

REPORT OF THE DIVISION OF STATISTICS AND METHODS OF THE FISHERIES.

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At the commencement of the present fiscal year, most of the statistical field agents of the division were engaged in canvassing the fisheries of the New England States. Maine was canvassed by Mr. John N. Cobb; New Hampshire by Messrs. W. A. Wilcox and T. M. Cogswell; Massachusetts by Messrs. Wilcox, Cogswell, and Ansley Hall; Rhode Island by Mr. E. S. King, and New York and Connecticut by Mr. C. H. Stevenson. At the same time Mr. W. A. Roberts was engaged in statistical work in New Jersey, and Mr. John B. Wilson was temporarily engaged in canvassing the wholesale fishery trade of Boston. Upon the completion of the work in the fall, all of these persons were employed in the arrangement of the data collected and in other necessary office work.

Mr. C. H. Townsend, assistant in charge, after a brief visit early in July to certain fishery centers of the New England States in company with the statistical agents, returned to the office. In August he was, on account of previous experience in deep-sea investigations, detailed as a member of the scientific staff to assist Prof. Alexander Agassiz on board the steamer *Albatross*, then starting upon a voyage of deep-sea exploration through the South Pacific Ocean. Mr. Townsend accompanied the expedition as far as the Fiji Islands, from which point he returned to Washington. Arriving there in January, he remained in charge of the office until near the close of the fiscal year.

In October Mr. Stevenson began work in North Carolina in connection with the steamer *Fish Hawk*, then engaged in investigations respecting the oyster-grounds of that State. His inquiries were in large part prosecuted on shore, and were continued, with some interruptions, until March.

In December Mr. Cobb commenced a canvass of the fisheries of Lake Erie, the work being completed in February.

Mr. Wilcox left in May for the Columbia River to commence a canvass of the fisheries of the Pacific coast. The fisheries of Oregon and Washington were taken up first, in order that the extensive salmon fisheries of the Northwest coast might be studied while the canneries were in operation. The work is still in progress.

Capt. S. J. Martin and Mr. F. F. Dimick, local statistical agents of the division stationed at Gloucester and Boston, continue to submit monthly reports on the fisheries at those places. The information is tabulated in the office and distributed regularly to the fishery trade in the New England States.

The results of the work of this division are presented elsewhere from year to year in the publications of the Commission as detailed statistical reports on the commercial fisheries of different sections of the country, or special papers on the methods of conducting the fisheries.

Single-sheet bulletins containing advance statistics in condensed form are distributed for the information of the fishery trade in the regions to which they refer. The following have been issued during the year:

- No. 13. Fisheries of New York and New Jersey, 1898.
- No. 14. Statement of quantities and values of certain fishery products landed at Boston and Gloucester by American vessels during the year 1899.
- No. 15. Fisheries of the New England States, 1898.
- No. 16. Fisheries of Lake Erie, 1899.

FISHERIES OF LAKE ERIE.

An inquiry respecting the commercial fisheries of Lake Erie in 1899 shows an important increase in the yield of these fisheries since they were last canvassed. This applies not only to the quantity of products, but also to their value, the amount of capital invested, and the number of persons employed. Decided increases are shown in the yield of white-fish and lake herring. The yield of pike perch continues to be large, although it has not increased over that of former years. These species are extensively propagated artificially, and it is believed that their cultivation is producing excellent results. In 1899 the fisheries of this lake yielded 58,393,364 pounds of products, valued at \$1,150,890. The total number of persons engaged was 3,728, and the investment amounted to \$2,719,654.

The vessels employed numbered 104 and were valued, with their outfits, at \$439,077. The apparatus of capture which represented the greatest value was pound nets, of which 1,298 were in use, valued at \$313,125. Gill nets are next in importance, 41,678 being in use, and valued at \$229,182.

Among the products herring are preeminent, 33,470,633 pounds having been taken, worth \$431,894. The catch of pike and pike perch was 9,325,991 pounds, valued at \$302,296. White-fish was taken to the amount of 2,066,314 pounds, worth \$152,009. It is interesting to note that carp, now abundant in this lake, are extensively utilized, the catch amounting to 3,633,697 pounds, worth \$51,456.

The two following tables show the persons, apparatus, and capital employed in the fisheries of Lake Erie in 1899, and the quantities and values of the different species obtained in the fisheries of the lake in that year.

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Table showing the persons, apparatus, and capital employed in the fisheries of Lake Erie in 1899.

Items.	New York.		Pennsylvania.		Ohio.		Michigan.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Persons employed:										
Vessel fishermen	55		150		369				574	
Transporters and shoremen	104		102		537		10		753	
Boat fishermen	817		206		1,208		110		2,401	
Vessels, apparatus, etc.:										
Steamers fishing	10	\$34,000	25	\$80,200	50	\$187,200			85	\$281,400
Tonnage	107		284		706				1,247	
Outfit		7,070		20,235		38,200				65,571
Steamers transporting			1	1,000	10	63,500		\$10,200	19	74,700
Tonnage			16		351		51		418	
Outfit				400		15,790		3,216		19,406
Boats	194	9,955	40	8,055	630	57,797	63	3,059	876	79,463
Pile-drivers			10	1,165	48	22,705	11	2,160	69	28,050
Seines	4	406			62	7,425	8	505	104	8,390
Gill nets	6,279	39,108	11,394	66,062	24,035	123,922			41,678	229,182
Pound nets			50	19,900	988	259,475	200	35,750	1,208	313,125
Trap nets	24	1,036	102	3,710	257	10,400	43	1,230	426	16,375
Fyke nets					535	15,130	62	620	617	15,750
Lines, etc.		2,620		90		902				3,612
Shore property and cash capital		227,145		275,265		1,071,110		16,107		1,588,627
Total investment		321,393		456,102		1,871,022		70,537		2,719,054

Summary of the quantities and values of the species of fishes obtained in the fisheries of Lake Erie in 1899.

Species.	New York.		Pennsylvania.		Ohio.		Michigan.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Black bass	10,579	\$322	38,209	\$3,031	83,714	\$5,933	1,154	\$80	133,746	\$9,866
Carp	9,505	190	12,195	244	3,417,064	47,178	104,903	3,846	3,633,697	51,456
Cat-fish	136,243	4,087	100,727	8,022	704,029	21,503	61,705	1,839	1,002,704	30,451
Crappie			60,000	1,800					60,000	1,800
Herring	3,321,558	43,554	10,742,315	134,142	10,380,822	253,669	17,938	539	33,471,633	431,904
Perch	257,932	4,391	815,553	16,911	2,174,564	30,310	07,447	1,018	3,316,496	52,625
Rock bass					5,298	91			5,298	91
Sheepshead	10,130	102	57,993	580	1,043,818	6,792	35,181	177	1,147,122	7,051
Sturgeon	627,433	40,997	99,570	7,090	50,094	4,519	12,905	786	780,402	53,392
Sucker	93,370	1,068	120,245	1,339	1,171,782	12,020	183,337	2,750	1,568,734	18,077
Sun-fish			125,000	3,750	36,800	407	18,040	205	175,440	4,382
Trout	29,242	1,510	722	01	2,000	185			32,024	1,796
Pike and pike perch	840,244	32,369	1,600,940	48,575	6,371,497	104,093	504,310	26,359	9,325,991	302,296
White bass	45,432	908	454,434	8,039	1,055,951	20,046	40,707	1,010	1,596,524	30,003
White-fish	172,450	10,907	615,821	46,690	1,049,578	76,276	228,459	18,138	2,066,314	152,009
Other fish	200	14	190	18	108	9	550	39	1,048	75
Frogs					982	172			982	172
Turtles					67,211	2,324			67,211	2,324
Total	5,554,324	140,919	14,853,004	276,887	30,624,400	677,305	1,361,638	56,779	58,393,364	1,150,890

For purposes of comparison the following table is given, showing the yield and value of the fisheries of Lake Erie in former years:

Species.	1880.		1885.		1890.		1893.		1897 (fiscal year).
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.
All varieties.	20,087,300	\$474,880	51,456,517	\$1,109,093	64,850,873	\$1,000,905	42,068,325	\$805,970	(*)
White-fish	8,333,800		3,531,855		2,341,451		1,262,410		639,906
Herring	11,774,400		19,354,900		38,868,283		20,931,078		19,038,289

* Information on all species not obtained.

FISHERIES OF LAKE ONTARIO.

The commercial fisheries of this lake, after several years of decrease, now show a gratifying increase, the products being, in quantity and value, nearly three times as great as in 1897, the year when last investigated. The same increase is shown in the amount of capital invested, and the number of persons employed is much greater. Fish-cultural operations here are apparently giving good results, the plantings of white-fish and pike perch having been noticeably beneficial.

The total number of persons engaged in the commercial fisheries in 1899 was 391. The capital invested amounted to \$80,350. The fisheries yielded 2,407,132 pounds of products, worth \$101,130.

Among the products cat-fish are prominent in quantity and value, 518,423 pounds, worth \$18,834, being taken. The yield of perch was 407,017 pounds, valued at \$11,822. The catch of sturgeon was 189,955 pounds, worth \$17,843. Pike and pike perch, 297,801 pounds, were worth \$16,127, and white-fish, 161,935 pounds, were worth \$10,978.

The figures for Lake Ontario include, however, the fisheries of the St. Lawrence and Niagara rivers. In the St. Lawrence 69 fishermen obtained 81,900 pounds of products in 1899, valued at \$6,988; in the Niagara River 7 fishermen procured 13,170 pounds, worth \$484.

Table showing the persons employed in the fisheries of Lake Ontario in 1899.

How engaged.	No.
On vessels transporting	5
In shore fisheries	373
Shoresmen	13
Total	391

Vessels, apparatus, and capital employed in the Lake Ontario fisheries in 1899.

Items.	No.	Value.	Items.	No.	Value.
Vessels transporting	2	\$1,000	Apparatus—Continued.		
Tonnage	22		Dip nets	4	\$20
Outfit		60	Set and hand lines		1,355
Boats	287	8,482	Spears	9	7
Apparatus:			Fishing machines	4	400
Seines	24	420	Shore and accessory property		18,440
Gill nets	1,187	18,074	Cash capital		20,200
Pound nets	1	60			
Trap nets	144	5,790	Total		80,350
Fyke nets	451	5,412			

Table showing the species and yield of the fisheries of Lake Ontario in 1899.

Products.	Lbs.	Value.	Products.	Lbs.	Value.
Black bass	48,046	\$3,133	Sucker	278,738	\$5,101
Cat-fish	518,423	18,834	Sun-fish	148,449	2,009
Carp	1,000	50	Trout	15,432	853
Eels	123,840	6,163	Pike and pike perch	297,801	16,127
Herring	85,478	3,736	White bass	2,300	92
Long-jaw or bloater	1,300	77	White-fish	161,935	10,978
Minnows	22,700	1,593	Frogs	1,750	308
Perch, yellow	407,017	11,822			
Sturgeon	189,955	17,843	Total	2,407,132	101,130
Rock bass	102,968	2,323			

FISHERIES OF BOSTON AND GLOUCESTER.

The reports of the agents of the Commission stationed at these ports show a large increase in the quantity and value of fishery products landed during the year. The figures for 1899, as compared with those of the previous year, exhibit an increase of 33,370,561 pounds, valued at \$1,204,564. The total quantity of products landed by American vessels was 176,774,301 pounds, worth \$4,193,652. The total number of fares was 7,820.

At Boston there has been a slight increase in the total quantity and value of products as compared with 1898. This is shown both in the supply derived from the eastern banks and from fishing-grounds off the New England coast. There has been an increase in the quantity of both fresh and salted fish and in the value of fresh fish, with a small decrease in the value of salted fish. The increase in the quantity of fresh fish landed was 9,956,659 pounds and \$390,831 in value. In the salted fish the increase amounted to 88,500 pounds, with a decrease in value of \$4,125. The total increase in fresh and salted fish amounted to 10,045,159 pounds, and \$386,706 in value.

The total quantity of products landed at Boston was 64,724,729 pounds, valued at \$1,428,346. The number of fares was 3,866, of which 183 were from the eastern banks and 3,683 from grounds off the New England coast. The fresh and salted fish from the eastern banks amounted to 9,908,910 pounds, valued at \$246,206, and from grounds off the New England coast to 54,815,819 pounds, valued at \$1,182,140.

Summary, by fishing-grounds, of certain fishery products landed at Boston, Mass., in 1899 by American fishing vessels.

Fishing-grounds.	No. of trips.	Cod, fresh.		Cod, salted.		Cusk, fresh.		Haddock, fresh.	
		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 68° W. long.:									
La Have Bank	54	786,500	\$18,481			220,000	\$3,172	552,910	\$14,107
Western Bank	48	1,263,400	25,282	50,000	\$1,250	55,000	687	170,800	4,674
Grand Bank	3								
Burgeo Bank	2								
Bacalen Bank	1								
Off Newfoundland	27								
Cape Shore	42	407,000	8,065			67,000	680	280,000	6,873
Gulf of St. Lawrence.	6	6,000	90						
Total	183	2,462,900	51,948	50,000	1,250	342,600	4,498	1,009,710	25,654
West of 68° W. long.:									
Browns Bank	65	1,114,500	19,007			271,500	2,873	1,224,000	21,614
Georges Bank	378	3,090,400	73,629			94,500	1,190	6,438,000	181,405
Cashes Bank	31	220,000	4,088			109,000	1,074	121,700	8,725
Clark Bank	4	24,500	500					120,000	1,750
Pippettes Bank	1	3,000	75					1,000	13
Middle Bank	336	648,400	16,501			15,800	186	1,573,800	37,628
Jeffreys Ledge	261	563,200	14,897			82,200	453	1,188,500	80,867
South Channel	552	4,694,300	104,451			145,500	1,819	9,115,200	193,050
Nantucket Shoals	161	2,058,200	80,788					188,200	8,860
Off Highland Light	81	290,100	6,556			3,000	89	450,900	11,464
Off Chatham	87	353,300	7,706			13,000	210	624,300	15,494
Shore, general	1,728	4,185,750	108,115			75,700	1,085	3,094,860	77,676
Total	3,683	17,221,050	385,808			790,200	8,855	24,135,450	528,544
Grand total	3,866	19,684,550	437,756	50,000	1,250	1,102,800	18,353	25,145,160	554,198

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Summary, by fishing-grounds, of certain fishery products landed at Boston, Mass., in 1899 by American fishing vessels—Continued.

Fishing-grounds.	Hake, fresh.		Pollock, fresh.		Hullbut, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. longitude:						
La Have Bank	297,000	\$3,992	33,500	\$458	194,400	\$15,258
Western Bank	211,600	2,067	18,000	173	341,100	28,459
Grand Bank					150,000	7,500
Burgeo Bank					115,000	5,750
Bacaleu Bank					50,000	3,500
Off Newfoundland					180,000	10,000
Cape Shore	107,000	1,235	7,600	77	16,500	1,677
Gulf of St. Lawrence					285,000	15,000
Total	615,600	7,294	59,100	708	1,332,000	87,744
West of 66° W. longitude:						
Browns Bank	165,000	1,885	8,000	98	119,300	9,103
George Bank	370,700	4,986	68,400	641	85,060	7,977
Cashes Bank	276,500	3,043	6,500	64	2,000	217
Clark Bank	10,000	75	1,500	18	1,400	108
Fippenies Bank	15,000	150	1,000	10		
Middle Bank	758,300	8,946	34,500	469	8,700	914
Jeffreys Ledge	1,106,100	12,156	257,400	2,646	2,700	255
South Channel	3,689,700	42,236	238,000	2,183	39,250	4,434
Nantucket Shoals	62,300	482	120,700	1,281	1,400	126
Off Highland Light	256,200	3,454	11,400	140	575	60
Off Chatham	291,900	3,060	86,500	384	200	16
Shore, general	902,500	11,941	445,850	4,241	13,400	1,388
Total	7,874,200	92,414	1,227,750	12,175	274,585	24,718
Grand total	8,489,800	99,708	1,286,850	12,883	1,606,585	112,462

Fishing-grounds.	Mackerel, fresh.		Mackerel, salted.		Other fish, fresh.		Other fish, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. long.:								
Western Bank					2,000	\$60	10,000	\$225
Off Newfoundland					3,020,000	52,976	1,005,000	13,850
Total					3,022,000	53,036	1,015,000	14,075
West of 66° W. long.:								
Georges Bank					1,073,700	48,884		
Middle Bank	8,800	\$1,119						
Jeffreys Ledge					1,500	111		
South Channel	55,500	4,810			1,400	96		
Nantucket Shoals	9,000	675						
Off Chatham	1,500	160	25,000	\$2,500	1,782	69		
Shore, general	723,652	37,141	171,400	12,105	1,235,450	21,671	13,000	195
Total	798,752	43,905	196,400	14,695	2,313,832	70,831	13,000	195
Grand total	798,752	43,905	196,400	14,695	5,335,832	123,867	1,028,000	14,270

Fishing grounds.	Total, fresh.		Total, salted.		Grand total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
West of 66° W. longitude:						
Browns Bank	2,902,300	\$54,640			2,902,300	\$54,640
Georges Bank	11,221,300	208,688			11,221,300	208,688
Cashes Bank	735,700	12,211			735,700	12,211
Clark Bank	157,400	2,511			157,400	2,511
Fippenies Bank	20,000	248			20,000	248
Middle Bank	3,048,300	65,761			3,048,300	65,761
Jeffreys Ledge	3,146,600	60,885			3,146,600	60,885
South Channel	17,976,850	353,079			17,976,850	353,079
Nantucket Shoals	2,439,800	37,207			2,439,800	37,207
Off Highland Light	938,175	21,718			938,175	21,718
Off Chatham	1,292,482	27,089	25,000	\$2,500	1,317,482	29,589
Shore, general	10,677,452	293,206	184,400	12,390	10,861,852	275,598
Total	54,606,410	1,167,250	209,400	14,890	54,815,810	1,182,140

Summary, by fishing-grounds, of certain fishery products landed at Boston, Mass., in 1899 by American fishing vessels—Continued.

Fishing-grounds.	Total, fresh.		Total, salted.		Grand total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. longitude:						
La Have Bank	2,084,810	\$55,468			2,084,810	\$55,468
Western Bank	2,061,900	61,352	60,000	\$1,475	2,121,900	62,827
Grand Bank	150,000	7,500			150,000	7,500
Burgeo Bank	115,000	5,750			115,000	5,750
Bacalieu Bank	50,000	3,500			50,000	3,500
Off Newfoundland	3,200,000	63,575	1,005,000	13,850	4,205,000	77,425
Cape Shore	891,700	18,646			891,700	18,646
Gulf of St. Lawrence	291,000	15,090			291,000	15,090
Total	8,843,910	230,881	1,065,000	15,325	9,908,910	246,206
Grand total	63,450,329	1,398,181	1,274,400	30,215	64,724,729	1,428,346

There were 112,049,572 pounds of fish landed at Gloucester, valued at \$2,765,306, an increase over the previous year of 23,325,402 pounds and \$817,858. The increase is shown in the quantity and value of both fresh and salted fish, in the former amounting to 9,436,768 pounds, worth \$252,391, and in the latter to 13,888,634 pounds, worth \$565,467.

The fares landed at Gloucester numbered 3,954, of which 867 were from the Eastern banks and 3,087 from grounds off the New England coast. The total of fresh and salted fish from the Eastern banks was 72,924,652 pounds, valued at \$1,750,896, and from grounds off the New England coast 39,124,920 pounds, valued at \$1,006,410.

Summary, by fishing-grounds, of certain fishery products landed at Gloucester, Mass., in 1899 by American fishing vessels.

Fishing-grounds.	No. of trips.	Cod, fresh.		Cod, salted.		Cusk, fresh.		Cusk, salted.	
		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. long.:									
La Have Bank	200	4,162,386	\$79,921	485,400	\$13,854	1,025,002	\$13,570	11,000	\$248
Western Bank	172	8,945,058	142,065	2,142,500	59,346	153,710	1,075	18,000	451
Quereau Bank	215	7,641,420	126,069	5,043,367	185,757	46,000	583	6,000	135
Green Bank	2	75,000	1,350	53,000	1,478				
Grand Bank	100			17,878,595	444,443				
Canso Bank	1	77,000	1,386						
Burgeo Bank	2								
Bacalieu Bank	50			21,500	613				
Off Newfoundland	100	30,000	405	201,380	5,786				
Cape North	3	50,000	935	397,000	10,523				
Cape Shore	16	325,000	5,232	135,000	4,191	12,000	150		
Total	807	21,805,864	357,453	25,857,742	675,491	1,237,672	16,278	85,000	834
West of 66° W. long.:									
Browns Bank	48	832,287	16,312	244,000	6,894	192,188	2,570		
Georges Bank	568	2,828,902	58,736	10,208,534	325,213	374,077	4,814	180,122	4,197
Cashes Bank	55	847,189	15,500			330,030	4,473	6,805	154
Bay of Fundy	8	101,760	1,679			62,745	775		
Middle Bank	32	4,000	90						
German Bank	4	41,945	762			46,236	593		
Jeffreys Ledge	1	2,000	50						
Ipswich Bay	8	135,945	2,515						
South Channel	7								
Nantucket Shoals	13	35,750	664	249,373	6,822				
Block Island	20	25,000	467	142,000	3,958				
Shore, general	2,317	2,418,996	52,346	154,000	4,138	59,861	782		
Total	3,087	7,933,174	149,121	10,997,907	347,025	1,071,077	14,007	192,987	4,351
Grand total	3,954	28,000,038	506,574	36,855,649	1,022,516	2,308,749	80,285	227,987	5,185

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Summary, by fishing-grounds, of certain fishery products landed at Gloucester, Mass., in 1899 by American fishing vessels—Continued.

Fishing-grounds.	Haddock, fresh.		Haddock, salted.		Hake, fresh.		Hake, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. long.:								
La Have Bank	1,962,008	\$28,279			3,485,154	\$29,637	15,000	\$188
Western Bank	906,025	10,037			786,670	6,885	12,000	200
Quereau Bank	109,000	925			124,440	1,086	4,000	110
Cape Shore	10,000	150			45,000	383		
Total	2,990,033	39,391			4,441,264	37,991	31,000	498
West of 66° W. long.:								
Browns Bank	342,309	4,510			861,260	2,902		
Georges Bank	4,183,012	65,013	4,000	\$50	418,548	3,683	9,500	119
Cashes Bank	165,818	2,085			1,104,440	9,300		
Clark Bank	13,150	79			295,320	2,095		
Middle Bank	7,000	158			35,000	525		
German Bank	5,450	87			130,390	977		
Jeffreys Ledge	1,000	23			20,000	300		
Ipswich Bay	1,970	26			1,445	11		
Nantucket Shoals	1,000	9						
Block Island	30,000	225	9,000	113			13,000	160
Shore, general	406,466	7,417	2,279	24	1,359,167	20,824		
Total	5,156,175	70,612	15,279	187	3,725,540	40,617	22,500	309
Grand total	8,146,208	119,003	15,279	187	8,166,804	78,608	53,500	807

Fishing-grounds.	Pollock, fresh.		Pollock, salted.		Halibut, fresh.		Halibut, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. long.:								
La Have Bank	84,514	\$588			150,731	\$12,840		
Western Bank	65,458	372	6,500	\$81	150,783	12,679		
Quereau Bank	9,000	68			1,714,644	132,426		
Green Bank					17,167	740		
Grand Bank					596,794	37,363	39,790	\$1,850
Canso Bank					4,000	240		
Burgeo Bank					89,450	2,924		
Bacalleu Bank					2,199,932	147,778	747,000	57,268
Off Newfoundland					1,276,602	47,775		
Cape North							2,000	100
Total	158,972	1,028	6,500	81	6,200,463	394,755	788,790	59,218
West of 66° W. long.:								
Browns Bank	10,859	66			3,880	290		
Georges Bank	36,767	319	14,500	181	425,204	33,268		
Cashes Bank	15,077	75						
Clark Bank	4,120	22						
German Bank	370	2						
Ipswich Bay	3,010	16						
Nantucket Shoals	540	3	1,000	12	200	10		
Block Island			2,000	25				
Shore, general	5,826,537	39,616	120,000	1,500				
Total	5,897,280	40,119	137,500	1,718	429,344	33,574		
Grand total	6,056,252	41,147	144,000	1,799	6,629,807	428,329	788,790	59,218

Fishing-grounds.	Mackerel, fresh.		Mackerel, salted.		Other fish, fresh.		Other fish, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. long.:								
Quereau Bank					352	\$49		
Off Newfoundland					3,302,000	72,645	6,407,000	\$91,910
Cape Shore			162,000	\$11,274				
Total			162,000	11,274	3,302,352	72,694	6,407,000	91,910
West of 66° W. long.:								
Georges Banks			177,200	9,242	38,611	1,308		
Middle Bank	18,540	\$1,702	475,400	35,145			7,000	97
Ipswich Bay								
South Channel	30,960	988	40,600	3,477				
Block Island	18,776	1,075	72,000	4,046	229	16		
Shore, general	362,512	23,608	2,738,600	212,386	134,729	1,591	61,000	1,069
Total	430,788	27,373	3,503,800	264,296	173,569	2,915	68,000	1,186
Grand total	430,788	27,373	3,665,800	275,570	3,475,921	75,609	6,475,000	93,096

Summary, by fishing-grounds, of certain fishery products landed at Gloucester, Mass., in 1899 by American fishing vessels—Continued.

Fishing-grounds.	Total fresh.		Total salted.		Grand total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
East of 66° W. longitude:						
La Have Bank	10,870,755	\$164,835	511,400	\$13,790	11,882,155	\$178,625
Western Bank	11,010,704	174,013	2,173,000	60,078	13,189,704	234,091
Quereau Bank	9,044,856	261,206	5,053,367	136,002	14,098,223	397,208
Green Bank	92,167	2,090	53,000	1,478	145,167	3,568
Grand Bank	596,794	37,353	17,418,385	446,293	18,015,179	483,646
Canso Bank	81,000	1,626			81,000	1,626
Burgeo Bank	89,450	2,924			89,450	2,924
Bacalieu Bank	2,199,932	147,778	768,500	57,981	2,968,432	205,659
Off Newfoundland	4,603,862	120,915	6,008,380	97,690	11,217,842	218,011
Cape North	50,000	935	399,000	10,623	449,000	11,558
Cape Shore	392,000	5,915	297,000	15,465	689,000	21,380
Total	39,636,620	919,590	33,288,032	839,306	72,924,652	1,758,896
West of 66° W. longitude:						
Browns Bank	1,772,783	26,656	244,000	6,894	2,016,783	33,550
Georges Bank	8,305,181	167,141	10,589,850	339,002	18,905,031	500,143
Cashes Bank	2,468,654	31,433	6,865	154	2,475,419	31,587
Clark Bank	477,065	4,650			477,065	4,650
Middle Bank	64,540	2,475	475,400	35,145	539,940	37,620
German Bank	224,361	2,401			224,361	2,401
Jeffreys Ledge	23,000	373			23,000	373
Ipswich Bay	141,770	2,568	7,000	97	148,770	2,665
South Channel	30,960	988	40,600	3,477	71,560	4,465
Nantucket Shoals	37,490	686	250,373	6,834	287,863	7,520
Block Island	74,005	1,783	238,000	8,352	312,005	10,115
Shore, general	10,667,208	146,184	3,075,879	219,137	18,643,087	365,321
Total	24,186,947	387,338	14,937,973	619,072	39,124,920	1,006,410
Grand total	63,823,567	1,306,928	48,226,005	1,458,378	112,049,572	2,765,306

Statement, by months, of quantities and values of certain fishery products landed at Boston and Gloucester by American fishing vessels during 1899.

Months.	No. of trips.	Cod, fresh.		Cod, salted.		Cusk, fresh.		Cusk, salted.	
		Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
January	317	1,080,150	\$32,850			51,500	\$1,024		
February	216	635,650	20,834			79,000	1,299		
March	298	1,286,850	47,953			39,500	890		
April	427	1,514,400	27,505			162,300	1,816		
May	393	2,163,200	35,548			267,000	2,489		
June	283	2,059,350	34,153			109,500	1,095		
July	907	2,297,950	42,636			37,000	408		
August	301	2,195,900	42,462			42,000	403		
September	270	1,889,700	46,056	50,000	\$1,250	30,500	393		
October	394	1,750,700	39,888			65,000	792		
November	358	1,307,400	34,505			76,500	753		
December	299	1,403,900	33,806			148,000	2,011		
Total at Boston	3,866	19,084,650	437,766	50,000	1,250	1,102,800	18,858		
January	276	694,281	15,246	187,765	6,010	113,822	1,488		
February	177	903,900	23,751	123,010	7,071	131,330	1,886	6,000	\$185
March	280	1,690,283	34,763	821,180	26,387	78,001	904	8,000	68
April	597	2,045,942	52,535	1,076,667	34,620	254,010	3,300	28,000	630
May	418	2,008,474	46,870	2,122,300	62,214	619,200	8,052	41,987	944
June	264	1,043,307	17,553	2,786,621	77,112	320,588	4,009	43,000	969
July	273	1,728,327	30,792	7,313,738	198,484	452,340	5,657	76,000	1,743
August	249	4,047,543	73,155	4,268,065	124,114	122,000	1,554	10,000	225
September	379	6,390,115	53,654	5,248,931	140,127	38,000	1,479	9,000	199
October	878	5,914,950	96,447	6,668,183	176,456	89,000	1,203	11,000	273
November	417	2,627,635	42,736	4,882,700	129,807	61,365	419		
December	246	1,068,401	19,072	1,260,280	40,115	31,232	1,274		
Total at Gloucester	3,954	28,609,638	506,574	36,855,649	1,022,516	2,306,749	30,285	227,987	5,185
Grand total	7,820	46,293,588	944,330	36,905,649	1,023,796	3,411,549	43,638	227,987	5,185
Landed at Boston in 1899	3,491	14,882,500	317,079	70,000	1,550	1,754,100	24,141		
Landed at Gloucester in 1899	3,441	16,792,005	279,872	26,416,021	666,819	3,163,933	36,070	107,190	2,896

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Statement, by months, of quantities and values of fishery products landed at Boston and Gloucester by American fishing vessels during 1899—Continued.

Months.	Haddock, fresh.		Haddock, salted.		Hake, fresh.		Hake, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
January	2,044,910	\$47,285			337,100	\$7,578		
February	2,337,750	49,009			207,100	4,646		
March	2,350,000	67,641			114,000	2,700		
April	2,556,350	39,229			261,600	3,375		
May	1,545,900	36,221			537,000	4,456		
June	1,752,850	28,275			393,550	3,570		
July	2,061,200	29,196			444,600	4,235		
August	2,225,300	42,807			478,050	4,750		
September	2,476,800	49,518			751,100	9,249		
October	2,677,700	62,972			2,297,200	23,876		
November	1,629,400	53,664			1,844,200	19,419		
December	1,486,400	47,501			823,700	11,848		
Total at Boston	25,145,160	554,198			8,489,800	99,708		
January	1,496,866	24,400			75,272	1,152		
February	1,404,090	25,221			147,597	2,321	4,000	\$110
March	1,705,155	28,378			53,158	725		
April	1,217,550	11,290	2,279	\$24	360,458	2,702		
May	802,720	2,094			1,388,962	10,427	5,000	63
June	233,269	2,041	5,000	63	1,335,728	9,707	20,000	250
July	331,078	2,740	8,000	100	2,082,166	17,096	14,500	209
August	185,750	1,856			642,703	5,526		
September	43,310	405			84,388	684		
October	288,705	3,221			767,232	9,100	10,000	175
November	490,590	6,748			936,085	15,703		
December	467,185	9,709			292,455	3,465		
Total at Gloucester	8,146,208	119,003	15,279	187	8,166,804	78,608	53,500	807
Grand total	33,291,368	673,201	15,279	187	16,656,604	178,316	53,500	807
Landed at Boston in 1899	21,769,300	378,944			7,382,430	70,535		
Landed at Gloucester in 1899	10,712,623	124,300	36,820	439	10,119,143	73,981	18,800	230

Months.	Pollock, fresh.		Pollock, salted.		Halibut, fresh.		Halibut, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
January	16,900	\$308			25,200	\$2,082		
February	15,800	360			50,600	3,326		
March	16,300	473			60,175	5,020		
April	10,600	196			170,800	12,481		
May	175,000	1,241			290,500	15,189		
June	108,500	775			375,100	20,237		
July	67,700	595			174,000	14,483		
August	239,700	2,256			196,060	12,378		
September	319,100	3,481			9,600	1,540		
October	184,500	1,606			175,800	10,190		
November	96,850	1,063			40,550	3,751		
December	35,900	409			68,200	10,615		
Total at Boston	1,286,850	12,883			1,606,585	112,462		
January	26,842	216			214,415	21,055		
February	43,889	475			355,410	25,021		
March	71,690	423			503,445	40,001		
April	43,372	267			548,412	31,339		
May	243,521	1,332	88,500	\$1,104	600,529	27,815		
June	19,539	106	22,500	282	1,144,452	40,148	4,000	\$180
July	19,158	119			724,089	52,745	25,490	1,020
August	25,497	187			494,114	35,287	65,500	5,658
September	221,914	1,601			818,572	49,579	650,600	52,024
October	1,814,319	13,336	5,000	63	700,542	49,711	4,200	330
November	3,239,133	20,818	8,000	100	235,828	26,150		
December	293,878	2,262	20,000	250	208,399	21,678		
Total at Gloucester	6,056,252	41,147	144,000	1,799	6,029,807	428,320	788,790	59,218
Grand total	7,343,102	54,030	144,000	1,799	8,236,392	640,791	788,790	59,218
Landed at Boston in 1899	1,412,100	11,655			768,585	65,133	250,000	7,050
Landed at Gloucester in 1899	3,052,139	18,278	20,000	250	7,612,431	440,264	1,747,165	56,335

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Statement, by months, of quantities and values of fishery products landed at Boston and Gloucester by American fishing vessels during 1899—Continued.

Months.	Mackerel, fresh.		Mackerel, salted.		Other fish, fresh.*		Other fish, salted.*	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
January					\$90,000	\$19,400	360,000	\$5,400
February					1,690,000	24,450	5,000	150
March					570,000	9,125		
May	16,300	\$1,281				332	10,000	225
June	176,950	10,023			27,450			
July	130,300	4,190	23,400	\$1,273	559,900	28,008		
August	53,850	4,733	49,200	2,538	653,550	20,546		
September	141,127	11,571	75,400	6,878	69,482	5,206		
October	8,625	777	44,800	3,718	506,850	5,583	18,000	195
November	271,600	10,730	3,600	288	373,000	3,090		
December					124,800	1,550	640,000	8,300
Total at Boston	708,752	43,905	100,400	14,695	5,335,832	123,866	1,028,000	14,270
January					1,291,000	26,620	1,444,200	23,020
February					730,000	13,800	228,000	3,706
March					355,000	8,825	55,200	896
May	15,063	1,547						
June	31,925	2,387	354,000	22,670				
July	95,906	2,477	677,800	35,795	28,740	910		
August	38,710	3,141	808,400	54,266	13,509	473		
September	93,140	7,207	1,343,400	115,735	103,320	632	47,000	888
October	155,444	10,614	447,000	40,338	352	49	21,000	228
November			35,200	3,790	240,000	1,800	2,048,800	20,945
December					606,000	22,200	2,630,800	34,848
Total at Gloucester	430,788	27,373	3,605,800	275,570	3,475,021	75,609	6,475,000	93,096
Grand total	1,229,540	71,278	3,802,200	290,265	8,811,753	199,475	7,503,000	107,366
Landed at Boston in 1898	439,755	26,280	414,900	18,335	5,084,000	113,533	451,000	6,805
Landed at Gloucester in 1898	434,000	27,064	1,806,800	102,017	2,500,525	45,618	4,184,575	64,426

Months.	Total, fresh.		Total, salted.		Grand total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
January	4,375,760	\$110,697	360,000	\$5,400	4,735,760	\$116,097
February	4,955,900	104,824	5,000	150	4,960,900	104,974
March	4,537,425	134,402			4,537,425	134,402
April	4,676,050	84,662			4,676,050	84,662
May	4,964,900	96,405			4,964,900	96,405
June	5,003,250	99,090	10,000	225	5,013,250	99,291
July	5,772,550	123,751	23,400	1,273	5,795,950	125,024
August	6,084,410	136,335	49,200	2,538	6,133,610	138,873
September	5,687,409	127,014	125,400	8,128	5,812,809	135,142
October	7,666,375	145,654	57,800	3,913	7,724,175	149,567
November	5,640,400	127,575	3,600	288	5,644,000	127,863
December	4,685,900	107,746	640,000	8,300	4,725,900	116,046
Total at Boston	63,450,329	1,398,131	1,274,400	80,215	64,724,729	1,428,346
January	3,882,498	91,079	1,631,905	29,030	5,514,403	120,109
February	3,760,156	92,475	461,610	11,022	4,227,766	103,497
March	4,517,712	114,022	879,389	27,351	5,397,101	142,273
April	5,369,744	101,433	1,106,946	35,274	6,476,690	136,707
May	5,770,069	99,037	2,257,787	64,325	8,026,856	163,362
June	4,128,808	81,951	3,235,121	101,526	7,363,929	183,477
July	5,480,404	112,536	8,115,528	237,351	13,595,932	349,887
August	5,539,823	121,179	5,182,565	184,283	10,722,391	305,442
September	4,792,759	114,541	7,302,931	311,982	12,095,690	426,523
October	9,731,044	183,741	7,166,383	217,923	16,897,427	401,669
November	7,801,106	114,374	6,674,700	163,618	14,475,806	277,992
December	3,054,441	79,660	3,911,080	74,708	6,965,521	154,368
Total at Gloucester	63,823,567	1,306,928	48,226,005	1,458,378	112,049,572	2,765,300
Grand total	127,273,896	2,705,059	49,500,405	1,488,593	176,774,301	4,193,652
Landed at Boston in 1898	53,493,670	1,007,300	1,185,900	34,840	54,679,570	1,041,640
Landed at Gloucester in 1898	54,386,709	1,054,537	34,337,371	892,911	88,724,170	1,947,448

* Includes herring from Newfoundland, 6,082,000 pounds frozen, \$123,820, and 7,412,000 pounds salted, \$106,760.

FISHERIES OF THE NEW ENGLAND STATES.

There has been a decrease in the fisheries of this region, since their canvass in 1889, of 259,814,470 pounds of products, amounting to \$877,813 in value. A large part of this decrease is represented by algæ, which, if eliminated from the figures of both years, leaves an actual decrease in fish products of 111,030,570 pounds, worth \$825,512.

The catch of menhaden has largely decreased. In 1889 the quantity was 173,632,210 pounds, worth \$428,228, whereas in 1898 only 23,140,177 pounds, valued at \$65,175, were taken, a decrease of 150,492,023 pounds, worth \$363,053. The reduction in this fishery is traceable chiefly to the transfer of the industry to New York State. It is therefore apparent that the food fisheries of the New England States have increased in quantity and have decreased but slightly in value.

One of the most noticeable changes is in connection with the lobster fishery. The total catch of lobsters in 1889 was 30,449,603 pounds, worth \$833,736, and in 1898 14,661,808 pounds, worth \$1,276,968. The yield of this fishery has therefore diminished more than 50 per cent in quantity and increased more than 50 per cent in value.

The total number of persons engaged in the fisheries of the New England States was 35,445, distributed as follows: Maine, 16,954; New Hampshire, 154; Massachusetts, 14,177; Rhode Island, 1,687; and Connecticut, 2,473. A total decrease of 1,091 is shown since 1889.

The amount of capital invested in the fisheries was \$19,637,036, an apparent decrease of \$437,758, caused by the transfer of the menhaden fishery and the omission of certain valuations which were included in the former canvass.

The vessels employed in the fisheries numbered 1,427, and were valued with their outfits at \$4,224,339. The apparatus of capture was valued at \$1,218,898. Pound nets and weirs represent the greatest value among the apparatus, aggregating \$405,424. Hand and trawl lines are next in importance, valued at \$278,815. Lobster pots were worth \$219,045; seines, \$132,140, and gill nets, \$100,679.

Massachusetts leads in the New England States in respect to importance of the fisheries, the products being worth \$4,454,139. Maine is next, with fisheries valued at \$2,654,919, followed by Connecticut at \$1,559,599, Rhode Island at \$955,058, and New Hampshire at \$48,987. The yield of the entire region amounted to 393,355,570 pounds and was valued at \$9,672,702.

The fishery for cod, cusk, haddock, hake, and pollock leads all the others, being valued at \$2,798,109. The oyster fishery of Connecticut and Rhode Island, worth \$1,910,684, ranks next, followed by the lobster fishery, valued at \$1,276,967; the herring fishery at \$596,688; the halibut fishery, at \$569,515, and the mackerel fishery at \$481,933.

Other important fisheries are those maintained for alewives, smelt, blue-fish, scup, and sword-fish.

REPORT OF COMMISSIONER OF FISH AND FISHERIES. 175

Table showing the number of persons engaged in the fisheries of the New England States in 1898.

States.	Fisher- men.	Shores- men.	Total.
Maine.....	8,717	8,237	16,954
New Hampshire.....	143	11	154
Massachusetts.....	10,205	3,072	14,177
Rhode Island.....	1,340	347	1,687
Connecticut.....	1,826	647	2,473
Total.....	22,231	13,214	35,445

Table showing the investment in the fisheries of the New England States in 1898.

Items.	Maine.		New Hampshire.		Massachusetts.	
	No.	Value.	No.	Value.	No.	Value.
Vessels.....	497	\$538,400	5	\$3,900	637	\$1,778,025
Tonnage.....	8,175		79		30,558	
Outfit.....		182,427		3,458		939,772
Boats.....	5,741	284,897	123	5,395	2,025	178,082
Seines.....	251	29,600	1	500	272	88,382
Bag nets.....	202	8,645				
Dip nets.....	182	637			218	272
Drag nets.....					27	1,010
Fyke nets.....	28	710			88	1,124
Gill nets.....	3,722	37,418	60	844	4,032	50,812
Pound nets.....	67	14,680	17	0,960	126	141,835
Snap nets.....	20	20				
Trap nets.....	33	14,125			4	900
Weirs.....	557	111,618				
Lines, hand and trawl.....		51,905		2,118		221,365
Pots, eel.....	333	188			1,290	2,376
Pots, lobster.....	155,978	155,777	1,675	1,068	26,264	31,481
Harpoons.....		1,155				1,200
Spears.....	145	127				
Dredges, tongs, rakes, hoes, and forks.....		2,032		32		15,199
Other apparatus.....						469
Shore and accessory prop- erty.....		1,193,478		12,775		5,125,248
Cash capital.....		1,385,099		15,000		4,797,250
Total.....		4,013,053		52,648		13,372,902

Items.	Rhode Island.		Connecticut.		Total.	
	No.	Value.	No.	Value.	No.	Value.
Vessels.....	93	\$167,850	195	\$434,050	1,427	\$2,920,825
Tonnage.....	1,454		3,555		43,821	
Outfit.....		46,597		131,200		1,903,514
Boats.....	854	72,881	1,214	80,915	10,557	621,070
Seines.....	49	7,243	67	6,355	640	132,140
Bag nets.....					202	8,645
Dip nets.....					395	909
Drag nets.....					27	1,010
Fyke nets.....	320	2,482	410	3,522	853	7,818
Gill nets.....	134	7,085	89	5,025	8,637	100,879
Pound nets.....	202	110,395	68	19,930	478	293,800
Snap nets.....	4	20			24	40
Trap nets.....					37	15,025
Weirs.....					557	111,618
Lines, hand and trawl.....		2,010		1,357		278,815
Pots, eel.....	3,139	1,987	1,313	1,197	6,075	5,748
Pots, lobster.....	10,312	12,716	10,830	17,405	205,040	219,045
Harpoons.....		109		177		2,841
Spears.....	29	46	50	37	220	210
Dredges, tongs, rakes, hoes, and forks.....		6,549		15,131		88,943
Other apparatus.....		43		700		1,212
Shore and accessory prop- erty.....		439,149		344,380		7,115,030
Cash capital.....		80,500		172,250		6,457,099
Total.....		967,142		1,241,291		19,637,036

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Table showing the quantity and value of products taken in the fisheries of the New England States in 1898.

Species.	Maine.		New Hampshire.		Massachusetts.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Alewives, fresh	925,325	\$8,016	25,000	\$250	1,877,061	\$22,208
Alewives, salted	986,600	8,437	200,000	2,500	586,700	6,790
Alewives, smoked	606,800	8,849			71,440	2,230
Blue-fish					832,849	38,089
Bonito					89,136	2,410
Butter-fish	14,800	740			30,620	818
Cod, fresh	10,091,068	167,231	689,150	10,756	40,632,151	688,721
Cod, salted	5,232,022	147,024	2,000	70	30,682,827	718,318
Cunners	148,300	1,025			85,350	5,250
Cusk, fresh	1,138,201	12,545	97,500	995	5,825,173	63,308
Cusk, salted	86,667	1,210			128,863	2,206
Eels	163,811	12,942			425,846	17,035
Flounders and flat-fish	786,697	17,530			1,167,812	14,761
Haddock, fresh	7,274,909	119,982	1,379,750	14,552	35,451,284	418,520
Haddock, salted	956,637	12,380	4,000	100	180,230	1,292
Hake, fresh	13,329,899	110,558	115,400	1,379	21,099,428	181,495
Hake, salted	2,405,578	23,886	1,500	38	232,388	2,139
Halibut, fresh	304,890	22,075			8,063,443	487,714
Halibut, salted					1,859,854	59,726
Herring, fresh	37,017,814	174,313	65,000	650	16,562,338	256,335
Herring, salted	1,400,650	20,159			5,801,159	76,212
Herring, smoked	3,738,580	63,005				
Mackerel, fresh	1,441,157	85,344	58,750	3,207	3,791,233	197,339
Mackerel, salted	163,000	12,761			2,912,131	164,525
Menhaden	7,319,900	20,706			1,497,307	10,544
Pollock, fresh	1,126,746	8,483	180,200	1,559	6,500,388	38,256
Pollock, salted	1,002,704	10,901	1,200	24	517,649	4,789
Salmon	53,322	10,000			60	30
Scup					1,043,625	14,253
Sea bass					99,300	4,946
Shad	861,879	19,752			29,333	1,426
Smelt	1,608,045	139,345			7,079	515
Squeteague					1,371,910	39,518
Striped bass	25,067	4,200	850	85	12,948	989
Sword-fish	878,290	44,395			597,186	35,280
Tautog					289,505	7,567
Tomcod	310,083	6,158				
Miscellaneous fish	16,275	408	1,050	165	147,672	5,692
Refuse fish	55,000	354				
Squid					1,069,425	14,620
Lobsters	11,183,294	992,855	108,515	9,372	1,093,741	147,702
Shrimp					25,200	1,183
Quahogs or hard clams					510,536	50,724
Clams (soft), fresh	8,768,800	274,885	6,000	360	1,470,951	102,594
Clams (soft), salted	711,200	48,568				
Oysters					708,575	156,235
Scallops	166,509	14,522			773,176	85,383
Irish moss			70,000	2,450	700,000	22,375
Oil, fish	157,920	4,591	14,250	475	358,927	13,963
Oil, sea elephant					472,500	20,790
Oil, whale					3,119,450	199,023
Whalebone					27,100	65,875
Other products	955,562	18,791			107,062	8,810
Total	123,404,561	2,654,919	3,020,715	48,987	202,155,481	4,454,139

Species.	Rhode Island.		Connecticut.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Alewives, fresh	628,132	\$6,621	868,400	\$7,346	4,323,918	\$44,501
Alewives, salted	74,100	940			1,847,400	18,667
Alewives, smoked	130,890	2,712			814,630	18,991
Blue fish	330,290	15,521	963,285	32,851	2,126,424	86,491
Bonito	124,450	2,615			213,586	5,025
Butter-fish	207,000	5,615	60,280	2,870	812,700	9,543
Cod, fresh	1,111,811	23,556	451,225	10,978	52,975,425	901,242
Cod, salted	315,101	13,154			36,232,550	878,566
Cunners	3,300	100			230,950	6,375
Cusk, fresh					7,060,874	74,848
Cusk, salted					215,530	3,416
Eels	443,374	20,030	206,970	14,149	1,240,001	64,756
Flounders and flat-fish	1,710,057	27,576	443,864	13,883	4,107,930	78,259
Haddock, fresh	366,525	8,373	112,800	856	44,585,298	562,289
Haddock, salted					1,000,887	13,761
Hake, fresh					34,544,727	273,432
Hake, salted					2,639,466	28,083
Halibut, fresh					8,908,338	509,789
Halibut, salted					1,859,854	59,726
Herring, fresh	2,000	10			63,647,152	431,306

Table showing the quantity and value of products taken in the fisheries of the New England States in 1898—Continued.

Species.	Rhode Island.		Connecticut.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Herring, salted					7,201,809	\$102,371
Herring, smoked					3,738,500	63,005
Mackerel, fresh	359,900	\$15,004	40,913	\$1,753	6,991,953	302,647
Mackerel, salted			28,000	2,000	3,103,131	170,288
Menhaden	3,140,000	7,591	11,182,910	29,334	23,140,177	65,175
Pollock, fresh	50,000	500			7,923,334	48,778
Pollock, salted					1,521,553	15,714
Salmon					53,382	10,039
Scup	6,390,225	75,598	101,040	3,504	7,594,890	93,353
Sea bass	440,950	11,935	247,739	12,182	788,039	29,093
Shad	25,112	1,925	499,825	21,215	1,415,649	44,018
Smelt	4,100	215	5,800	837	1,624,824	140,912
Squeteague	3,125,635	63,970	193,043	5,451	4,601,188	108,945
Striped bass	101,950	10,511	13,845	1,032	154,690	17,403
Sword-fish	55,875	2,935	85,980	7,520	1,617,331	90,180
Tautog	248,129	7,214	70,540	3,118	608,174	17,800
Tomcod	8,000	340	88,750	1,677	358,333	8,075
Miscellaneous fish	314,123	8,402	82,923	3,489	532,343	18,158
Refuse fish	1,012,000	1,222			1,067,000	1,578
Squid	124,000	1,375	6,000	150	1,200,325	16,145
Crabs, hard	7,875	1,375			7,875	575
Crabs, soft	6,023	1,375			5,030	1,675
Lobsters	578,006	43,290	1,098,102	33,748	14,661,808	1,276,907
Shrimp	2,250	750			27,450	1,933
Quahogs or hard clams	249,095	31,816	234,000	29,000	994,232	112,440
Clams (soft), fresh	150,150	20,500	199,800	10,039	10,535,701	417,447
Clams (soft), salted					711,200	48,568
Oysters	3,201,640	508,378	14,633,283	1,249,071	18,543,504	1,910,048
Scallops	115,388	10,471	50,160	5,016	1,105,231	115,392
Irish moss					770,000	24,825
Oyster shells	7,674,000	3,968			7,074,000	3,968
Oil, fish					531,097	19,029
Oil, sea elephant					472,500	20,700
Oil, whale					3,119,450	199,023
Whalebone					27,100	95,875
Other products	17,778	1,402			1,080,402	24,003
Total	32,854,390	955,068	31,920,417	1,559,599	393,355,570	9,672,702

THE FUR-SEAL ROOKERIES OF THE PRIBILOF ISLANDS.

Near the close of the fiscal year Mr. Townsend left for the Pribilof Islands to ascertain the condition of the fur-seal rookeries, in accordance with the requirements of the law respecting the relations of the Fish Commission with the fur-seal fisheries. The customary records relating to the size of the rookeries in 1899 were secured in part by the resident Treasury agents upon the islands. The American seal herd is still declining on account of the continuance of pelagic sealing in Bering Sea and the North Pacific Ocean.

For a number of years all the seals born on several of the more accessible rookeries have been counted systematically. The counts, when compared with those of previous seasons, show more or less decrease in the number of seals born from year to year. The diminution of the herd is shown also in the annual photographs and charts of the rookeries. The total number of seals taken on the Pribilof Islands in 1899 by the lessees under Government supervision was 16,812. Seals of the class available for killing, the surplus males, become less in number from year to year.

The pelagic catch made from the American herd by the Canadian sealing fleet of 26 vessels during 1899 was 33,755. Of this number 23,284 were taken in Bering Sea and 10,471 in the North Pacific Ocean.

To the vessel catch should be added 892 seals taken off the Northwest coast by Indian canoes. The only Canadian vessel sealing in Asiatic waters took 699 seals, but a fleet of 11 Japanese vessels secured 7,308 seals from the Asiatic herd. One American vessel obtained 336 seals from the American herd in waters south of the award area.

NOTES ON THE FISHERIES.

THE WHALE FISHERY.

The vessels engaged in whaling during the year 1899 numbered 48, 3 additional vessels having been lost; 22 vessels were employed in the Pacific Ocean and 26 in the Atlantic. The yield of the whale fishery for the year amounted to 11,903 barrels of sperm oil, valued at \$583,274; 3,827 barrels of whale oil, valued at \$133,945, and 320,100 pounds of whalebone, valued at \$864,270.

CARP.

Investigations of the fisheries of the Great Lakes and the Mississippi and its tributaries, now being made by field agents of this division, reveal the fact that an important quantity of carp is finding its way into the fish markets—chiefly those of the larger Eastern cities.

The catch of carp in Lake Erie in 1899 amounted to 3,633,679 pounds, valued at \$51,456. The report of the Illinois Fishermen's Association shows that the catch of carp in the Illinois River is greater than that of all other species combined, the quantity of carp taken in 1899 amounting to 6,332,990 pounds, valued at \$189,980. The yield of carp from the Ohio River and two of its tributaries, the Cumberland and Wabash Rivers, during the same year, amounted to 113,387 pounds, worth \$6,654.

These figures show an increase in the quantity of carp derived from the above-named waters amounting to nearly nine times the quantity yielded six years ago. During the same period the total fishery products of Lake Erie increased more than 15,000,000 pounds and those of the Illinois River more than 5,000,000 pounds. There are, therefore, no indications that the presence of the carp has produced any injurious effect on the native species associated with it, but, on the contrary, its presence may have a salutary effect, the young of the carp doubtless being food for black bass and other species. It is certain that the black bass has increased in the Illinois River along with the carp, the yield of black bass in 1899 being greater than ever before, amounting to over 70,000 pounds. The last canvass of the fisheries of the Middle Atlantic States, made in 1897, shows the yield of carp from the coastal waters of these States to have been 1,333,263 pounds, valued at \$63,567, whereas in 1891 the catch amounted to only 46,798 pounds, worth \$1,715. More than half of the catch of carp in this region in 1897 was made in New Jersey, most of the fish being taken in partly brackish water. Complete returns respecting the interior waters now being investigated will probably show that the carp is entering largely into the food supply of the country.

EASTERN OYSTERS IN SAN FRANCISCO BAY.

This industry has reached large proportions. From 1887 to 1900 more than 11,000 tons of eastern yearling seed oysters have been shipped to the bay of San Francisco and laid out for further growth. The time required for seed oysters to become marketable is from two to four years, according to the sizes demanded by Pacific Coast consumers. The beds of transplanted oysters occupy flats or tide lands and are exposed during the lowest tides. The areas where they are laid out are inclosed by fences of closely set stakes, which lessen the action of the waves in these shallows and keep out stingrays and other marauders. The value of the mature oysters sold is considerably over \$500,000 a year, the quantity and value being on the increase.

An important fact in connection with the maturing of large quantities of eastern oysters in the bay is the extensive degree of propagation that has been going on. The writer has investigated this subject several times during the past ten years, finding each time evidences of greater natural increase.

For a number of years considerable quantities of oysters of volunteer growth have been picked at low tide from areas remote from the transplanted beds, and it has been ascertained that oystering of this character has been carried on without decreasing the supply.

Oyster spat from extensive planted beds along the west side of the bay drifts with the prevailing winds, toward the east side, where a very considerable set takes place, over an area more than 20 miles long.

Here there are broad stretches of shell banks of the small worthless native oyster of San Francisco Bay, upon the shells of which the young of the eastern oyster find lodgment. The strong winds of mid-summer create a heavy wave wash over the reefs, drifting the light shells of the natives and burying many of the eastern oysters growing among them. Fencing lessens the action of the waves and protects the interests of the owners. From a tract of 150 acres in this section of the bay, recently inclosed, over a million oysters were picked before any imported seed was laid out. It appears that the amount of spat set free from the transplanted beds is increasing, and the indications are that with the fencing in and planting of the shell banks of the east side the increment from natural propagation will grow in importance.

Table showing the quantity of eastern seed oysters shipped to San Francisco Bay from 1887 to 1900.

Year.	Pounds.	Year.	Pounds.
1887	1,582,000	1895	1,880,000
1888	1,128,000	1896	1,485,000
1889	1,007,000	1897	1,859,000
1890	1,559,000	1898	1,564,000
1891	3,273,000	1899	1,088,000
1892	2,123,000	1900 (first 8 months)	1,408,000
1893	1,007,000		
1894	1,332,000	Total	22,873,000

THE LOBSTER FISHERY.

The lobster fishery is prosecuted to a greater or less extent in all the States on the Atlantic coast from Maine to Delaware, but nearly 75 per cent of the total annual yield is from the waters of Maine. The statistics show that the total yield in 1880 was 20,128,033 pounds, valued at \$488,871, and in 1889 it was 30,771,573 pounds, valued at \$861,297, an increase of 10,643,540 pounds in quantity and of \$372,426 in value. There has since been a great reduction in the quantity of lobsters annually produced, but the value has been constantly increasing. In 1898 the total yield was 15,188,062 pounds, valued at \$1,318,299, a decrease, as compared with 1889, of over 50 per cent in quantity and an increase of over 50 per cent in value. The greater part of this decrease in quantity has occurred in Maine and Massachusetts. From 1889 to 1898 the lobster yield of Maine declined about 55 per cent in quantity, while it increased about 70 per cent in value. In Massachusetts there has been an almost steady decline in the yield since 1880. In that year the catch was 4,315,416 pounds, valued at \$158,229, and in 1898 it was 1,693,741 pounds, valued at \$147,702, a decrease of 2,621,675 pounds, or 60 per cent in quantity, and of \$10,527, or about 6 per cent, in value.

The following table shows the quantity and value of lobsters taken in each of the lobster-producing States in each year for which this fishery has been investigated from 1880 to 1898:

States.	1880.		1887.		1888.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Maine	14,234,182	\$268,739	22,916,642	\$512,044	21,094,731	\$515,880
New Hampshire	250,000	7,500	142,824	6,208	130,350	6,258
Massachusetts	4,315,416	158,229	3,511,075	156,204	3,743,475	172,938
Rhode Island	423,250	15,871	570,039	27,123	588,500	28,047
Connecticut	613,385	23,002	1,487,020	82,594	1,477,228	85,723
New York	135,000	5,082	114,000	6,850	248,000	13,000
New Jersey	156,800	5,488	101,580	7,719	181,688	12,965
Delaware			30,000	910	89,000	910

States.	1880.		1890.		1891.		1892.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Maine	25,001,351	\$574,185					17,642,677	\$663,048
New Hampshire	137,175	6,415					168,350	11,700
Massachusetts	3,353,787	149,492					3,182,270	205,688
Rhode Island	456,000	21,565					574,100	53,702
Connecticut	1,501,290	53,099					1,614,580	101,858
New York	124,023	12,780	160,400	\$14,764	165,083	\$15,665		
New Jersey	188,347	14,301	185,321	13,683	165,694	12,463	143,905	10,861
Delaware	6,600	480	7,200	300	8,200	410	8,600	286

States.	Fiscal year 1897.		Calendar year 1897.		1898.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Maine	10,300,880	\$683,082			11,183,294	\$992,855
New Hampshire	90,300	5,493			108,515	6,372
Massachusetts	2,089,602	157,330			1,693,741	147,702
Rhode Island					578,066	43,200
Connecticut					1,098,192	83,743
New York	130,610	10,913	881,020	\$31,458	362,378	30,235
New Jersey	79,230	6,197	99,230	8,573	123,876	11,097
Delaware			5,095	459		

THE PEARL FISHERY OF THE TUAMOTU ARCHIPELAGO.

During the voyage of the *Albatross* in the South Pacific Ocean in 1899, the writer made some investigations respecting the pearl fisheries of the Tuamotu Islands. This archipelago, more than 1,500 miles in length, consists of atolls, or low coral islands having large inclosed lagoons, within which the pearl fisheries are prosecuted.

The yield of pearl shell fluctuates according to the sections of the archipelago thrown open for pearl diving each year, and the methods of conducting the fishery have changed somewhat since it was investigated for the French Government, in 1884, by Mr. G. Bouchon-Brandelely. Until 1889 the pearl fisheries of the Tuamotus were free to all, and were participated in by both natives and whites, the latter as well as some of the natives employing diving suits. From 1890 to 1892 the use of diving apparatus was subject to special regulations, but since 1892 it has been prohibited, with the idea of restricting the taking of pearl shell and preserving the industry for the benefit of the native inhabitants.

Under present methods pearling is permitted each year in certain lagoons only, others being closed for periods of two or three years to permit the growth of shell. The different pearl-bearing lagoons are thus worked in succession. The diving season begins October 1, the natives concentrating at the most favorable places upon the official announcement of the list of islands to be fished. The industry employs about 20 small sail vessels and 600 boats or canoes.

The more important pearling islands are: Hiqueru, Hao, Raroia, Katiu, Takapoto, Ahe, Manihi, Apataki, Marutea, Aratika, Fakarava, Kaukura, Marokau, and Mangareva. Hiqueru is by far the most important of the group. It is worked at intervals of three years, its output of shell averaging over 250 tons per season. In 1896 the first month's diving produced about half the entire yield of the archipelago. Hao Island is next in importance for pearl shell. Pearls appear to be derived chiefly from Kaukura.

At the opening of the season of 1899 the *Albatross* called at Hiqueru, where over 3,000 persons were gathered, representing the majority of the pearling population of the Tuamotus. The bulk of the pearl shell was being taken from depths of 8 to 10 fathoms. Less than 25 per cent of the divers work at depths greater than 12 fathoms, while a few only can descend to 20 fathoms. When conditions are best, good divers earn \$2.20 to \$2.50 (Chilean silver) a week.

The industry here as elsewhere is based on pearl shell or mother-of-pearl, worth in the European market \$375 to \$800 per ton, according to the grade. Pearls when found are usually secreted by those discovering them, and disposed of privately. There are no statistics available respecting this feature of the fishery, although the total value of the pearls that come from the islands through various channels is known to be considerable.

The following statement respecting the quantity and value of mother-of-pearl shell from the Tuamotu Archipelago, exported from Tahiti during the period from 1873 to 1898 was secured with the assistance of Mr. J. L. Doty, consul of the United States at Tahiti:

Quantity and value of mother-of-pearl shell from the Tuamotu Archipelago, exported from Tahiti from 1873 to 1898.

Year.	Tons.	Value in United States coin.	Year.	Tons.	Value in United States coin.
1873.....	328	\$28,572.80	1886.....	162	\$59,535.00
1874.....	410	50,597.00	1887.....	271	99,592.50
1875.....	240	65,080.00	1888.....	367	113,778.00
1876.....	390	76,340.00	1889.....	593	214,252.50
1877.....	234	57,330.00	1890.....	649	237,713.70
1878.....	591	173,054.00	1891.....	598	242,275.00
1879.....	470	138,180.00	1892.....	563	248,140.80
1880.....	281	82,614.00	1893.....	596	225,790.00
1881.....	502	106,784.00	1894.....	675	274,640.00
1882.....	471	207,711.00	1895.....	296	91,644.30
1883.....	384	169,344.00	1896.....	591	239,955.00
1884.....	343	134,455.00	1897.....	445	238,953.60
1885.....	249	75,407.00	1898.....	437	181,887.90

A more extended account of the Tuamotu pearl fishery is being prepared, as the facts relating to it may prove of interest in connection with the pearl fishery of the Philippine Islands.

THE CHINESE SHRIMP FISHERY OF SAN FRANCISCO BAY.

The fishery for shrimps has been conducted in this bay for many years. The products are marketed fresh in California, or dried and exported to China, together with certain dried fish also yielded by the fishery. The industry is a declining one. When visiting the camps and fishing grounds in 1891 the writer counted 46 boats. The number from which licenses are collected at the present time is 31. The export of dried shrimps is decidedly less than in former years, while the quantity of dried fish exported is not great, the total amount from 1890 to 1898 being a little more than 3,600,000 pounds, or about equal to the export of shrimp products for any one year prior to 1894.

The following table shows the yield and value of the shrimp fishery in San Francisco Bay in 1889, 1890, 1891, 1892, 1895, and 1898, though the figures for 1898 are probably incomplete:

Year.	Pounds.	Value.
1889.....	5,522,104	\$251,037
1890.....	5,812,848	264,823
1891.....	4,896,558	222,451
1892.....	5,810,075	241,163
1895.....	5,425,000	182,759
1898.....	1,760,492	93,822

The following table shows the exports of dried shrimp, shrimp shells, and dried fish from 1890 to 1898.

Table showing the quantity of products of the Chinese shrimp fishery of San Francisco Bay exported to China during the period from 1890 to 1898.

Months.	1890.			1891.			1892.		
	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.
January	Lbs. 4,200	Lbs. 5,832	Lbs. 278,705	Lbs. 850	Lbs. 18,192	Lbs. 257,567	Lbs. 8,900	Lbs. 16,800	Lbs. 179,100
February	8,403	8,789	843,215	8,537	39,736	790,788		38,400	679,500
March	4,325	3,407	72,322	8,210	1,580	333,354	762,600	43,400	589,800
April	13,181	17,792	58,530	57,537	83,329	235,313	3,560	83,000	304,800
May	1,935	39,935	156,565	38,338	93,328	236,396	1,967	51,200	159,700
June	138,737	208,310	417,172	231,489	91,750	285,127	81,200	79,000	262,800
July	71,061	100,307	238,224	112,249	188,408	304,520	114,310	128,400	334,500
August	87,570	181,240	82,977	69,105	104,919	38,753	100,200	80,400	174,800
September	24,184	110,785	12,620	77,542	210,306	39,153	104,800	168,000	59,400
October	29,286	45,457	37,894	80,000	150,800	36,000	23,200	167,400	39,300
November	8,921	95,339	7,600		23,800			77,000	17,100
December		7,630		900	106,200	169,300	1,400	47,800	109,500
Total.	301,302	780,823	2,205,854	684,787	1,107,348	2,740,271	697,077	976,400	2,909,800

Months.	1893.			1894.			1895.		
	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.
January	Lbs. 2,000	Lbs. 72,200	Lbs. 47,700	Lbs. 13,400	Lbs. 13,400	Lbs. 278,700	Lbs. 15,400	Lbs. 15,400	Lbs. 145,200
February		2,000	491,100		6,800	243,600		15,800	98,000
March		27,200	617,700		53,800	433,500		28,000	47,400
April		50,600	198,200		57,400	210,300		63,000	104,400
May		42,200	138,400		60,200	167,400	6,400	81,200	112,500
June	120,400	69,400	175,200	76,600	60,400	175,800	26,400	82,000	185,100
July	32,200	50,200	190,200	21,000	55,600	233,100	31,800	73,400	114,900
August	36,800	50,600	241,200	71,400	40,800	112,500	1,200	83,800	179,700
September	8,900	81,800	207,000	207,200	63,400	17,400	4,600	88,800	80,700
October		100,200	50,100	80,600	40,200	5,700	15,000	53,600	83,900
November	600	53,000	53,700	55,600	110,200	6,600	83,600	119,000	
December	5,000	18,200	27,900		31,600		19,800	74,100	
Total.	203,600	617,600	2,412,400	513,000	599,800	1,884,600	188,800	778,100	1,090,800

Months.	1896.			1897.			1898.		
	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.	Fish.	Shrimp.	Shrimp shells.
January	Lbs. 14,600	Lbs. 6,200	Lbs. 98,010	Lbs. 69,190	Lbs. 69,720	Lbs. 1,000	Lbs. 22,400	Lbs. 900	
February	15,400	308,200	16,500	82,125	167,000	900	40,400	1,200	
March	2,500	19,400	145,000	900	26,700	223,439	2,000	66,800	
April	47,200	77,400	179,700	183,899	9,400	160,755	55,000	55,000	
May	15,200	19,600	90,600	1,000	75,100	163,645	11,900	38,400	
June	54,400	44,800	64,800				90,000	86,200	
July	183,600	83,400	261,000	4,000	9,800	47,400			
August	48,600	98,000	59,400				90,600	98,800	
September	10,800	85,600	37,800	3,600	99,800		19,800	80,400	
October	13,400	162,000	74,200	29,006	75,200	4,200	5,000	21,200	
November	15,600	70,000	27,300				11,000	1,000	
December	19,200	62,200	2,100	2,506	47,429	6,670		42,200	
Total.	418,700	1,034,600	958,400	291,521	494,190	782,820	275,700	508,800	

There has been considerable local discussion respecting the bearing of the shrimp fishery upon the food of important fishes frequenting the same bay. The fishery can not be conducted successfully without the use of small-meshed nets, which involves the taking of the young of many species of fishes which are either themselves valuable fish or supposed to be the food of such species. Many of these are sculpins or other unimportant kinds. A careful search was made for young shad, salmon, and striped bass, but none were found. The food of the important fishes of this region is not yet well known.

Investigations of this subject by the writer in May and November revealed the presence of the following fishes in the shrimp nets as they came from the waters:

List of fishes commonly taken in shrimp nets.

Food-fishes.		Unimportant species.	
Scientific name.	Common name.	Scientific name.	Common name.
<i>Platichthys stellatus</i>	Flounder.	<i>Liparis pulchellus</i>	Sea snail.
<i>Parophrys vetulus</i>	Do.	<i>Lampetra cibaria</i>	Lead-colored lamprey.
<i>Pectichthys melanostictus</i>	Do.	<i>Siphostoma californiense</i>	Pipe-fish.
<i>Engraulis mordax</i>	California anchovy.	<i>Pholis ornatus</i>	Butter-fish.
<i>Clupanodon caeruleus</i>	California sardine.	<i>Leptocottus armatus</i>	Sculpin.
<i>Osmerus thaleichthya</i>	Smelt.	<i>Porichthys margaritatus</i>	Midshipman.
<i>Genyonemus lineatus</i>	Little roncador.	<i>Lepidogobius lepidus</i>	
<i>Sebastes juv</i>	Rock-fish.	<i>Myliobatis californicus</i>	Sting ray.
<i>Cyprinus carpio</i>	Scale carp.	<i>Raja binoculata</i>	Skate.
<i>Microgadus proximus</i>	California tom-cod.	<i>Notorhynchus maculatus</i>	Spotted shark.
<i>Cymatogaster aggregatus</i>	Viviparous perch.	<i>Galeus californicus</i>	Hound-shark.
		<i>Triakis semifasciatus</i>	Leopard-shark.
		<i>Rhinotriakis henlei</i>	Small dog-shark.