15,000	450	4,620	58,906	446,700	71,357
1891	Clallam	Fur seals					815	14,947		14,947
1891	Jefferson	Cultus-cod.	10,000	200					10,000	200
		Dog salmon			13,000	260			13,000	260
		Halibut	60,000	1,750					60,000	1,750
		Silver salmon			17,000	640			17,000	640
		Total	70,000	1,950	30,000	900			100,000	2,850
1891	King	Cultus-cod.	12,000	300					12,000	300
		Halibut	207,000	6,480					207,000	6,480
		Fur seals					2,852	45,632		45,632
		Total	219,000	6,780			2,852	45,632	219,000	52,412
1891	Pierce	Black-cod.	13,500	405					13,500	405
		Cultus-cod.	2,000	40					2,000	40
		Halibut	349,000	8,735					349,000	8,735
		Total	364,500	9,180					364,500	9,180
1891	Skagit	Cod, salted.	85,000	3,400					85,000	3,400
		Fur seals					600	9,600		9,600
		Total	85,000	3,400			600	9,600	85,000	13,000
		Grand total.	738,500	21,310	30,000	900	4,267	70,179	768,500	92,389
1892	Clallam	Cultus-cod.	2,000	40					2,000	40
		Dog salmon			2,000	40			2,000	40
		Halibut	5,000	100					5,000	100
		Silver salmon			3,000	110			3,000	110
		Fur seals					1,743	16,537		16,537
		Total	7,000	140	5,000	150	1,743	16,537	12,000	16,827
1892	Jefferson	Cultus-cod.	59,000	730					59,000	730
		Dog salmon			4,000	80			4,000	80
		Halibut	265,000	5,150					265,000	5,150
		Silver salmon			8,000	220			8,000	220
		Total	324,000	5,880	10,000	300			334,000	6,180
1892	King	Cod, salted.	175,000	7,000					175,000	7,000
		Cultus-cod.	16,000	380					16,000	380
		Halibut	348,000	10,150					348,000	10,150
		Fur seals					6,830	98,511		98,511
		Total	539,000	17,530			6,830	98,511	539,000	116,041
1892	Pierce	Black-cod.	15,000	450					15,000	450
		Cultus-cod.	3,000	60					3,000	60
		Halibut	345,000	5,800					345,000	5,800
		Total	363,000	6,310					363,000	6,310
1892	Skagit	Cod, salted.	364,000	14,560					364,000	14,560
		Fur seals					270	3,780		3,780
		Total	364,000	14,560			270	3,780	364,000	18,340
1892	Whatecom	Halibut	500	15					500	15
		Grand total.	1,597,500	44,435	15,000	450	8,843	118,828	1,612,500	163,713

* Caught with gill net.

Tables sh

Counties a

Chehalis;
Chinook
Silver sal
Total

Clallam:
Cultus-co
Dog salm
Halbut...
Humpbac
Rockfish.
Silver sal
Total

Clarke:
Blueback
Chinook
Steelhead
Total

Cowlitz:
Blueback
Chinook
Silver sal
Steelhead
Sturgeon
Total

Jefferson:
Cultus-co
Halbut...
Herring
Silver sal
Smelt...
Total

King:
Chinook
Dog salm
Flounders
Herring
Humpbac
Perch...
Silver sal
Steelhead
Crabs...
Total

Klickitat:
Blueback
Chinook
Steelhead
Total

Pacific:
Blueback
Chinook
Shad...
Silver sal
Steelhead
Total

Pierce:
Chinook
Cultus-co
Dog salm
Floun' r
Halbut...
Herring
Humpbac
Rockfish.
Shad...
Silver sal
Smelt...
Trout, bl
Trout, sal
Crabs...
Shrimp...
Total

vessel fisheries of

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889.

e.	Total.		Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Lbs.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
	7,000	\$140								
	6,000	120								
	30,000	900								
	0,000	330								
	52,000	1,490								
	11,000	230								
	177,000	5,310								
		58,906								
	188,000	64,436								
	4,700	141								
	2,000	40								
	200,000	5,250								
	206,700	5,431								
	446,700	71,357								
		14,947								
	10,000	200								
	13,000	260								
	60,000	1,750								
	17,000	640								
	100,000	2,850								
	12,000	300								
	207,000	6,486								
		45,632								
	219,000	52,412								
	13,500	465								
	2,000	40								
	349,000	8,735								
	364,500	9,180								
	85,000	3,400								
	9,000									
	85,000	13,000								
	768,500	92,389								
	2,000	40								
	2,000	40								
	5,000	100								
	3,000	110								
		16,537								
	12,000	10,827								
	59,000	750								
	4,000	80								
	285,000	5,150								
	6,000	220								
	334,000	6,180								
	175,000	7,000								
	16,000	380								
	348,000	10,150								
		98,511								
	539,000	110,041								
	15,000	450								
	3,000	60								
	345,000	5,800								
	363,000	6,310								
	364,000	14,560								
		3,780								
	364,000	18,340								
	500	15								
	1,612,500	163,713								
Chehalis:										
Chinook salmon	1,085,075	\$21,701								
Silver salmon	662,750	10,558	619,450	\$15,486						
Total	1,747,825	38,259	619,450	15,486						
Clallam:										
Cultus-cod									130,000	\$2,500
Dog salmon									47,210	965
Halibut									300,000	4,500
Humpback salmon									30,350	810
Rockfish									60,000	1,050
Silver salmon									86,440	2,695
Total									663,000	13,120
Clarke:										
Blueback salmon	47,000	1,500								
Chinook salmon	20,000	800								
Steelhead salmon	6,000	175								
Total	73,000	2,475								
Cowlitz:										
Blueback salmon	13,000	390								
Chinook salmon	81,000	3,240								
Silver salmon	26,675	667								
Steelhead salmon	42,325	1,143								
Sturgeon									218,985	2,300
Total	163,000	5,440							218,985	2,300
Jefferson:										
Cultus-cod									19,000	500
Halibut									41,000	820
Herring						15,000	\$300			
Silver salmon									6,000	300
Smelt						25,000	750			
Total						40,000	1,050		66,000	1,620
King:										
Chinook salmon	35,861	984	17,273	327	27,114	517				
Dog salmon	155,347	1,483	12,115	61	121,785	871				
Flounders					25,000	500				
Herring	26,250	394			8,750	131				
Humpback salmon	20,255	439	17,212	257	137,060	2,068				
Perch					23,000	460				
Silver salmon	208,583	4,249	375,890	4,021	502,547	5,652				
Smelt					33,000	325				
Steelhead salmon	57,600	1,152	11,520	230	21,450	420				
Crabs					14,400	600				
Total	512,896	8,701	433,950	4,896	915,006	12,053				
Klickitat:										
Blueback salmon	15,000	600	14,000	560						
Chinook salmon	8,500	340	5,000	200						
Steelhead salmon	2,000	00	1,000	30						
Total	25,500	1,000	20,000	700						
Pacific:										
Blueback salmon	90	4	106,995	5,344	4,765	238				
Chinook salmon	608,200	20,332	990,571	49,528	34,178	1,709				
Shad			14,125	1,412						
Silver salmon	399,330	9,983	758,670	10,967						
Steelhead salmon	1,120	33	221,160	6,634	29,240	877				
Total	1,008,740	30,352	2,131,525	82,885	68,183	2,824				
Pierce:										
Chinook salmon			3,500	105	12,480	375				
Cultus-cod									105,000	2,100
Dog salmon			21,405	214	51,468	515				
Flounders					80,000	1,200				
Halibut									4,000	120
Herring					165,000	1,650				
Humpback salmon			22,125	443	76,490	1,598				
Rockfish									42,000	1,200
Shad			500	30	500	25				
Silver salmon			71,320	1,558	210,215	4,692				
Smelt					145,000	2,175				
Trout, black-spotted									12,000	1,800
Trout, salmon					13,000	390				
Crabs					8,000	240				
Shrimp					1,500	500				
Total			118,850	2,350	700,050	13,160			163,000	5,280

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Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Skamania:								
Blueback salmon	11,000	\$550						
Chinook salmon	3,000	150						
Steelhead salmon	1,000	30						
Total	15,000	730						
Wahkiakum:								
Blueback salmon					7,460	\$373		
Chinook salmon	5,440,350	266,630	69,375	\$3,469	1,560,375	78,018		
Shad			5,875	587	10	1		
Steelhead salmon	132,580	3,077	10,470	314	410,540	12,316		
Total	5,572,930	270,607	85,720	4,370	1,978,385	90,708		
All counties:								
Blueback salmon	86,090	3,044	120,905	5,904	12,225	611		
Chinook salmon	7,281,986	314,177	1,085,723	53,629	1,634,147	80,619		
Cultus-cod							254,000	\$5,100
Dog salmon	155,347	1,483	33,520	275	173,250	1,386	47,210	965
Flounders					105,000	1,700		
Halibut							345,000	5,440
Herring	20,250	394			188,750	2,081		
Humpback salmon	29,255	430	39,337	700	214,456	3,666	39,350	810
Perch					23,000	460		
Rockfish							102,000	2,910
Shad			20,500	2,029	510	20		
Silver salmon	1,297,338	31,457	1,865,270	41,032	718,702	10,344	92,440	2,095
Snelt					203,000	3,750		
Steelhead salmon	242,625	6,573	244,150	7,208	461,230	13,622		
Sturgeon							218,985	2,300
Trout, black-spotted							12,000	1,800
Trout, salmon					13,000	390		
Crabs					22,400	840		
Shrimp					1,500	300		
Grand total	9,118,891	357,564	3,409,495	110,777	3,771,224	119,795	1,110,985	22,320
Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Callam:								
Whales								\$800
Clarke:								
Blueback salmon	4,750	\$237						
Chinook salmon	10,200	510						
Steelhead salmon	2,020	88						
Total	17,870	835						
King:								
Frogs			7,500	\$3,000				
Clams					108,000	\$900		
Total			7,500	3,000	108,000	900		
Klickitat:								
Blueback salmon	163,257	4,130	40,560	608				
Chinook salmon	65,425	2,617	34,000	510				
Silver salmon	16,780	503	22,225	333				
Steelhead salmon	7,870	230						
Total	193,332	7,480	96,785	1,451				
Mason:								
Oysters					1,500,000	37,500		
Pacific:								
Oysters					5,600,400	81,804		
Pierce:								
Clams					330,000	2,750		
Oysters					300,000	7,500		
Dogfish oil							28,500	1,330
Total					600,000	10,250	28,500	1,330

Counties and species.
Skamania:
Blueback salmon
Chinook salmon
Steelhead salmon
Total
Thurston:
Oysters
All counties:
Blueback salmon
Chinook salmon
Silver salmon
Steelhead salmon
Frogs
Clams
Oysters
Dogfish oil
Whales
Grand
Table showing
Counties and species.
Callam:
Chinook salmon
Silver salmon
Total
Clarke:
Blueback salmon
Chinook salmon
Steelhead salmon
Total
Cowlitz:
Blueback salmon
Chinook salmon
Silver salmon
Steelhead salmon
Sturgeon
Total
Jeddoon:
Cultus-cod
Halibut
Herring
Silver salmon
Snelt
Total
King:
Chinook salmon
Dog salmon
Flounders
Herring
Perch
Silver salmon
Snelt
Steelhead salmon
Crabs
Total

the shore fish-

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Lines.		Wheels.		Minor nets.		Tongs and boes.		Spears, guns, etc.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Counties and species.									
Skamania:									
Blueback salmon		122,315	\$4,803						
Chinook salmon		90,275	3,851						
Steelhead salmon		4,010	160						
Total		222,600	8,904						
Thurston:									
Oysters						78,000	\$1,800		
All counties:									
Blueback salmon		230,322	9,260	40,500	\$808				
Chinook salmon		171,000	0,978	34,000	510				
Silver salmon		10,780	503	22,225	333				
Steelhead salmon		14,800	484						
Frogs				7,500	3,000				
Clams						438,000	3,650		
Oysters						7,547,400	128,604		
Dogfish oil								28,500	\$1,330
Whales									800
Grand total		433,802	17,225	104,285	4,451	7,985,400	132,254	28,500	2,130

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890.

Lines.		Gill nets.		Pound and trap nets.		Seines.		Lines.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Counties and species.									
Chehalis:									
Chinook salmon		75,000	\$1,875						
Silver salmon		150,000	3,750						
Total		225,000	5,625						
Challam:									
Cultus-cod								120,000	\$2,350
Halibut								280,000	4,200
Rockfish								65,000	1,725
Dog salmon								63,800	1,275
Silver salmon								96,200	3,000
Total								625,000	12,550
Clarke:									
Blueback salmon		85,920	1,730						
Chinook salmon		34,000	1,020						
Steelhead salmon		6,000	60						
Total		125,920	2,810						
Cowlitz:									
Blueback salmon		20,000	700						
Chinook salmon		137,000	5,480						
Silver salmon		37,150	743						
Steelhead salmon		70,850	1,717						
Sturgeon								255,263	2,871
Total		265,000	8,640					255,263	2,871
Jefferson:									
Cultus-cod								21,000	570
Halibut								50,000	1,000
Herring						17,000	\$340		
Silver salmon								7,000	350
Smelt						20,000	600		
Total						37,000	940	78,000	1,020
King:									
Chinook salmon		56,270	1,656			37,523	1,030		
Dog salmon		350,481	3,158			395,004	2,741		
Flounders						40,000	980		
Herring		52,500	788			17,500	262		
Porch						44,000	880		
Silver salmon		311,214	7,426			408,486	6,526		
Smelt						60,000	1,650		
Steelhead salmon		107,787	2,156			64,673	1,203		
Crabs						38,400	1,000		
Total		878,252	15,184			1,120,586	16,962		

Spears, guns, etc.

Pounds. Value.

\$800

28,500 1,330

28,500 1,330

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Klickitat:								
Blueback salmon	11,480	\$230	12,000	\$240	.....	.....	.....	.....
Chinook salmon	8,000	240	5,000	150	.....	.....	.....	.....
Steelhead salmon	4,000	50	3,000	30	.....	.....	.....	.....
Total	24,080	520	20,000	420	.....	.....	.....	.....
Pacific:								
Blueback salmon	85	2	108,485	3,960	14,945	\$290	.....	.....
Chinook salmon	260,825	8,005	1,778,650	53,300	74,500	2,237	.....	.....
Shad .....	.....	.....	20,117	2,090	.....	.....	.....	.....
Steelhead salmon	1,310	13	411,120	4,110	.....	.....	.....	.....
Total	208,220	8,020	2,414,380	63,529	89,445	2,536	.....	.....
Pierce:								
Chinook salmon .....	.....	.....	7,500	225	30,890	927	.....	.....
Cultus cod .....	.....	.....	.....	.....	.....	.....	115,000	\$2,300
Dog salmon .....	.....	.....	27,701	277	75,727	757	.....	.....
Flounders .....	.....	.....	.....	.....	85,000	1,275	.....	.....
Halibut .....	.....	.....	.....	.....	.....	.....	3,000	90
Herring .....	.....	.....	.....	.....	170,000	1,700	.....	.....
Rockfish .....	.....	.....	.....	.....	.....	.....	45,000	1,350
Shad .....	.....	8,725	698	512	26	.....	.....	.....
Silver salmon .....	.....	97,400	2,168	260,722	5,646	.....	.....	.....
Smelt .....	.....	.....	.....	150,000	2,250	.....	.....	.....
Trout, black-spotted .....	.....	.....	.....	15,000	450	.....	15,000	2,700
Trout, salmon .....	.....	.....	.....	10,000	300	.....	.....	.....
Crabs .....	.....	.....	.....	1,475	295	.....	.....	.....
Shrimp .....	.....	.....	.....	.....	.....	.....	.....	.....
Total .....	.....	.....	141,386	3,368	799,326	13,629	178,000	6,440
San Juan:								
Herring .....	.....	.....	.....	.....	150,000	1,500	.....	.....
Skamania:								
Blueback salmon	10,000	200	.....	.....	.....	.....	.....	.....
Chinook salmon	4,000	120	.....	.....	.....	.....	.....	.....
Steelhead salmon	6,000	60	.....	.....	.....	.....	.....	.....
Total	20,000	380	.....	.....	.....	.....	.....	.....
Wabklakum:								
Blueback salmon	1,105	22	1,515	30	50,515	1,126	.....	.....
Chinook salmon	4,916,850	151,302	90,725	2,721	1,209,225	39,165	.....	.....
Shad .....	.....	.....	8,725	698	80	7	.....	.....
Steelhead salmon	138,440	1,384	29,790	298	367,010	3,600	.....	.....
Total	5,056,395	152,708	130,755	3,747	1,692,890	43,967	.....	.....
All counties:								
Blueback salmon	128,590	2,884	212,000	4,239	71,460	1,425	.....	.....
Chinook salmon	5,497,945	169,698	1,881,875	56,456	1,412,138	43,350	.....	.....
Cultus cod .....	.....	.....	.....	.....	.....	.....	250,000	5,250
Dog salmon	350,481	3,158	27,701	277	470,731	3,498	63,800	1,275
Flounders .....	.....	.....	.....	.....	134,000	2,255	.....	.....
Halibut .....	.....	.....	.....	.....	.....	.....	333,000	5,290
Herring	52,500	788	.....	.....	354,500	3,802	.....	.....
Perch .....	.....	.....	.....	.....	44,000	880	.....	.....
Rockfish .....	.....	.....	.....	.....	.....	.....	110,000	3,075
Shad .....	.....	.....	43,575	3,486	592	33	.....	.....
Silver salmon	408,304	11,010	97,400	2,168	660,208	12,172	103,200	3,350
Smelt .....	.....	.....	.....	.....	236,000	4,500	.....	.....
Steelhead salmon	334,987	5,440	443,910	4,438	431,683	4,962	.....	.....
Sturgeon .....	.....	.....	.....	.....	.....	.....	255,263	2,871
Trout, black-spotted .....	.....	.....	.....	.....	.....	.....	15,000	2,700
Trout, salmon .....	.....	.....	.....	.....	15,000	450	.....	.....
Crabs .....	.....	.....	.....	.....	49,400	1,900	.....	.....
Shrimp .....	.....	.....	.....	.....	1,475	295	.....	.....
Grand total	6,862,807	193,887	2,706,521	71,064	3,889,187	70,531	1,136,263	24,781

Table showing

Counties and

Klickitat:
Whales

Clarke:
Blueback
Chinook
Steelhead

Total

King:
Frogs
Clams

Total

Klickitat:
Blueback
Chinook
Silver salmon
Steelhead

Total

Mason:
Oysters
Pacific:
Oysters

Pierce:
Clams
Oysters
Dogfish oil

Total

Skamania:
Blueback
Chinook
Steelhead

Total

Thurston:
Oysters

All counties:
Blueback
Chinook
Silver salmon
Steelhead
Frogs
Clams
Oysters
Dogfish oil
Whales

Grand

F.

PACIFIC COAST FISHERIES.

273

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Lines.		Wheels.		Minor nets.		Tongs and hoos.		Spears, guns, etc.	
		Counties and species.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pounds.	Value.								
		Challam:							
		Whales.....							\$600
		Clarke:							
		Blueback salmon.....	60,250	\$1,325					
		Chinook salmon.....	41,300	1,239					
		Steelhead salmon.....	18,080	187					
		Total.....	120,230	2,751					
		King:							
		Frogs.....			10,813	\$4,325			
		Clams.....					204,000	\$1,700	
		Total.....			10,813	4,325	204,000	1,700	
		Klickitat:							
		Blueback salmon.....	295,470	8,864	38,585	579			
115,000	\$2,300	Chinook salmon.....	143,342	4,300	56,068	841			
		Silver salmon.....	10,500	210	31,500	472			
		Steelhead salmon.....	96,250	1,443	14,025	210			
3,000	90	Total.....	545,562	14,817	140,178	2,102			
45,000	1,350	Mason:							
		Oysters.....					1,524,000	38,100	
15,000	2,700	Pacific:							
		Oysters.....					6,898,200	100,598	
		Pierce:							
		Clams.....					420,000	3,500	
		Oysters.....					390,000	7,312	
178,000	6,440	Dogfish oil.....						30,000	1,400
		Total.....					810,000	10,812	1,400
		Skamania:							
		Blueback salmon.....	674,745	20,242					
		Chinook salmon.....	514,075	15,440					
		Steelhead salmon.....	23,080	692					
		Total.....	1,212,500	36,374					
		Thurston:							
		Oysters.....					76,800	1,820	
		All counties:							
		Blueback salmon.....	1,030,405	30,431	38,585	579			
		Chinook salmon.....	609,317	20,970	56,068	841			
		Silver salmon.....	10,500	210	31,500	472			
		Steelhead salmon.....	138,010	2,322	14,025	210			
		Frogs.....			10,813	4,325			
		Clams.....					624,000	5,200	
		Oysters.....					8,880,000	147,930	
250,000	5,220	Dogfish oil.....						30,000	1,400
63,800	1,275	Whales.....							600
333,000	5,290	Grand total.....	1,884,292	53,942	150,991	6,427	9,513,000	153,130	2,000
F. R. 93—18									
110,000	3,075								
103,200	3,350								
255,263	2,871								
15,000	2,700								
1,136,263	24,781								

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	60,000	\$1,500						
Silver salmon	130,000	3,150						
Total	190,000	4,650						
Challam:								
Cultus cod					8,150	\$103	115,000	\$2,275
Flounders							315,000	5,350
Hallbut					15,000	150		
Herring					8,370	125	48,770	915
Dog salmon							37,880	757
Humpback salmon							100,000	2,775
Rockfish					21,030	475	82,350	2,688
Silver salmon								
Total					53,150	913	697,000	14,780
Clark:								
Blueback salmon	48,000	1,080						
Chinook salmon	21,000	840						
Steelhead salmon	5,000	125						
Total	74,000	2,045						
Cowlitz:								
Blueback salmon	12,000	420						
Chinook salmon	82,500	3,300						
Silver salmon	54,400	1,068						
Steelhead salmon	68,000	1,537						
Sturgeon							503,327	5,468
Total	216,900	6,325					503,327	5,468
Jefferson:								
Cultus cod							14,000	420
Hallbut							60,000	1,200
Herring	16,000	320						
Silver salmon							6,500	325
Smelt	22,000	660						
Total	38,000	980					80,500	1,945
King:								
Chinook salmon	75,580	2,055			70,483	1,475		
Dog salmon	411,199	3,607			450,273	3,165		
Flounders					70,000	1,400		
Herring	79,500	1,148			25,500	382		
Humpback salmon	154,854	2,322			404,582	6,960		
Perch					60,000	1,500		
Silver salmon	387,511	8,948			543,570	8,272		
Smelt					75,000	1,875		
Steelhead salmon	130,825	2,617			78,405	1,570		
Crabs					57,600	2,400		
Total	1,236,469	20,757			1,805,483	20,005		
Klickitat:								
Blueback salmon	11,400	342	12,000	\$360				
Chinook salmon	4,000	120	3,000	90				
Steelhead salmon	5,100	153	5,000	150				
Total	20,500	615	20,000	600				
Pacific:								
Blueback salmon	105	2	248,840	4,076	2,805	50		
Chinook salmon	1,222,075	41,310	2,337,000	93,504	43,625	1,745		
Shad			42,180	2,531				
Silver salmon	137,060	1,377	305,340	3,353				
Steelhead salmon	27,075	400	432,301	6,051	5,330	80		
Total	1,380,915	43,095	3,366,264	110,415	51,700	1,881		

Table show

Counties a

Here:

Chinook s
Cultus-cod
Dog salmon
Flounders
Hallbut..
Herring..
Humpbac
Rockfish..
Shad.....
Silver salm
Smelt.....
Trout, bla
Trout, salm
Crabs.....
Shrimp.....

Total

San Juan:

Herring

Skamania:

Blueback
Chinook sa
Steelhead

Total

Wahkiakum:

Blueback s
Chinook sa
Shad.....
Steelhead

Total

Whatcom:

Blueback s
Silver salm

Total

All counties

Blueback s
Chinook sa
Cultus-cod
Dog salmon
Flounders
Hallbut..
Herring..
Humpback
Perch.....
Rockfish..
Shad.....
Silver salm
Smelt.....
Steelhead
Sturgeon..
Trout, bla
Trout, salm
Crabs.....
Shrimp.....

Grand

shore fisheries

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Lines.		Gill nets.		Pound and trap nets.		Selses.		Lines.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:									
				10,012	\$570	37,600	\$1,128		
								130,000	\$2,000
				26,500	265	64,039	649		
						115,000	1,725		
								3,500	105
						175,000	1,750		
115,000	\$2,275			25,416	508	70,220	1,404		
								50,000	1,500
				612	37	400	20		
40,770	935			95,300	1,910	261,004	5,220		
37,880	757					175,000	2,625		
100,000	2,775							16,000	2,880
82,350	2,088					18,000	540		
						12,000	360		
697,000	14,780					1,800	450		
				166,840	3,206	930,972	15,871	199,500	7,085
San Juan:									
						200,000	2,000		
Skamania:									
		4,835	\$145						
		2,500	100						
		4,000	60						
		11,335	305						
Wahkiakum:									
503,327	5,468					38,820	1,105		
						1,171,275	35,130		
503,327	5,468	4,270,900	106,168	12,208	732	4,500	270		
				12,170	182	200,360	5,387		
		140,640	2,109						
		4,420,540	168,367	67,178	2,620	1,483,955	41,901		
Whatcom:									
				512,260	10,977				
		14,625	156			72,750	776		
		14,625	156	512,260	10,977	72,750	776		
All counties:									
		76,340	2,580	773,100	10,313	41,625	1,221		
		5,747,555	215,393	2,402,412	95,876	1,322,063	39,487	250,000	5,295
								46,770	935
		411,199	3,007	26,500	265	523,582	3,030		
						193,150	3,288		
								378,500	6,655
		92,500	1,408			415,500	4,282		
		154,854	2,322	25,416	508	534,791	8,370	37,880	757
						60,000	1,500		
				55,000	3,300	4,900	290	150,000	4,275
		723,190	14,009	400,640	5,209	898,954	14,743	88,850	3,013
		22,000	660			250,000	4,500		
		387,240	7,097	449,474	6,383	333,185	7,037		
								503,327	5,468
								16,000	2,880
						18,000	540		
						68,600	2,760		
						1,800	450		
		7,614,884	247,805	4,132,542	127,974	4,688,070	92,407	1,480,327	29,278

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales.....								\$2,400
Clark:								
Blueback salmon....	5,830	\$175						
Chinook salmon.....	14,500	435						
Steelhead salmon....	4,300	120						
Total.....	24,630	730						
King:								
Frogs.....			8,413	\$3,365				
Clams.....					270,000	\$2,250		
Total.....			8,413	3,365	270,000	2,250		
Klickitat:								
Blueback salmon....	63,455	1,004	60,918	914				
Chinook salmon.....	50,605	1,700	10,183	151				
Silver salmon.....	10,110	573	29,820	447				
Steelhead salmon....	48,050	1,441	20,164	302				
Total.....	187,280	5,618	121,085	1,814				
Mason:								
Oysters.....					1,500,000	30,000		
Pacific:								
Oysters.....					7,890,480	105,206		
Pierce:								
Clams.....					460,800	3,800		
Oysters.....					420,000	7,875		
Dogfish oil.....							33,750	1,375
Total.....					880,800	11,785	33,750	1,575
Skamania:								
Blueback salmon....	114,000	3,423						
Chinook salmon.....	169,375	5,081						
Steelhead salmon....	63,010	1,890						
Total.....	346,475	10,394						
Thurston:								
Oysters.....					115,200	2,880		
Whatcom:								
Blueback salmon....			10,500	225				
Silver salmon.....			15,750	108				
Total.....			26,250	393				
All counties:								
Blueback salmon....	183,375	5,502	71,418	1,130				
Chinook salmon.....	240,540	7,216	10,183	151				
Silver salmon.....	19,110	573	45,570	615				
Steelhead salmon....	115,360	3,460	20,164	302				
Frogs.....			8,413	3,365				
Clams.....					736,800	0,140		
Oysters.....					0,985,680	154,901		
Dogfish oil.....							33,750	1,375
Whales.....								2,400
Grand total.....	558,385	16,751	155,748	5,572	10,722,480	161,101	33,750	3,975

Table showing

Counties and

Chelan:
Chinook salmon
Dog salmon
Silver salmon
Sturgeon

Total

Clallam:
Cultus cod
Flounders
Halibut
Herring
Dog salmon
Rockfish
Silver salmon

Total

Clark:
Black salmon
Cook salmon
Head salmon

Total

Cowlitz:
Blueback salmon
Chinook salmon
Silver salmon
Steelhead salmon
Sturgeon

Total

Jefferson:
Cultus cod
Halibut
Herring
Silver salmon
Smelt

Total

King:
Chinook salmon
Dog salmon
Flounders
Herring
Perch
Silver salmon
Smelt
Steelhead salmon
Crabs

Total

Klickitat:
Blueback salmon
Chinook salmon
Silver salmon
Steelhead salmon

Total

Pacific:
Blueback salmon
Chinook salmon
Dog salmon
Shad
Silver salmon
Steelhead salmon
Crabs

Total

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892.

shore fisheries

Counties and species.		Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chas.:									
Chinook salmon.....	299,054	\$5,283	99,084	\$1,760					
Dog salmon.....	219,800	1,009	102,140	511					
Silver salmon.....	563,608	10,048	187,869	3,349					
Sturgeon.....			38,000	190					
Total.....	1,082,522	16,430	427,093	5,810					
Clallam:									
Cultus-cod.....						12,400	\$248	117,000	\$2,305
Flounders.....								354,000	6,035
Hallbut.....						25,000	250	74,000	1,440
Herring.....						17,090	325	123,000	3,315
Dog salmon.....								111,000	3,210
Rockfish.....						38,310	\$95		
Silver salmon.....									
Total.....						93,400	1,718	779,000	10,305
Clarke:									
Chinook salmon.....	88,000	2,040							
Dog salmon.....	27,000	1,080							
Head salmon.....	6,000	90							
Total.....	101,000	3,210							
Cowlitz:									
Blueback salmon.....	15,000	450							
Chinook salmon.....	119,900	4,400							
Silver salmon.....	27,000	552							
Steelhead salmon.....	49,400	863						505,623	5,567
Sturgeon.....									
Total.....	202,000	6,265						505,623	5,567
Jefferson:									
Cultus-cod.....								37,000	860
Hallbut.....								90,000	1,800
Herring.....						12,000	240		
Silver salmon.....						23,000	690	5,000	250
Smelt.....									
Total.....						35,000	1,930	132,000	2,910
King:									
Chinook salmon.....	69,917	2,040	32,018	902	43,440	1,134			
Dog salmon.....	043,110	4,780	164,790	1,640	1,108,329	6,142			
Flounders.....					72,160	1,443			
Herring.....	78,834	1,183			20,278	394			
Perch.....					65,140	1,303			
Silver salmon.....	447,932	9,585	128,230	3,847	692,452	9,219			
Smelt.....					98,726	2,408			
Steelhead salmon.....	130,570	2,011	02,322	1,246	68,250	1,365			
Crabs.....					60,000	2,500			
Total.....	1,370,363	20,199	387,360	7,695	2,234,775	25,068			
Klickitat:									
Blueback salmon.....	12,000	360	14,000	280					
Chinook salmon.....	3,000	90	2,000	80					
Silver salmon.....	5,000	150							
Steelhead salmon.....	5,000	150	4,000	60					
Total.....	25,000	750	20,000	420					
Pacific:									
Blueback salmon.....	105	3	934,885	18,607	8,985	270			
Chinook salmon.....	1,097,175	43,387	2,294,300	90,772	65,300	1,950			
Dog salmon.....	67,666	338	135,334	677					
Shad.....			62,400	1,872					
Silver salmon.....	252,000	2,520	504,000	5,040					
Steelhead salmon.....	9,710	146	765,980	11,489	11,440	289			
Crabs.....	9,000	750							
Total.....	1,435,656	47,144	4,096,899	128,547	88,725	2,518			

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Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon			45,600	\$1,458	91,800	\$2,754		
Cultus-cod							125,000	\$2,500
Dog salmon			55,280	553	110,600	1,106		
Flounders					100,000	1,500		
Halibut							3,000	90
Herring					225,000	2,250		
Rockfish							40,000	1,200
Shad			500	25	600	30		
Silver salmon			165,560	3,311	227,780	4,555		
Smelt					200,000	3,000		
Trout, black-spotted							20,000	3,600
Trout, salmon					20,000	600		
Crabs					10,000	300		
Shrimp					2,000	500		
Total			260,940	5,347	987,780	16,595	183,000	7,390
San Juan:								
Herring					250,000	2,500		
Skamania:								
Blueback salmon	15,000	\$450						
Chinook salmon	4,000	160						
Steelhead salmon	5,000	75						
Total	24,000	685						
Wahkiskum:								
Blueback salmon					366,000	10,980		
Chinook salmon	4,490,500	174,550	500	20	624,250	18,728		
Shad			17,850	536	22,000	720		
Steelhead salmon	283,570	4,254	1,500	150	333,990	6,680		
Total	4,783,070	178,804	19,850	706	1,346,240	37,114		
Whatcom:								
Blueback salmon			260,225	5,570				
Dog salmon	83,475	477			500,850	2,862		
Silver salmon	21,000	224			127,050	1,365		
Total	104,475	701	260,225	5,576	628,800	4,227		
All counties:								
Blueback salmon	110,105	3,303	1,200,110	24,553	374,985	11,256		
Chinook salmon	6,109,646	230,990	2,477,102	95,052	824,790	24,575		
Cultus-cod							279,000	5,685
Dog salmon	1,014,111	6,694	457,544	3,381	1,737,460	10,435	74,000	1,410
Flounders					184,500	3,191		
Herring	78,834	1,183			538,278	5,634	447,000	7,925
Halibut								
Perco					65,140	1,303		
Rockfish							163,000	4,515
Shad			80,750	2,433	22,600	750		
Silver salmon	1,317,140	23,070	985,659	15,547	1,986,492	16,034	116,000	3,460
Smelt					321,720	6,158		
Steelhead salmon	489,250	8,189	833,802	12,945	416,680	8,334		
Sturgeon			38,000	190			505,623	5,567
Trout, black-spotted							20,000	3,600
Trout, salmon					20,000	600		
Crabs	9,000	750			70,000	2,800		
Shrimp					2,000	500		
Grand total.	9,128,066	273,188	6,081,967	154,101	5,664,720	91,570	1,604,623	32,172

Table sho

Counties

Clallam:
Whales.
Fur-seal.

Total

Clarke:
Blueback
Chinook
Steelhead

Total

King:
Clams
Frogs...

Total

Klickitat:
Blueback
Chinook
Silver sa
Steelhead

Total

Mason:
Oysters.
Pacific:
Oysters.

Pierce:
Clams
Oysters.
Dogfish

Total

Skamania:
Blueback
Chinook
Steelhead

Total

Thurston:
Oysters.

Whatcom:
Blueback
Dog sal
Silver sa

Total

All counti
Blueback
Chinook
Dog sal

Silver sa
Steelhead
Frogs...

Clams
Oysters
Dogfish

Whales
Fur-seal

Grand

Shore fisheries

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Lines.		Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
Counties and species.		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:									
Whales.....									\$000
Fur-seal pelts.....									2,700
Total.....									3,300
Clarke:									
Blueback salmon.....	94,500	\$2,835							
Chinook salmon.....	38,825	1,165							
Steelhead salmon.....	29,400	882							
Total.....	162,725	4,882							
King:									
Clams.....						300,000	\$2,500		
Frogs.....				13,125	\$5,250				
Total.....				13,125	5,250	300,000	2,500		
Klickitat:									
Blueback salmon.....	217,052	6,512	76,000	1,154					
Chinook salmon.....	125,405	3,762	14,450	217					
Silver salmon.....	34,104	1,023	33,650	510					
Steelhead salmon.....	242,970	4,289	28,000	434					
Total.....	619,531	15,586	154,200	2,315					
Mason:									
Oysters.....						1,576,800	32,850		
Pacific:									
Oysters.....						7,588,440	101,179		
Pierce:									
Clams.....						384,000	3,200		
Oysters.....						598,200	11,216		
Dogfish oil.....								37,500	1,750
Total.....						982,200	14,416	37,500	1,750
Skamania:									
Blueback salmon.....	417,280	12,513							
Chinook salmon.....	253,400	7,602							
Steelhead salmon.....	378,190	8,346							
Total.....	1,048,870	28,461							
Thurston:									
Oysters.....						132,000	2,750		
Whatcom:									
Blueback salmon.....			14,000	300					
Dog salmon.....			21,000	120					
Silver salmon.....			15,000	160					
Total.....			50,000	580					
All counties:									
Blueback salmon.....	728,832	21,865	90,000	1,454					
Chinook salmon.....	417,630	12,520	14,450	217					
Dog salmon.....			21,000	120					
Silver salmon.....	34,104	1,023	48,050	670					
Steelhead salmon.....	650,560	13,517	28,000	434					
Frogs.....			13,125	5,250					
Clams.....					684,000	5,700			
Oysters.....					9,895,440	147,095			
Dogfish oil.....							37,500	1,750	
Whales.....								600	
Fur-seal pelts.....									2,700
Grand total.....	1,831,120	48,934	217,325	8,145	10,579,440	153,695	37,500	5,050	

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Table showing by counties and species the yield of the shore fisheries of Washington—Continued.

SUMMARY.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	1,085,075	\$21,701	75,000	\$1,875	60,000	\$1,500	398,738	\$7,043
Dog salmon							322,000	1,610
Silver salmon	1,282,200	32,044	150,000	3,750	130,000	3,150	751,477	13,397
Sturgeon							387,000	190
Total	2,367,275	53,745	225,000	5,625	190,000	4,650	1,510,215	22,240
Clallam:								
Cultus cod	130,000	2,500	120,000	2,350	115,000	2,275	117,000	2,305
Flounders					8,150	163	12,400	214
Hallbut	300,000	4,500	280,000	4,200	315,000	5,350	354,000	6,055
Herring	47,210	965	63,600	1,275	15,000	150	25,000	250
Dog salmon	39,350	810			55,140	1,080	91,690	1,705
Humpback salmon	60,000	1,650	65,000	1,725	77,880	757		
Rockfish	86,440	2,095	96,200	3,000	100,000	2,775	123,000	3,315
Silver salmon					3,163		149,310	4,105
Whales		800		600		2,400		600
Fur-seal pelts								2,700
Total	663,000	13,920	625,600	13,150	750,150	18,993	872,400	21,323
Clarke:								
Blueback salmon	51,750	1,737	152,170	3,055	53,890	1,855	162,500	4,875
Chinook salmon	30,200	1,310	75,300	2,250	35,500	2,275	65,825	2,245
Steelhead salmon	8,820	263	24,680	247	9,300	254	35,400	972
Total	96,870	3,310	252,150	5,561	98,690	3,384	263,725	8,092
Cowlitz:								
Blueback salmon	13,000	390	20,000	700	12,000	420	15,000	450
Chinook salmon	81,000	3,240	137,000	5,480	82,500	3,300	110,000	4,400
Silver salmon	26,675	607	37,150	743	53,400	1,068	27,600	552
Steelhead salmon	42,325	1,143	70,850	1,717	68,600	1,537	49,400	861
Sturgeon	218,985	2,300	255,263	2,871	503,327	5,408	555,023	5,507
Total	381,985	7,740	520,263	11,511	719,827	11,703	707,623	11,832
Jefferson:								
Cultus cod	19,000	500	21,000	570	14,000	420	37,000	860
Hallbut	41,000	820	50,000	1,000	60,000	1,200	90,000	1,800
Herring	15,000	300	17,000	340	16,000	320	12,000	210
Silver salmon	6,000	300	7,000	350	6,500	325	5,000	250
Smelt	25,000	750	20,000	600	22,000	600	23,000	690
Total	106,000	2,670	115,000	2,860	118,500	2,925	167,000	3,840
King:								
Chinook salmon	80,248	1,828	93,792	2,686	146,063	3,530	145,384	4,136
Dog salmon	289,247	2,415	745,485	5,899	801,472	6,832	1,916,220	12,562
Flounders	25,000	500	49,000	980	70,000	1,400	72,100	1,441
Herring	35,000	525	70,000	1,050	102,000	1,530	105,112	1,577
Humpback salmon	184,427	2,764			619,416	9,288		
Perch	23,000	460	44,000	880	60,000	1,500	65,140	1,303
Silver salmon	1,086,060	13,922	719,700	13,052	931,081	17,220	1,268,614	22,651
Smelt	33,000	825	60,000	1,650	75,000	1,875	98,726	2,468
Steelhead salmon	90,570	1,811	172,466	3,440	209,320	4,187	201,142	5,222
Crabs	14,400	600	38,400	1,600	57,600	2,400	60,000	2,500
Frogs	7,500	3,000	10,813	4,325	8,413	3,365	13,125	5,250
Clams	108,000	900	204,000	1,700	270,000	2,250	300,000	2,500
Total	1,977,352	29,550	2,213,651	38,171	3,410,365	55,377	4,365,623	61,612
Klickitat:								
Blueback salmon	172,817	5,898	357,555	9,913	147,773	3,520	319,952	8,306
Chinook salmon	112,925	3,667	212,410	5,531	73,848	2,061	144,855	4,119
Silver salmon	30,005	836	42,000	682	48,950	1,420	73,054	1,681
Steelhead salmon	10,870	320	117,875	1,733	78,314	2,040	280,870	4,633
Total	335,617	10,727	729,820	17,850	348,865	8,047	818,731	19,071
Mason:								
Oysters	1,500,000	37,500	1,521,000	38,100	1,560,000	39,000	1,573,800	32,850
Pacific:								
Blueback salmon	111,850	5,586	213,515	4,270	251,750	5,634	943,975	18,979
Chinook salmon	1,632,953	71,569	2,119,975	63,602	3,603,300	130,550	3,450,775	138,118
Dog salmon							203,000	1,015
Shad	14,125	1,412	26,125	2,090	42,186	2,531	62,400	1,872
Silver salmon	1,198,000	29,950			443,800	4,730	750,000	7,500
Steelhead salmon	251,520	7,544	412,430	4,123	464,709	6,537	790,130	11,921
Crabs							3,000	750
Oysters	5,609,400	81,804	6,898,200	100,598	7,800,480	105,206	7,588,440	101,179
Total	8,817,848	107,865	9,670,245	174,683	12,605,419	200,507	13,869,720	279,368

Counties and	Species:
	Chinook salmon
	Cultus cod
	Dog salmon
	Flounders
	Hallbut
	Herring
	Humpback
	Rockfish
	Shad
	Silver salmon
	Smelt
	Trout, black
	Trout, salmon
	Crabs
	Shrimp
	Clams
	Oysters
	Dogfish oil
Total ..	
San Juan:	
Herring ..	
Shamania:	
Blueback s	
Chinook sal	
Steelhead s	
Total ..	
Thurston:	
Oysters ..	
Waukiakum	
Blueback s	
Chinook sa	
Shad	
Steelhead s	
Total ..	
Whatcom:	
Blueback s	
Dog salmon	
Silver salm	
Total ..	
All counties:	
Blueback s	
Chinook sa	
Cultus cod	
Dog salmon	
Flounders	
Hallbut ..	
Herring ..	
Humpback	
Perch	
Rockfish ..	
Shad	
Silver salm	
Smelt	
Steelhead s	
Sturgeon	
Trout, bla	
Trout, salm	
Fur-seal p	
Frogs	
Crabs	
Clams	
Shrimp	
Oysters	
Whales	
Dogfish oil	
Grand	

Washington—

Table showing by counties and species the yield of the shore fisheries of Washington—
Continued.

SUMMARY—Continued.

1892.	Pounds.	Value.	Counties and species.	1889.		1890.		1891.		1892.	
				Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
108, 738	\$7.043		Pierce:								
322, 000	1.610		Chinook salmon	15, 980	\$480	38, 390	\$1, 152	50, 612	\$1, 008	140, 400	\$4, 212
751, 477	13.397		Cultus cod	105, 000	2, 100	115, 000	2, 300	130, 000	2, 000	125, 000	2, 500
387, 000	190		Dog salmon	72, 870	729	103, 488	1, 034	91, 439	914	165, 880	1, 050
510, 215	22, 240		Flounders	80, 000	1, 200	85, 000	1, 275	115, 000	1, 725	100, 000	1, 500
			Halibut	4, 000	120	4, 000	90	3, 500	105	3, 000	90
117, 000	2, 305		Herring	165, 000	1, 050	170, 000	1, 700	175, 000	1, 750	225, 000	2, 250
12, 400	248		Humpback salmon	98, 015	2, 041	45, 000	1, 350	95, 645	1, 012	40, 000	1, 200
354, 000	0.035		Rockfish	42, 000	1, 200	45, 000	1, 350	50, 000	1, 500	40, 000	1, 200
25, 000	250		Shad	1, 000	55	9, 237	724	1, 012	57	1, 100	55
91, 690	1, 705		Silver salmon	287, 535	6, 250	358, 122	7, 814	356, 304	7, 136	393, 340	7, 860
			Smelt	145, 000	2, 175	150, 000	2, 250	175, 000	2, 625	200, 000	3, 000
123, 000	3, 315		Trout, black-spotted	12, 000	1, 800	15, 000	2, 700	16, 000	2, 880	20, 000	3, 600
140, 310	4, 105		Trout, salmon	13, 000	390	15, 000	450	18, 000	540	20, 000	600
	690		Crabs	8, 000	240	10, 000	300	12, 000	360	10, 000	300
	2, 700		Shrimp	1, 500	300	1, 475	295	1, 800	450	2, 000	500
872, 400	21, 323		Clams	330, 000	2, 750	420, 000	3, 500	466, 800	3, 890	384, 000	3, 200
			Oysters	360, 000	7, 500	390, 000	7, 312	420, 000	7, 875	598, 200	11, 216
			Dogfish oil	28, 500	1, 330	30, 000	1, 400	33, 750	1, 575	37, 500	1, 750
			Total	1, 770, 000	32, 370	1, 958, 712	35, 646	2, 217, 862	30, 592	2, 405, 420	45, 498
162, 500	4, 875		San Juan:								
65, 825	2, 245		Herring			150, 000	1, 500	200, 000	2, 000	250, 000	2, 500
35, 400	972										
263, 725	8, 092		Skamania:								
15, 000	450		Blueback salmon	133, 315	5, 443	684, 745	20, 442	118, 925	3, 568	432, 280	12, 968
110, 000	4, 400		Chinook salmon	99, 275	4, 001	518, 675	15, 500	171, 875	5, 181	257, 400	7, 702
27, 000	552		Steelhead salmon	5, 010	190	29, 080	752	67, 010	1, 050	383, 190	8, 421
49, 400	861		Total	237, 600	9, 634	1, 232, 500	36, 754	357, 810	10, 609	1, 072, 470	29, 151
505, 623	5, 567		Thurston:								
707, 623	11, 832		Oysters	78, 000	1, 800	76, 800	1, 020	115, 200	2, 880	132, 000	2, 750
37, 000	860		Wahkiakum:								
90, 000	1, 800		Blueback salmon	7, 460	373	59, 135	1, 178	38, 820	1, 165	366, 000	10, 980
12, 000	240		Chinook salmon	7, 070, 100	348, 117	6, 276, 800	193, 188	5, 493, 975	203, 019	5, 124, 250	193, 298
5, 000	250		Shad	5, 885	588	8, 805	705	16, 708	1, 002	39, 850	1, 256
23, 000	690		Steelhead salmon	553, 590	10, 007	535, 240	5, 351	428, 170	7, 768	619, 060	11, 084
167, 000	3, 840		Total	7, 637, 035	363, 685	6, 879, 980	200, 423	5, 977, 673	212, 054	6, 140, 160	216, 624
145, 384	4, 136		Whatcom:								
1010, 220	12, 562		Blueback salmon					522, 760	11, 202	274, 225	5, 876
72, 160	1, 443		Dog salmon							905, 325	3, 450
105, 112	1, 577		Silver salmon					103, 125	1, 100	163, 950	1, 740
65, 140	1, 303		Total					625, 885	12, 302	1, 043, 500	11, 084
268, 614	22, 051		All counties:								
98, 726	2, 468		Blueback salmon	490, 192	19, 427	1, 487, 100	39, 558	1, 145, 858	26, 764	2, 513, 932	62, 431
201, 142	5, 222		Chinook salmon	10, 207, 756	455, 913	9, 547, 343	291, 333	9, 723, 673	358, 124	9, 843, 627	303, 363
60, 000	5, 250		Cultus cod	254, 000	5, 100	256, 000	5, 224	259, 000	5, 295	270, 000	5, 665
13, 125	5, 250		Dog salmon	409, 327	4, 109	912, 773	8, 208	1, 008, 051	8, 806	3, 304, 115	22, 070
306, 000	2, 500		Flounders	165, 000	1, 700	134, 000	2, 255	193, 150	3, 288	184, 560	3, 101
303, 623	61, 612		Halibut	345, 000	5, 440	335, 000	5, 290	378, 500	6, 055	447, 000	7, 925
			Herring	215, 000	2, 475	407, 000	4, 590	508, 000	5, 750	617, 112	6, 817
319, 952	8, 306		Humpback salmon	322, 892	5, 615	.....	.....	752, 941	11, 957	.....	.....
44, 855	4, 149		Perch	23, 000	400	44, 000	880	60, 000	1, 500	65, 110	1, 303
73, 054	1, 683		Rockfish	102, 000	2, 910	110, 000	3, 075	150, 000	4, 275	163, 000	4, 515
280, 870	4, 633		Shad	21, 010	2, 055	44, 167	3, 519	59, 000	3, 590	103, 350	3, 183
318, 731	19, 071		Silver salmon	4, 012, 815	86, 684	1, 410, 172	30, 291	2, 176, 320	38, 912	3, 588, 345	59, 813
			Smelt	203, 000	3, 750	230, 000	4, 500	272, 000	5, 160	321, 726	6, 158
573, 800	32, 850		Steelhead salmon	962, 805	27, 881	1, 302, 615	17, 372	1, 325, 423	24, 279	2, 419, 102	43, 419
			Sturgeon	218, 085	2, 300	255, 263	2, 871	503, 327	5, 468	543, 623	5, 757
943, 975	18, 979		Trout, black-spotted	12, 000	1, 800	15, 000	2, 700	16, 000	2, 880	20, 000	3, 600
450, 775	136, 118		Trout, salmon	13, 000	390	15, 000	450	18, 000	540	20, 000	600
203, 000	1, 015		Far-seal pelts	7, 500	3, 000	10, 813	4, 325	8, 413	3, 365	13, 125	5, 250
62, 400	1, 872		Frogs	438, 000	3, 650	624, 000	5, 200	730, 800	6, 140	684, 000	5, 700
756, 000	7, 500		Clams	22, 400	840	48, 400	1, 000	69, 600	2, 760	79, 000	3, 550
790, 130	11, 321		Crabs	1, 500	300	1, 475	295	1, 800	450	2, 000	500
3, 000	750		Shrimp	7, 547, 400	128, 004	8, 889, 000	147, 030	9, 985, 680	154, 061	9, 895, 410	147, 995
588, 440	101, 179		Oysters .....	.....	800	.....	600	.....	2, 400	.....	600
309, 720	279, 368		Whales	28, 500	1, 330	30, 000	1, 400	33, 750	1, 575	37, 500	1, 750
			Dogfish oil								
			Grand total	25, 002, 582	766, 510	20, 173, 121	589, 762	20, 386, 180	684, 893	35, 144, 737	707, 855

Table showing by counties the extent of the salmon-canning industry of Washington in 1889, 1890, 1891, and 1892.

Counties and years.	No. of employees. (a)	Canneries.			Salmon utilized in canning.										Total.			
		Value.	Cash capital.	Chinook.		Blueback.		Steelhead.		Silver.		Dog.		Humpback.				
				Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
Chehalis:																		
1889.....	180	3	\$24,000	\$45,000	800,000	\$19,560										2,142,800	\$51,604	
1890.....	56	1	8,000	30,000	292,500	4,387						1,282,200	\$32,044		322,200	\$1,310	1,131,500	14,082
King:																		
1889.....	138	2	22,500	40,000	28,728	274						904,244	8,542		129,531	623	272,194	\$4,081
1890.....	85	1	15,000	29,000	6,268	60						309,000	3,450		307,860	1,466	683,728	4,978
1891.....	189	7	7,000	35,000	41,895	339						518,437	4,839		339,261	1,613	619,416	9,291
1892.....	73	1	7,000	35,000	11,098	106						715,500	6,958		1,560,000	6,000	2,046,358	13,064
Pacific:																		
1889.....	278	4	80,000	104,000	1,486,725	63,026	111,215	\$2,224	395,220	\$9,880	1,060,000	26,650				3,059,169	101,780	
1890.....	183	2	55,000	81,000	2,090,075	75,242	294,620	4,092	517,980	5,179						2,812,675	84,513	
1891.....	296	4	140,250	141,000	3,243,875	123,867	264,415	5,290	464,620	6,969	383,500	5,752				4,356,410	141,578	
1892.....	298	4	141,500	183,000	3,296,700	131,868	460,135	9,203	1,018,290	15,273	756,000	7,590				5,734,125	164,919	
Wahkiakum:																		
1889.....	356	7	184,500	230,000	7,114,649	350,211	7,400	373	551,500	12,383						7,675,609	362,907	
1890.....	344	7	182,050	250,000	6,912,288	266,833	59,135	1,178	577,240	5,272						7,548,663	373,790	
1891.....	328	7	177,500	207,000	5,386,143	216,335	38,829	776	478,170	7,171						6,103,133	294,282	
1892.....	312	7	183,250	252,000	5,194,352	201,700	518,065	11,464	789,530	7,895						6,501,847	221,059	
Whatcom:																		
1891.....	72	1	25,000	30,000			522,760	11,202			103,125	1,100				635,885	12,302	
1892.....	82	1	30,000	40,000			274,225	5,876			163,950	1,749				1,043,500	11,084	
Total:																		
1889.....	652	16	321,000	428,000	9,490,702	433,101	118,675	2,507	948,810	22,293	3,252,544	67,296			129,531	623	272,194	4,081
1890.....	452	10	242,000	316,000	8,036,631	342,141	243,753	5,297	1,095,220	11,482	369,600	3,450			307,860	1,466	1,045,066	363,270
1891.....	773	12	242,000	413,000	8,571,913	346,301	825,095	17,268	942,790	14,140	1,005,062	11,691			339,261	1,613	619,416	9,291
1892.....	851	13	308,750	520,000	8,794,550	338,061	1,252,425	26,543	1,897,829	23,168	2,204,450	24,352			2,300,325	12,064	16,449,570	424,208

^a Included in the figures for Pacific County are 103 persons in 1889, 40 in 1891, and 45 in 1892 who were employed in salmon canning at Shoalwater (Willapa) Bay after the close of the season on the Columbia River. They have been credited to the Columbia River in the regular statistics of persons employed.

Table showing by counties the extent of the salmon-canning industry of Washington in 1889, 1890, 1891, and 1892.—Continued.

Counties and years.	Cases of salmon packed.					Total.
	Chinook.	Blueback.	Steelhead.	Silver.	Dog.	

table showing by counties the extent of the salmon-canning industry of Washington in 1887, 1890, 1894, and 1897.—Continued.

[illegible]

PACIFIC COUNTY.

This county is favorably located in respect to its fishing resources. One-half of its southern border is at the mouth of the Columbia River. Here are located over 300 pound nets used in the salmon fishery, many of which are owned in the county. Here, also, a large part of the salmon catch of the river is taken and distributed among the salmon canneries on both sides of the river. Here, at certain seasons, sardines, herring, shad, and other varieties not now utilized hold out inducements for the extension of the fisheries.

Just outside of the mouth of the Columbia, and off the shores of Pacific County, are good fishing-grounds on which may be found in more or less abundance, at all seasons of the year, rockfish, flounders, perch, halibut, and numerous other varieties of good food-fish, to all of which only slight attention is given.

At the northern end of the county Willapa Harbor is a good haven for shelter, and leading from it is Willapa Bay, formerly known as Shoalwater Bay, which is noted for its extensive beds of native oysters, as well as the abundance of salmon occurring during the fall.

The fisheries of Willapa Bay are confined to the salmon and oyster business, in addition to which a small quantity of crabs taken in the salmon nets are utilized.

The run of salmon was fair in 1889, light in 1890 and 1891, and the largest in many years in 1892. The fish in 1892 were also of larger size and better quality than the average of past years. Three canneries are located on the bay, but only one of them was packing during 1892. The low price of canned salmon and the light run in 1890 and 1891 were so discouraging to the canners that two of the canneries did not resume in 1892, and the only one packing was ill prepared for the large run, and was obliged to shut down in the height of the season, owing to lack of cans in which to pack. The first salmon to enter this bay are the chinooks, locally known as black salmon; they run from the last of July to the last of August, with some stragglers later. Silver salmon appear about the middle of August and drop off in September, to be followed by dog salmon and another run of silver salmon during the last of September or early in October. A few steelheads are found in November, but only a light run of them occurs before December, after which they are to be found more or less abundantly all winter.

The salmon catch is chiefly by pound nets, of which twelve were located on North River and three on Willapa River, near their entrance to the bay. As showing the abundance of salmon in 1892, the catch of 1,700 salmon, of which 1,460 were silver salmon, at one lift of a single pound net may be recorded. Pound nets are put down in August, previous to which time the fishing in Willapa Bay is of small extent and for local use.

The prices paid the salmon fishermen during 1892 were 10 cents each for silver salmon, 25 cents each for chinook salmon, and 5 cents each for

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dog salmon. During 1892 no arrangements had been made for salting the catch of salmon, and preparations for canning were based on the expectation of only a light run, as in the two previous years. At the date of closing, thousands of salmon were taken from the pound nets only to be refused at the cannery and then thrown away from want of salt and barrels in which to cure or tins in which to pack them; the fishing was consequently discontinued.

During December, 1892, the railroad reached Willapa Bay, its terminal being at South Bend on the Willapa River. The first house in South Bend is reported to have been built in 1889; in 1892 the town had a population of 2,000. With the advent of the railroad a cold-storage company was organized to engage extensively in the fresh-fish trade. Should the plans of the company be realized it would be of great advantage to the fishermen and would provide an outlet for any such abundance of salmon as was witnessed in 1892.

The growth of the salmon fishery of Willapa Bay from 1890 to 1892 was phenomenal. In 1890 the only salmon taken were for local use. In 1891 30,000 pounds of silver salmon were shipped fresh, in addition to the local consumption. In 1892 10,800 cases of silver salmon and 2,900 cases of dog salmon were canned, and 75,000 pounds of fresh chinook salmon were sent to market, the total catch of the 45 salmon fishermen being 1,034,000 pounds, valued at \$10,075.

The oyster industry of Willapa Bay has its principal headquarters at Bay Center, though the business is important at Oysterville. In 1892 365 persons were employed, including 143 Indians; \$47,735 was invested, and the value of the output was \$101,179. Next to San Francisco Bay, the oyster industry of Willapa Bay is more important than elsewhere on the Pacific Coast.

Since the oyster beds in Willapa Bay were visited by the writer in 1889 they had suffered severe loss from numerous storms; at times the shoal waters of the bay would sweep the oysters from the beds, leaving them in rows, buried in the mud and grass of the bottom. Thousands of bushels of oysters were thus killed. With the increased care of the beds, the replanting of the small oysters and of shells, the great losses by storms have been overcome, and the quantity of oysters taken for market has been kept up to the average of late years. For years the business was carried on with little or no regard to the future interest of the beds, the chief and only aim of the fishermen seemingly being to take all the oysters possible during the time permitted, without cultivating or caring for the beds in any way. The decline in the native beds called attention to the necessity for preserving them from complete depletion, and measures were taken by the State with that end in view.

During the open season before cold weather the native oysters are gathered by hand at low tide, the beds being entirely exposed, and only the market oysters being taken. With the return of the tide the oystermen work from boats with tongs, and the catch under such circumstances is culled, all small oysters and old shells being returned to

the water. During the prevalence of cold weather rakes and shovels take the place of hand-picking at low tide, and the oysters are culled, as is done with those taken by means of tongs.

The oysters gathered at Bay Center are mostly marketed at San Francisco; those taken at Oysterville go to Portland, Oreg.

The quantity and value of the oyster output of the bay in 1889, 1890, 1891, and 1892 were as follows:

Location.	1889.		1890.		1891.		1892.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
Bay Center	80, 490	\$70, 429	100, 720	\$88, 130	118, 268	\$94, 614	114, 250	\$91, 400
Oysterville	13, 000	11, 375	14, 250	12, 468	13, 240	10, 592	12, 224	9, 779
Total	93, 490	81, 804	114, 970	100, 598	131, 508	105, 206	126, 474	101, 179

CHEHALIS COUNTY.

The fisheries of this county are located on the Chehalis River, mostly near its mouth, and in Grays Harbor. In addition to the commercial fishing which is there carried on, considerable quantities of fish are also taken by Indians belonging on the Quinault Reservation, who fish in the river of the same name for local consumption. Fishing in the Chehalis River is done by means of gill nets and pound nets, the only fish utilized being salmon and sturgeon. Ocean food-fish in great abundance and variety are found just outside the harbor. These, together with the salmon, sturgeon, trout, and other fish found in the river and bay, will doubtless lead to a marked development of the fisheries of this county within a short time.

During 1889 three canneries were located on the Chehalis River whose aggregate pack was 31,550 cases. The very large output of canned salmon in that year on the west coast resulted in such low prices that many canneries were kept idle during the next two years, among which were the three canneries on this river. The only fishing carried on during 1890 and 1891 was a limited amount of gill-nets salmon fishing in the Chehalis, and the Indian fishing already alluded to.

In December, 1891, a branch of the Pacific Railroad was opened to Ocosta, near the entrance to Grays Harbor. The facilities for shipment thus furnished and the opening of a cannery the following year revived the business that for two years had been almost abandoned. A cold-storage company was organized which contemplated entering largely into the fresh-fish business and shipping to Atlantic cities by means of refrigerator cars. During the fall of 1892 the run of the several varieties of salmon was very good: Chinooks, locally known as black salmon, entered the river in limited numbers as early as August 10, and by the 15th they were quite abundant; their average weight was 24 pounds. Silver salmon were found from the last of September to the first of November, averaging 12 pounds in weight. There was a short run of dog salmon from October 10 to November 1, these fish

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having an average weight of 12 pounds. There was also a small run of dog salmon in the river after November 1. Steelheads are found from November to the following March, but the closing of the canneries before the run begins had, prior to building the railroad, prevented their utilization. The prices received by the salmon fishermen in 1892 were 30 cents each for chinooks, 15 cents each for silver salmon, and 5 cents each for dog salmon. In 1892 there were 102 fishermen employed in the salmon fishery of the Chehalis River, 34 of whom came from the Columbia River after the close of the season on that stream. Of the capital employed, amounting to \$52,285, \$7,300 represented nets, boats, etc., brought from the Columbia. Fifty-eight Chinamen were employed as cannery hands. The aggregate catch of salmon on the Chehalis in 1892 was 1,472,215 pounds, with a value to the fishermen of \$22,050. This quantity included salmon canned, used locally, and shipped fresh by express. During the years 1889 and 1892, when salmon canning was done on this river, the following quantities of the different kinds of salmon were packed:

Species.	1889.	1892.
	<i>Cases.</i>	<i>Cases.</i>
Chinooks.....	13, 240	4, 500
Silver.....	18, 310	7, 700
Dog.....		4, 600
Total.....	31, 550	16, 800

Sturgeon have always been more or less abundant in the Chehalis River, but up to a recent date no value was attached to them, and those found in the pound nets were knocked in the head and thrown away. Direct rail communication soon brought buyers from Puget Sound, and no more sturgeon were discarded. In 1892 38,000 pounds of sturgeon incidentally taken in the pound nets were disposed of; the price received by the fishermen being one-half cent a pound gross weight.

A few fine shad are taken in the pound nets of Chehalis River, but no special fishing for shad is done at any time. No nets of any kind are used until the fall run of salmon begins, by which time the run of shad is probably nearly over. The few shad taken are eaten by the fishermen. Salmon trout are found plentifully in the Chehalis River, but are fished for only by sportsmen.

JEFFERSON COUNTY.

The fishing business of this county centers at Port Townsend. The many advantages which this point possesses for the carrying on of an extensive fishing industry have often been mentioned. The city has one of the best harbors on the Pacific coast. Many varieties of desirable food-fish are to be found almost at the city's docks. The halibut, cod, and other fish, which are found in abundance just within and outside the Strait of San Juan de Fuca, are much nearer to Port Townsend than to any other city or important shipping point. The fisheries have not reached that stage of development which was anticipated a few

years ago, chiefly for the reason that the attempts to utilize the fine resources of the region have not been sufficiently extensive and enough capital has not been put into the business to demonstrate the success of the industry. The great depression in all kinds of business during the past few years had its effects here as elsewhere and prevented the introduction of new enterprises or the enlargement of those already in existence. There is little reason to doubt that in the near future the fishing business of this county will be of great importance. A number of small-sized sailboats using hand lines for cultus-cod and halibut furnish the city with an abundance of food-fish, the surplus catch being sent to the various ports on Puget Sound. This, at present, constitutes the extent of the fishing industry of the county, with the exception of a small amount of seine fishing for herring and smelt. The western end of this county, which borders on the Pacific Ocean, is mountainous and unsettled, and maintains no fisheries.

CLALLAM COUNTY.

On the west this county abuts on the Pacific Ocean, while its northern border extends the entire length of the Strait of Fuca. It is therefore conveniently located with reference to the fishing-grounds, and it maintains fisheries of great and growing importance. The chief fishing centers are Neah Bay, Port Angeles, and Dungeness.

The fishery resources of this county are varied and valuable. The western section is mountainous and sparsely settled, and the fishing is confined to the taking of salmon by the Indians living along the banks of the Quillaiute River, which flows through their reservation. Small quantities of halibut and cod, with an occasional whale, are also taken by these Indians, who depend chiefly on these products for their winter supply of food. During the early spring months, for several weeks, the fur seal is found resting and feeding off the shores of this county before proceeding on its migration to Bering Sea. In the fall immense numbers of salmon come in from the ocean on their way up the strait and sound. Herring, anchovies, and smelt are also found in large bodies. The fishing banks and shoals in the immediate vicinity of the north-western end of the county abound with fish, of which halibut, cultus-cod, rockfish, and black-cod are most sought after, while flounders, perch, dogfish, sharks, sculpins, and many other species are also abundant. The value of the fishery resources of this section has long been known, but up to the past few years the attempts made to utilize the resources have been limited.

In 1889 these fisheries were investigated for the United States Fish Commission by the writer, who again visited the region in 1892. In the interim the attention of the fishermen had been especially directed to this section by the printed reports distributed by the Commission, and as a result the fishermen largely extended their operations in that vicinity, marketing their catch at the various cities on the strait and sound, whence the surplus was shipped to the interior.

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BOWHEAD OR ARCTIC WHALE (*Balaena mysticetus*).

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CORSAIR (*Sebastichthys rosaceus*).

TREEFISH (*Sebastichthys serripes*).

HALIBUT (*Hippoglossus hippoglossus*).

CALIFORNIA FLOUNDER (*Paralichthys stellatus*).

SURF SMELT (*Hypomesus pretiosus*).

COD (*Gadus morhua*).

CULTUS-COD (*Ophiodon elongatus*).

BLACK COD, OR BESHOWE (*Anoplopoma fimbria*).

CALIFORNIA HERRING (*Clupea pallasii*).

CHINOOK, KING, OR QUINNAT SALMON (*Oncorhynchus tshawytscha*).

BLUEBACK OR RED SALMON (*Oncorhynchus nerka*).

SILVER SALMON (*Oncorhynchus kisutch*).

DOG SALMON (*Oncorhynchus keta*).

STEELHEAD (*Salmo gairdneri*).

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YELLOW TAIL, OR AMBER FISH (*Seriola dorsalis*).

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Neah Bay.—The most important of the fishing communities of this county is Neah Bay, located on a reservation of the Makah Indians. Its nearness to the fishing-grounds makes it important as a harbor of refuge for fishermen of this entire region. In 1892 the Indians of Neah Bay numbered 442. They are industrious, self-supporting, quiet, and peaceable. The only work performed by them is connected with the fisheries, with the exception that during the hop-picking season men, women, and children are engaged in the hopyards of the white settlers of distant counties on or near Puget Sound. As reported in 1889, these Indians continue to procure the larger part of their food supply from the fishing-grounds of the Strait of Fuca and the adjacent ocean. No records are kept of their catch, and the amounts credited in the tables are based on careful estimates made at the agency.

Halibut are the favorite food-fish of the Indians. It is estimated at the agency that 280,000 pounds of this fish are used annually as food, in addition to the quantities sold. During 1892 a fishing firm located at Tacoma had a steamer employed in visiting the grounds near Cape Flattery and buying the catch from the Indians and the small sailing vessels of white men. It is the practice of the Indians to go into camp near Cape Flattery, where the fish are dressed and disposed of, those not sold fresh being taken home and smoked for future use. The home market thus created induced a largely increased catch.

The average daily catch of a halibut canoe is about 40 fish, having an average weight of 30 pounds, many of the fish taken being much heavier. The fishing season is from the middle of May to the middle of August, after which time three-fourths of the Indians leave for the hop vineyards. The halibut continue to be taken by the Indians with large, cumbersome wooden hooks made by them, which they prefer to the regular trade hooks used by white men. Halibut have been found in their usual abundance on the several fishing-grounds inside and outside the Strait of Fuca, although the larger catch is taken in the ocean. In rough and stormy weather fishing can be successfully carried on inside the mouth of the strait.

In 1892 new grounds were resorted to with excellent results. These were located from 25 to 40 miles southwest from Cape Flattery, and fishing was done in a depth of 75 fathoms. The Indians of this county pay but little attention to salmon. Their catch is only made by trolling a bone or spoon hook in the American waters of the Strait of Fuca. The principal portion of the salmon run, which occurs in the fall, is said to be on the British side of the strait, on reaching the inner extremity of which the fish turn into their customary routes, one body going into Puget Sound and one going northward into the Strait of Georgia destined for the Fraser River.

The pursuit of the fur seal is an important branch of the fisheries carried on by the Indians of Neah Bay. Small sailing vessels making their headquarters at that point are employed, several of which are owned by the Indians. In addition to the five sailing vessels used, in

1892 two others were bought and one was built in Seattle, too late for use during that year, all of which were to be put into this fishery in the following season.

Whales are pursued in large canoes that often go 15 or 20 miles from the shore. Only harpoons and lances are employed by the Indians in the whale fishery. After being killed, the whale is buoyed with large air bags made from the skins of sea lions and towed to the shore, where it is soon cut up and divided among the tribe. The blubber is cut into long, narrow strips and smoked for later use as one of their favorite articles of food.

The Indian, almost from infancy, is familiar with the canoe and its management. Very young children are often noticed dexterously manipulating the paddle in miniature canoes, and during youth the greater part of the life of the Indians is spent in their canoes. Strange to say, however, they do not feel safe on the deck of a vessel and seldom become good sailors. Even in the fur-seal fishery in which the Indians are the owners of the vessels employed, they never go any distance from land without having a white man aboard as navigator.

On returning from a fishing trip, the work of the Indian fisherman ceases until he again enters his canoe. The women meet the boats as soon as they land and attend to all the details connected with the care and preservation of the catch.

The canoes used by the Indians are all made of red cedar, each from a single log. Canoes of different sizes are employed in the different fisheries, the standards being about as follows:

Dimensions and crews of Indian canoes, Neah Bay.

Fisheries in which employed.	Length.	Beam.	Crew.
	<i>Feet.</i>	<i>Feet.</i>	
Salmon.....	10	2½ to 3	1 to 2
Halibut.....	30 to 33	5	4 to 6
Whale.....	35 to 40	6 to 7	8
Fur seal.....	22	2½	2

The quantities and values of the products taken by the Indians of Neah Bay when fishing in their canoes were as follows, the figures applying to each of the years 1889 to 1892, inclusive. In addition to the products shown, the Indians of the same tribe and county living on the Quillaiute River took 300 fur seals, valued at \$2,700, and a large amount of fish for local consumption of which no estimate can be given.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Halibut.....	300,000	\$4,500	280,000	\$1,200	290,000	\$4,350	325,000	\$4,875
Salmon.....	48,000	720	35,000	525	42,000	630	60,000	900
Cod (cultus and black).....	100,000	1,500	90,000	1,350	85,000	1,275	87,000	1,305
Rockfish.....	10,000	150	15,000	225	15,000	225	25,000	375
Whales.....number..	(4)	800	(3)	600	(12)	2,400	(3)	600
Total.....	458,000	7,650	420,000	6,000	432,000	8,880	497,000	8,055

During 1889 and 1890 the sealing vessels of Neah Bay were seized for illegal sealing. In 1891 they took 815 seals, which were sold for \$14,947, and in the following year 1,743 seals were killed, which brought \$16,537. Three vessels were used in 1891 and five in 1892.

Port Angeles.—Prior to 1891 the fisheries of this port were confined to the operations of the Indians who live in the vicinity, but with the growth of the place during the years covered by this report more attention was given to developing the fishing business. A fishing and canning company under the name of the Port Angeles Packing Company was organized in 1892, a small cannery was built, and \$10,000 was invested in the plant. The business was started too late in the season to do more than prepare for the ensuing year.

Two small vessels and several boats were engaged in the line and gill-net fisheries of this place, the catch, consisting of cultus-cod, halibut, and salmon, being marketed at Port Townsend or Seattle, when not sold locally. Fish of numerous varieties are fairly abundant at most seasons of the year, and the port has one of the best harbors in this region. It would therefore appear that with the further growth of the country the fisheries will receive more attention. In 1891 and 1892 the following quantities of fish were taken by the fishermen of Port Angeles and the immediate vicinity, including some Indian fishermen of Elwha Creek, located 6 miles west of Port Angeles:

Species.	1891.		1892.	
	Pounds.	Value.	Pounds.	Value.
Salmon	30,000	\$600	46,000	\$870
Halibut	25,000	1,000	34,000	1,180
Rockfish	35,000	1,050	50,000	1,480
Total	90,000	2,650	130,000	3,530

Dungeness.—Dungeness is a settlement composed for the most part of Indians, with only a few white families. The section is rough and mountainous, the harbor is shallow, and the conditions do not appear favorable for a great increase in the fisheries. Some little fishing is carried on from canoes, with hooks and lines, by Clallam Indian men and women. Any surplus catch, which is seldom made, finds a market at Seattle. The quantity taken varies but little from year to year, and in 1892 was about as follows:

Species.	Pounds.	Value.
Salmon	125,000	\$3,750
Cultus cod and black-cod	30,000	1,000
Rockfish	50,000	1,500
Total	205,000	6,250

PIERCE COUNTY.

This county occupies the head of Puget Sound and has as its fishing center Tacoma, where most of the fishermen of the county reside and nearly all of the catch is marketed. With the recent growth of the city, the construction of a large cold-storage warehouse, and the investment of more capital in the industry, the outlook for the fisheries is very encouraging to the fishermen, and the results of the business present a considerable increase since the last report.

The principal fisheries are for salmon, carried on with pound nets; for cultus-cod, halibut, and rockfish, with lines; for flounders, herring, salmon, smelt, etc., with seines; and for oysters and clams, with tongs. The most important single products are oysters and silver salmon.

During 1892 a firm largely interested in the fisheries placed the steamer *Francis Cutting* in the business. This steamer was chiefly used as a transporter, making frequent trips from Tacoma to the several fishing banks of the sound and strait. The fishing season extended from May 1 to November 2, during which time about 500,000 pounds of halibut, 50,000 pounds of black-cod, and 75,000 pounds of cultus-cod were bought from the fishermen on the fishing-grounds, in addition to which the crew of the steamer caught about 20,000 pounds of halibut. On securing a fare the steamer returned to Tacoma, where the catch was placed in cold storage until needed. Fishing for halibut and the other fish is done by a small fleet of sailing vessels using hand lines.

Besides the halibut, black-cod, and cultus-cod brought in by the steamer, this firm handled considerable quantities of salmon, smelt, and sturgeon. After supplying the local demand, the surplus catch was packed in refrigerator cars and shipped to points east of the Rocky Mountains. The sturgeon handled came by rail from Grays Harbor the other fish were caught locally. This was probably the first year in which smelt were sent from the Pacific Coast to the East. The business of freezing and shipping fresh fish to eastern points promises a large increase in the near future. In 1891 one car, with 20,000 pounds of fresh fish, was sent east. In 1892, up to the middle of December, eleven cars, containing 297,369 pounds of fresh frozen fish, had been sent, while half a dozen car loads still remained in storage, to be forwarded later.

KING COUNTY.

The most important fishing center of this county is Seattle. The rapid growth in the population of Seattle, the building of a cold-storage warehouse, and the establishment of new fishing firms have led to a threefold increase in the fisheries of this county as compared with 1888.

The salmon canning business of Seattle and vicinity has fluctuated considerably in recent years. In 1889 three canneries were operated. During that season one was destroyed by fire, and the following year another shared the same fate, and the third was closed. The cannery destroyed in 1890 was burned during the packing season, but the business was continued in a hastily provided temporary building, the

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packing for the season being necessarily much reduced, owing to the interruption. A large new cannery to replace the loss by fire was constructed, and was the only one in operation during the years 1891 and 1892. The most abundant salmon taken in this county is the dog salmon, which constitutes about five-twelfths of the catch. Silver salmon is next in abundance, representing one-third the catch, while steelhead and chinook salmon, respectively, comprise one-sixth and one-twelfth of the yield. In 1889 about three-eighths of the salmon catch of this county was obtained by means of pound nets, but in the later years the use of purse seines has been increasing and pound nets have been given up, so that in 1892 three-fourths of the catch was made with purse seines and one-fourth with gill nets.

A fleet of small-sized schooners, built for the fisheries during the years 1891 and 1892, at once inaugurated the halibut fishery, and their catch met with a ready sale at Seattle.

The business of shipping fish fresh in refrigerator cars is growing in importance. Shipments are as yet confined to fresh salmon and halibut consigned mostly to points east of the Missouri River. Each car carries from 12 to 18 tons of fish. In 1890 six carloads, comprising 195,250 pounds of fresh fish, were sent east from Seattle; the following year, nineteen carloads, aggregating 690,210 pounds, were sent east. Up to December 1, 1892, five carloads, equivalent to 121,550 pounds, had been sent, and it is probable that the shipments during the remainder of the year would make the aggregate for the season fully equal to that of 1891.

The Puget Sound and Alaska Commercial Company, of Seattle, was the pioneer of the cod-fishing business of that city. The firm began operations in February, 1892, and on March 5 of that year sent the schooner *Moonlight*, of 68 tons, with a crew of 17 men, on the first cod-fishing trip from Seattle. The vessel fished in Bering Sea and returned to Seattle on August 20 with 175,000 pounds of salt cod. Soon after being landed the fish were prepared in the usual manner as boneless cod and placed on the market. The success attending this first trip and the favorable reception accorded the prepared catch indicate that the future may see this business largely increased.

The pelagic fur-seal fishery has for many years received considerable attention in Seattle. Of late more vessels and larger craft have been engaged in this branch of the fisheries. During 1892 the vessels were very successful in taking seals and in receiving good prices in the London market, to which the entire catch was sent. At the close of 1892 vessels were being overhauled and made ready for an early start in January, 1893, for the distant sealing-grounds off the coast of Japan.

SKAGIT COUNTY.

This county is favorably located with reference to the fishing-grounds of the Strait of Fuca and Strait of Georgia, and will no doubt come into prominence with the further settlement of the section, but at the present time it maintains no local fisheries, and the only feature which

entitles it to mention is the offshore cod fishery carried on from Anacortes, in this county. During 1892 direct rail communication was established between Seattle and this county, with the water terminal at Anacortes. This town was one of many communities that the opening of the railroad brought into existence. Up to the date of the visit of the agent of the Fish Commission no attention had been given to the fisheries, with the exception of the cod fishery noted.

In 1891 Capt. J. A. Matteson, of Provincetown, Mass., brought to Anacortes the schooner *Lizzie Colby*, which had for a number of years been engaged in the Grand Banks cod fishery out of Provincetown. On the arrival of the vessel she was at once sent to the fishing banks in Bering Sea. Although the season was late when fishing began and the operations were continued only twenty days, 85,000 pounds of codfish were taken and brought to Anacortes. On March 17, 1892, this pioneer vessel in the cod fishery of Washington sailed from Anacortes on her second trip to Bristol Bay, Alaska, returning August 30 with 364,000 pounds of codfish, which were caught in three months' fishing. On the return of the vessel the cargo was stored under pickle in tanks until needed. As occasion requires, the fish are dried on outdoor flakes, and prepared for market as boneless codfish. The fish are sold in Seattle, Portland, and other cities of the west coast, and one car load was sent to Boston, Mass.

WHATCOM COUNTY.

This is the most northern county of the Pacific Coast of the United States. It lies at the southern entrance to the Gulf of Georgia and just northeast of the Strait of Fuca, and is of considerable importance in connection with the fisheries. Salmon on their way to the Fraser River pass the shores of this county, off which they are usually found about a month earlier than they are in the Fraser. The fisheries are centered at Point Roberts, a military reservation. Numerous varieties of fish are here found, but only salmon at the present time have any commercial importance. Previous to the establishment of a salmon cannery at Point Roberts in 1891, all the fishing of the county was confined to the period of the early run of salmon on their way to the Fraser. At that time the catch, of which no reliable report could be procured, was used locally, and sold to the canneries over the boundary line, on the Fraser River, and was much less than in 1891 and 1892.

During 1892 over three-fourths of the catch was taken by the 85 white men using purse seines and pound nets, and less than one-fourth by 100 Indian fishermen employing reef nets and gill nets. The reef net, of which a diagram and description were given in the previous report on the fisheries of this coast, is gradually going out of use, only 10 being used in 1892, against 20 in 1891. The proportional quantities of salmon taken with the different kinds of apparatus are as follows: Pound nets, two-tenths; purse seines, six-tenths; gill nets, one-tenth; reef nets, one-tenth. Silver salmon and skowitz or dog salmon are taken by purse seines and gill nets; sockeye or blueback salmon are

caught by pound nets, while all species are taken in small quantities in reef nets. The average gross weights of the different species of salmon taken at Point Roberts in 1892 were as follows: Blueback salmon, 7 pounds; silver salmon, $7\frac{1}{2}$ pounds; dog salmon, $10\frac{1}{2}$ pounds. The prices paid to the fishermen for these fish were 15 cents, 8 cents, and 6 cents, respectively.

The total quantity of salmon taken in 1891 was 625,885 pounds, and in 1892 1,043,500 pounds, all of which were caught and used in canning at Point Roberts.

SAN JUAN COUNTY.

This county consists of numerous islands lying midway between the island of Vancouver on the west and Skagit County on the east, in the direct line of migration of the large bodies of salmon on their way from the ocean to the Fraser River and other streams of the northwest coast. While the opportunities for commercial fishing for salmon and other fishes are regarded as extremely good, the fishing industry is insignificant. On Waldron Island some attention was given to the taking and smoking of herring during the years 1891 and 1892, several hundred thousand pounds of raw material being utilized annually. After being smoked the fish are packed in small boxes holding 5 or 6 pounds, and find a ready market in the cities of the Pacific Coast.

THE OYSTER BUSINESS OF PUGET SOUND.

Native oyster beds are abundant in Mason and Thurston counties, the beds in Mason County being in Oakland Bay, Case Inlet, Totten Inlet or Oyster Bay, and Hood Canal, and those of Thurston County in Muc Bay near Olympia; all of these bodies of water are tributary to Puget Sound. During the past few years more attention has been given to the native beds of this region. The small seed oysters obtained from the cull have been planted, and starfish found on the beds have been destroyed. In all cases in which some care has been bestowed on the beds a gain in the output has resulted, while localities where the beds have received no attention have generally shown a decrease, some beds worked as late as 1889 now being abandoned. In past years starfish have been very destructive to the native beds of Puget Sound; of late the efforts to rid the beds of this injurious animal have been increased, and depredations have been almost entirely prevented. The beds are exposed at low tide, at which time the starfish are gathered by hand and with forks, and used on the land for fertilizer.

In taking oysters in the Puget Sound region tongs are but little used—in some instances not at all, the oysters being picked by hand at low tide, and carried to floats, where they are culled, small seed oysters and shells being returned to the beds.

Market oysters are sent to Olympia, Tacoma, Seattle, and other points, in sacks containing 115 pounds, equivalent to 2 bushels. Prices in 1889 were \$3 per sack, and in 1891 and 1892 \$2.50 per sack. The oyster season is from September 1 to May 1. Two sacks per day are considered a fair quantity to be taken by one man.

Considerable interest is being taken in the question as to whether eastern oysters will propagate or thrive in the waters of Puget Sound. It is reported that the experiment will soon be given a trial by planting a consignment of oysters from the East.

The extent of the oyster industry of Puget Sound in the years 1889 to 1892, inclusive, is shown in the following tables. The number of men engaged and the capital invested in this industry show little change from year to year, although there has been a slight increase in the quantity of products, with a reduction in their value. In addition to the persons shown in the table, there were perhaps as many more employed at odd times in connection with the industry, but their operations were too brief to entitle them to mention in the tables. In addition to the quantities of oysters given for Mason and Thurston counties, about 10,000 bushels are taken annually from these counties by fishermen living at Tacoma, to which place their catch is credited.

In 1892 small beds of a bivalve mollusk (*Placunanomia macroschisma*) of no economic value were found between Tacoma and Seattle. Considerable attention was given to this discovery, because of the extensive notices in the press. By the newspapers the shellfish were almost invariably designated as valuable beds of eastern oysters. Their shells were about the size of a medium eastern oyster. The soft part of most of them was of a bright red color, resembling fresh meat rather than shellfish. The Indians of the sound have long been familiar with these mollusks, and report them as good for food at certain seasons and as poisonous at other times. No experiments as to their value for food were made by the whites, and the beds remain undisturbed.

Persons employed in the oyster industry of Puget Sound.

Counties and countries.	Nativity.	Nationality.
Mason:		
United States	40	45
United States (Indians)	11	11
China	8	8
France	5	5
Total	64	64
Thurston:		
United States (Indians)	12	12
Grand total	76	76

Boats, apparatus, shore property, and cash capital employed in the oyster industry of Puget Sound.

Items.	Mason.		Thurston.		Total.	
	No.	Value.	No.	Value.	No.	Value.
Boats	a78	\$1,500	b25	\$750	103	\$2,310
Tongs	43	172	10	40	53	212
Floats	40	2,000	5	250	45	2,250
Shore property		1,000				1,000
Cash capital		5,000				5,000
Total	161	9,732	40	1,040	201	10,772

a Rowboats.

b Canoes.

1889.....
1890.....
1891.....
1892.....

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Product of the oyster industry of Puget Sound.

Years.	Mason.		Thurston.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
1880.....	25,000	\$37,500	1,200	\$1,800	26,200	\$39,300
1890.....	25,400	38,100	1,280	1,920	26,680	40,020
1891.....	26,000	39,000	1,020	2,880	27,020	41,880
1892.....	26,280	32,850	2,200	2,750	28,480	35,600

ALASKA.

GROWTH OF THE FISHING INDUSTRY.

Until a few years ago the wonderful fishery resources of Alaska were little known except to the natives of the country. Attention was called to this distant portion of the United States by Dr. Tarleton H. Bean, of the United States Fish Commission, in the report of the Commission for 1880. This report was extensively copied and was read with great interest, and its accounts of the wonderful abundance of salmon and other fish were by many received with doubts similar to those entertained two hundred and fifty years before regarding the reports carried to Europe as to the abundance of fish off the New England coast. Time has proved that the statements of Dr. Bean were quite moderate and fully reliable. Notwithstanding the great abundance of fish in Alaskan waters, the total value of the fish utilized in 1880 by others than natives was shown to have been insignificant.

Soon after attention had been called to Alaska and its resources by the United States Fish Commission, many persons engaged in the salmon business on the Columbia and other coast rivers gave the subject of Alaskan fisheries careful consideration. Although the fish were very abundant, the great distance of the grounds and the expense necessary to establish a plant there were considered to involve too great a risk to warrant the inauguration of fisheries. The first experiment having proven a financial success, the doubtful watchers, slowly at first and later with more eagerness, followed, until at the present time it will be seen that over half of the aggregate pack of salmon in the United States and nearly half of the pack of the entire world comes from Alaska.

The large area, and the wide distances between inhabited stations of this vast domain, render the gathering of complete general and statistical information a matter of much time, difficulty, and expense. Fortunately, so far as the fisheries are concerned, the various fishing firms in Alaska have their home stations and headquarters at San Francisco, or in Washington and Oregon, and can be reached with comparative ease. The instructions to the writer on his last investigation of the fisheries of the Pacific Coast in 1892 called for such statistical information regarding the Alaskan fisheries as could be procured without visiting that Territory. Each of the headquarter offices, as previously mentioned, was visited, and through the courtesy of the

Nation- ality.	
45	
11	
8	
64	
12	
76	
Total.	
Value.	
\$2,310	
212	
2,250	
1,600	
5,000	
10,772	

proprietors and officers complete and accurate information was obtained directly from the books of every salmon cannery in Alaska, without one dollar of extra expense to the Government.

With the exception of the considerable quantities of fish caught and consumed in Alaska by the natives, the accompanying tables represent the entire food-fish fisheries of Alaska. The waters of that region, however, abound in many varieties of fine food-fish to which scarcely any attention has been given. San Francisco firms engaged in the cod fishery procure their catch on the extensive fishing banks just off the shores of Alaska, on which they have several stations. Their catch will be found in the statistical tables of California, and the two vessels in the same business from Washington will be credited to that State.

STATISTICS OF THE INDUSTRY.

The following tables show, for the years 1889 to 1892, inclusive, the extent of the fisheries of Alaska. The figures relate to persons employed; vessels, boats, apparatus, etc., used; and the quantity and value of the catch:

Persons employed in the fisheries of Alaska.

How employed.	1889.	1890.	1891.	1892.
In vessel fisheries	283	310	321	331
In shore fisheries	1,442	1,678	1,820	1,020
On shore, in canneries, etc.	2,497	2,068	2,806	1,533
Total	4,222	4,050	4,947	2,884

Vessels, boats, apparatus, shore property, and cash capital employed in Alaska fisheries.

Designation.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels	33	\$433,000	36	\$504,500	39	\$532,500	40	\$461,000
Tonnage	6,710		6,860		6,923		8,623	
Outfit		26,400		29,000		32,957		33,400
Boats	722	131,175	793	138,200	800	148,175	421	63,575
Apparatus:								
Seines	105	45,225	124	55,425	127	55,000	69	27,025
Gill nets	478	51,650	510	55,650	590	60,850	243	28,750
Pound nets	20	17,200	24	20,200	25	21,000	16	13,200
Lines		3,350		5,050		5,350		4,050
Guns								500
Shore property		1,124,900		1,214,400		1,208,500		720,650
Cash capital		1,723,000		1,788,750		2,001,500		1,257,000
Total		3,555,900		3,812,675		4,185,825		2,609,650

Products of the fisheries of Alaska.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Cod	1,135,975	\$28,453	1,166,002	\$41,082	1,637,000	\$10,025	2,219,835	\$55,562
Herring	13,860,800	24,335	15,694,800	27,464	15,437,000	27,169	18,700,000	32,900
Salmon	50,917,220	1,500,490	55,444,820	1,630,281	69,071,040	2,031,552	42,231,500	1,219,974
Fur-seal pelts		1,077,473		267,750		217,408		107,573
Sea-otter pelts								2,220
Total	65,913,995	2,630,822	72,215,622	1,967,177	86,145,040	2,317,054	63,151,335	1,418,228

a Represents 102,617 skins.

b Represents 21,000 skins.

c Represents 13,588 skins.

d Represents 7,175 skins.

e Represents 18 skins.

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1891.	1892.
321	331
1,820	1,020
2,800	1,533
3,947	2,884

Alaska fisheries.

1892.	
No.	Value.
40	\$461,000
1,023	33,400
421	69,575
69	27,025
243	28,750
10	13,200
.....	4,050
.....	500
.....	720,650
.....	1,257,500
.....	2,609,650

1892.	
Cnds.	Value.
9,835	\$55,362
0,000	32,900
1,500	1,219,973
.....	d 107,572
.....	e 2,220
1,335	1,418,228

18 skins.

THE SALMON INDUSTRY.

Brief notice has been made of the first canning of salmon in Alaska, of its success, and of the rush to this new region of those previously engaged in the business in other sections. The number of canneries in the Territory increased up to 1891, when the business reached high-water mark; the number of canneries in operation was 33 and the pack was 808,908 cases. This large amount of canned salmon, added to the customary yearly pack of the Columbia and other rivers, could have but one result, that of an overstocked market that at once necessitated a curtailing of operations. Salmon continued in great abundance in Alaskan waters, and it was apparent that the running of the 33 canneries to their full capacity would result in great pecuniary loss. Twenty-seven of the canning firms consequently decided to largely diminish expenses and reduce the amount of the pack in 1892, and in future years, so far as possible, to limit the production to the probable demand of the trade. This was accomplished by the firms mentioned pooling their business and closing 18 canneries that had run in 1891; the others, with those not entering the combine, made the number of factories operated in 1892 only 15. The pack in 1892 was 468,970 cases.

The principal salmon used in the canning business in Alaska are the small red-meated fish, locally known as red salmon, which has an average weight of 7 pounds, and the larger king or chinook salmon, which averages 30 pounds. In packing a case of 48 one-pound cans, the average number of red salmon required is 12, and of king salmon 23. This is a much larger average than obtains at the canneries in the Pacific States, where the fish are less abundant and more valuable. The great abundance of these fish in Alaska results in the use of only the choicest parts and in the loss or waste of large quantities of products which otherwise would be utilized.

The extent of the salmon fishery of Alaska and of the canning and salting industry dependent thereon is given in the following tables. It appears that in 1892 2,601 persons were engaged in the industry, that \$2,184,303 was invested, that 37,534,100 pounds of salmon were utilized at the canneries in the preparation of 468,970 cases of canned fish and 55 barrels of salt salmon, the manufactured products having a value of \$1,970,110. For reasons already given, the business was much less extensive in 1892 than in any of the other years under consideration. The canneries not operated in the years shown represent a very large investment which does not appear in the statistics. Only the property actively employed is noticed.

The business of salting salmon, as a branch of the fishing industry independent of the salting done at the canneries, is quite important and is yearly increasing in extent. About a dozen firms, located in various parts of Alaska, engaged in salting salmon in 1892, utilizing 4,697,400 pounds of fresh fish and preparing 15,658 barrels of salt salmon, having a value of \$125,264. In the following year 5,871,600 pounds of raw material were consumed in the production of 19,572

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300 REPORT OF COMMISSIONER OF FISH AND FISHERIES.

barrels of salt fish worth \$156,576. The persons employed in this branch of the salmon industry and the capital invested therein are included in the figures given in the preceding paragraph and in the tables which follow.

Persons employed in the salmon industry of Alaska.

Years.	On vessels.	In shore fisheries.	On shore.	Total.
1889.....	252	1,324	2,397	3,973
1890.....	279	1,533	2,508	4,340
1891.....	290	1,557	2,706	4,553
1892.....	288	880	1,433	2,601

Vessels, boats, apparatus, shore property, and cash capital employed in the salmon industry of Alaska.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Establishments.....	36	\$914,903	39	\$908,903	42	\$1,050,403	25	\$503,403
Cash capital.....		1,538,000		1,003,750		1,891,500		1,117,500
Vessels.....	28	\$412,000	31	\$488,000	34	\$518,500	34	\$441,500
Tonnage.....	6,552.42		6,701.80		6,765.24		8,421.48	
Boats.....	680	127,075	732	132,275	748	142,250	365	58,025
Seines.....	96	40,125	113	49,325	118	49,900	60	21,925
Gill nets.....	478	51,650	510	55,050	500	60,850	243	28,750
Trap nets.....	20	17,200	24	20,200	25	21,000	16	13,200
Total.....		3,101,953		3,348,103		3,744,403		2,184,303

a With outfit.

The vessels shown in the foregoing table are employed about the stations or are engaged in transporting supplies to the canneries and the prepared products to the markets. Many are of large size, and are among the finest vessels employed in the United States in connection with the fisheries. They are mostly steamers, but there are also ships, barks, and schooners. The largest sailing vessel is a ship of 1,158.30 tons, and the largest steamer has a tonnage of 449.64. These two vessels carry crews of 30 and 14 men, respectively. The aggregate tonnage of this fleet in 1892 was 8,421.48, the value of the vessels was \$441,000, and the crews numbered 288. The following table relates to the vessels employed in this capacity from 1889 to 1892, inclusive. A number of steam launches of less than 5 tons burden, used at the canneries, are classed as boats and do not appear in the table.

Vessels engaged in the salmon industry of Alaska.

Years and rigs.	No.	Net tonnage.	Value. (a)	No. of crew.	Years and rigs.	No.	Net tonnage.	Value. (a)	No. of crew.
1889—Steam.....	18	1,041.91	\$268,500	106	1891—Steam.....	25	1,290.95	\$378,000	148
Sail.....	10	5,510.51	144,500	146	Sail.....	9	5,474.29	140,500	142
Total.....	28	6,552.42	413,000	252	Total.....	34	6,765.24	518,500	290
1890—Steam.....	22	1,227.51	347,500	137	1892—Steam.....	28	1,002.03	315,500	129
Sail.....	9	5,474.29	140,500	142	Sail.....	11	7,358.85	126,000	159
Total.....	31	6,701.80	488,000	279	Total.....	34	8,421.48	441,500	288

a Includes outfit.

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1889... 48.2
1890... 52.1
1891... 65.0
1892... 37.5
1893... 51.7

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Products of the salmon industry of Alaska.

Years.	Salmon canneries.						Salmon salteries.			
	Salmon utilized.		Salmon canned.		Salmon salted.		Salmon utilized.		Salmon salted.	
	Pounds.	Value.	Cases	Value.	Bbls.	Value.	Pounds.	Value.	Bbla.	Value.
1889....	48,213,120	\$1,446,394	599,394	\$2,996,970	872	\$6,976	2,705,100	\$54,102	9,017	\$72,136
1890....	52,138,520	1,564,156	641,440	2,629,491	2,742	21,936	3,300,330	60,125	11,921	88,168
1891....	65,013,240	1,950,397	868,908	3,235,632	1,002	8,016	4,057,800	81,155	13,626	108,268
1892....	37,534,100	1,126,023	468,070	1,969,074	55	440	4,097,400	93,950	15,658	125,264
1893....	51,725,000	1,551,752	630,427	2,863,021	2,793	21,624	5,871,600	117,432	19,572	156,570

o shore. Total.

2,397	3,973
2,568	4,340
2,708	4,553
1,433	2,601

the salmon

1892.

No. Value.

25	\$503,403
.....	1,117,500
34	a441,500
21.48	
365	58,925
60	21,925
243	28,750
16	13,200
.....	2,184,303

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Value.
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378,000	148
140,500	142
518,500	290
315,500	129
128,000	158
441,500	288

The names of the salmon-canning firms in Alaska and the location of the canneries are shown for four years in the following list, the cross-marks indicating the years in which the canneries were operated:

List of Alaskan salmon canneries operated in 1889, 1890, 1891, and 1892.

Name of cannery.	Location.	1889.	1890.	1891.	1892.
Astoria Packing Company	Kuiu Island		x	x	
Alaska Packing Company	Nushagak River	x	x	x	x
Arctic Packing Company	Uyak	x	x	x	
Do	Bristol Bay	x	x	x	
Do	Alliak				x
Do	Cook Inlet	x		x	
Aleutian Island Fishing and Mishing Company	Karluk		x	x	
Alaska Salmon Packing and Fur Company	Loring	x	x	x	x
Alaska Improvement Company	Kadiak	x	x	x	
Aberdeen Packing Company	Wrangel	x	x	x	
Boston Fish and Trading Company	Yea Bay	x	x	x	x
Behring Sea Packing Company	Ugashik			x	
Bristol Bay Canning Company	Bristol Bay	x	x	x	x
Baranoff Packing Company	Baranof Island	x	x	x	x
Central Alaska Company	Thin Point	x	x	x	
Chilkat Packing Company	Chilkat River	x	x	x	
Chilkat Canning Company	do	x	x	x	
Chignik Bay Packing Company	Chignik Bay	x	x	x	
G. W. Hume	Cook Inlet		x	x	x
Hume Packing Company	Karluk	x	x	x	x
Karluk Packing Company	do	x	x	x	x
Kadiak Packing Company	do	x	x	x	
Do	Alliak		x	x	
Metlakatla Mission	Clarence Strait			x	x
North Pacific Trading and Packing Company	Klawak	x	x	x	x
Northern Packing Company	Cook Inlet	x	x	x	
Nushagak Canning Company	Bristol Bay	x	x	x	
Pacific Packing Company	Copper River	x	x	x	
Pacific Steam Whaling Company	do	x	x	x	
Peninsular Trading and Fishing Company	do	x	x	x	
Pyramid Harbor Packing Company	Pyramid Harbor	x	x	x	x
Royal Packing Company	Atognak	x	x		
Russian-American Packing Company	do	x	x	x	
Thin Point Packing Company	Thin Point	x	x	x	
Total		28	30	33	15

Mr. A. B. Alexander, fishery expert on the United States Fish Commission steamer *Albatross*, makes the following remarks on the business of salting salmon in Alaska:

The demand for salt salmon is yearly increasing. A few years ago there was but little call for it, probably owing to the fact that little effort was made on the part of those engaged in the business to introduce it in the East. Seeing the absolute necessity of taking steps to place their products on the eastern market in order to increase the demand and establish a trade for salt-cured salmon, efforts have been pushed in that direction, and the encouragement met with has induced many who had not the means or desire to enter into the expensive business of canning salmon to establish salmon salteries in various parts of Alaska.

The amount of capital required to start on a small scale in this business is not

large. One or two boats fitted with drag seines, a cabin on shore for living quarters, a rough shed or fish house in which to dress and salt the fish and for performing such general work as may be required in a limited business of this kind, will suffice for all purposes. Many of the well-established salteries were first started in this manner and have since grown to be of considerable importance. Two or three men with only a small amount of capital, if they are fortunate in selecting a good locality where the run of salmon can be relied upon—for the success of the entire business depends upon the location—can, if they display the required amount of energy, build up a paying business. They of course must appreciate the fact that at least for seven months out of the year they must content themselves with being cut off and isolated from civilization, but the class of men who seek a livelihood in this remote part of the world care little for social life, or, if so, the prospect which looms up before them for making money is fully equivalent to any hardships of this nature they may undergo.

Several small vessels manned by men of small means have, during the past few years, made annual voyages to Alaska, spent the fishing season there, and in the fall brought back the summer's catch. At first they temporarily located themselves by way of an experiment where it was thought to be a good position for carrying on the business. If the experiment proved a success, the next year greater preparations were made, and in this way from a small beginning quite a number of valuable plants have been established.

The greater part of the salmon put up at the salteries are caught in drag seines, although a few are taken in gill nets and traps, but at most places where salteries are situated the drag seine has been found to be the most profitable apparatus of capture, owing to the great number of smooth beaches where the fish can be easily taken. There are, however, numerous bays, channels, and straits in Alaska where the purse seine could be used to advantage. The reason why this style of net has not been adopted in places where it can be used is because the fishermen of the coast are not experienced in handling it. In 1893 a mackerel purse seine was for the first time used at Tongas Narrows, in southeastern Alaska. Previous to the introduction of this seine the drag seine had always been used. Mr. Clarke, one of the owners of the saltery established here, says that after a season's trial he has come to the conclusion that the purse seine is superior to the drag seine, and during the next season he intends to employ several of them. The secret of Mr. Clarke's success in fishing for salmon with a purse seine is in his knowledge of using it, which was gained by nearly twenty years' experience in the mackerel and other fisheries in New England. Seeing no reason why salmon could not be caught in the same manner as mackerel in places where the bottom and general surroundings were favorable, he sent East for enough twine to make a seine 150 fathoms long, 17 fathoms deep in the bunt, and 14 fathoms on the wings, the size of the twine being 9 and 12 thread. It will be observed that this seine is considerably deeper in proportion to its length than the ordinary mackerel seine. The reason for this extra depth is that salmon, when they find themselves surrounded by twine, will, like mackerel, dive, but, as a rule, they will only go down from 12 to 14 fathoms. By having the seine several fathoms deeper than they generally dive, a school, when once surrounded, is pretty sure of being caught. Mr. Clarke says he did not lose a single school during the summer.

The attempt to catch the salmon in this manner being only an experiment, everything connected with the new method, except the seine, was crude. A seine boat had to be built and the crew to man it drilled. The boat was manufactured on the spot by men connected with the fishing station.

Mr. Clarke finds this method a much more economical way of fishing than with drag seines. The bottom about Tongas Narrows is very rocky and drag seines are frequently torn to pieces. This involves a great deal of labor in keeping them in repair, and besides the expense amounts to considerable during the season. There being plenty of water here where the fishing is carried on, the purse seine never comes in contact with the bottom, and the hardest usage it gets is the natural wear and tear from handling.

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Two purse seines have been used for several years at Yes Bay. One is 300 fathoms long and 17 fathoms deep in the bunt, and the other is about 100 fathoms long. The larger one is used more frequently and is set from a small steamer. The superintendent of the saltery at that point says it works all right when he can get men who know how to handle it. Purse seines have also been in use for two seasons at Metlakatla, and with very good success.

Employees at the salteries have, heretofore, been paid by the month, but a few salters during the past season gave their men a lay. Sixty dollars a month for white fishermen and \$1 a day for native help have been the established wages. It is fast becoming the custom to pay so much per barrel to white fishermen for all salmon caught. At all places where this system has been tried it has given satisfaction to both fishermen and owners. Ten cents a barrel is the lay received. In all fishing communities where fishing is performed on a lay much better results follow than where stipulated wages are given. The constant expectation of good catches stimulates the men with energy which wages have not the power to bring out. The fishermen know that what benefits the proprietors likewise helps them.

All barrels used for putting up salmon in southeastern Alaska are manufactured at the salteries. Suitable wood being abundant, they can be made at a reasonable price. During the winter months enough barrels are made to meet the demand for the coming season. A cooper is an indispensable person about a salmon saltery, for, besides performing his regular duties as a cooper, he is often called upon to assist in various mechanical jobs, and is paid by the piece, or so much per barrel—85 cents for making a whole barrel and 65 cents for a half barrel. At this price he can earn good wages, for he is under no expense for board.

It being the object of every man owning a saltery to enlarge on the plant and increase his business as rapidly as possible, several weeks of each year, before and after the fishing season, are spent in building wharves if needed, erecting buildings, and making such improvements as are required to keep a place of this kind in good order.

Many salmon salters have gained a firmer foothold in Alaska than the mere business of salting salmon would give them. They have branched out into general trade, and have stores well stocked with goods of all kinds. In this way they have drawn around them the neighboring tribes of Indians who are ever ready to buy and trade for such commodities as they require. The result of barter and trade with the Indians has been to annually fill the stores with large collections of furs. Bear, fox, and deer skins are chiefly dealt in, the most of which are shipped direct to San Francisco.

MANUFACTURE OF HERRING OIL AND GUANO.

According to the report of Mr. Paul S. Luttrell, special agent of the Treasury Department for the protection of the salmon fisheries of Alaska, a herring fishery of some magnitude was carried on in 1892 at Killisnoo, Alaska, by the Alaska Oil and Guano Company. While a considerable quantity of herring was preserved by salting, the chief feature of the business was the manufacture of oil and fertilizer. One hundred and twenty-two persons were employed in various capacities, of whom 93 were in the oil works and 29 on steamers engaged in fishing. Of the factory employees 47 were whites, 4 were Chinese, and 42 were natives. Four steamers, of 60, 42, 23, and 4 tons, respectively, were used. The value of the property and improvements was \$100,000.

During the year 93,000 barrels of herring were taken, from which the following were prepared: 500 half barrels of salt herring, 1,000 barrels of salt herring, 316,000 gallons of oil, 700 tons of guano. The oil, the price of which at the trade centers was 25 to 35 cents a gallon, had an aggregate value of \$85,000. The value of fertilizer was \$21,000, or \$30 a ton.

THE ATKA MACKEREL.

The few persons who are familiar with this fish pronounce it one of the best of the numerous food-fishes found in the waters of Alaska. Its name is misleading in that the fish has no relation to the mackerel family and does not resemble it in looks or flavor. While found at numerous places in Alaskan waters, it has so far been observed most plentifully around the far-distant island of Attu. This island is the outer one in the Aleutian chain, and is the most western land belonging to the United States. It is so far west that it might, with almost equal propriety, be called east, being nearer the Asiatic shore than to any other mainland. San Francisco vessels engaged in trading or seal hunting have from time to time brought back larger or smaller quantities of salted Atka mackerel, usually taken in the vicinity of Attu. One of these vessels, the schooner *Rosa Sparks*, of 42.11 tons, with a crew of 20 men, which was engaged during the season of 1891 in fishing and sealing, returned with 148 seal skins and 324 barrels of Atka mackerel. The latter found a ready sale at \$15 a barrel. The captain of the vessel, Mr. S. L. Weatherbee, reports that his catch was made at Attu Island, and furnishes the following statements on the subject:

Atka mackerel are reported by the natives as remaining in the vicinity of Atka all winter, but do not reach Attu before April 10, from which date up to September they are found among the kelp in great abundance. Up to July they are very fat and in their best condition. The spawning season is in July, at which time they grow thin and poor. The fish are taken in 25 fathoms of water by jigging, no bait being required. Three or four hooks are fastened together and placed in a mold, into which lead, pewter, or some similar composition is run, welding the hooks together and leaving a shank that is polished up brightly to attract the fish; this also serves as a sinker. These lines and hooks are put down through the kelp, amidst which the fish are feeding. Being attracted by the bright metal, to which the hooks are attached, they swim around it in such numbers that their capture is easy by simply drawing the hooks up through them, and repeating the act so long as a catch is desired. From 8 to 10 barrels a day have been taken by two men in a single dory. Cod follow the Atka mackerel to this place to feed on them. The few Atka mackerel that have occasionally reached San Francisco are always eagerly sought after, and some fish have been sold at \$20 a barrel. Seines or nets of any kind could not be used to advantage, owing to the abundance of the large kelp among which the fish are always found.

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