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A REVIEW OF THE ATLANTIC COAST WHITING FISHERY

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ABSTRACT

The annual landings of whiting or silver hake have increased slowly during the last 25 years, from a few pounds to well over 150 million pounds. Technological advances in processing, freezing, and transportation, as well as changes in fishing gear and grounds, have contributed to this increase. New methods of utilizing this species for animal food and industrial purposes have developed a stable demand and created an important fishery.

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INTRODUCTION

The whiting or silver hake (*Merluccius bilinearis*) (fig. 1) has always been abundant on the fishing grounds from Maine to Virginia. Prior to 1920, it was at times considered a nuisance by fishermen and landings amounted to less than 7 million pounds. Technological advances in handling fish, particularly quick-freezing and automatic scaling machines, in addi-

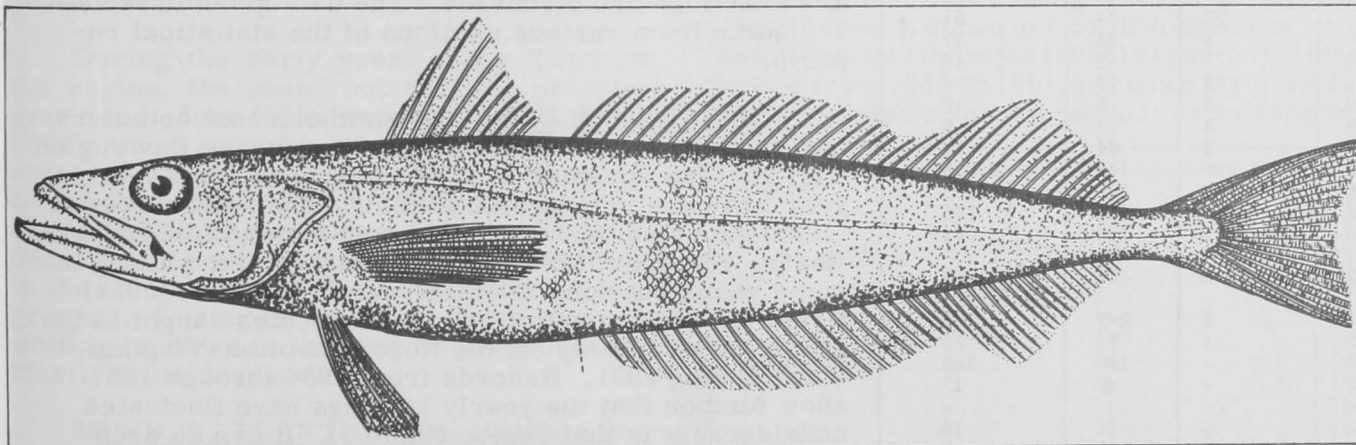


Fig. 1 - Whiting (*Merluccius bilinearis*).

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tion to the development of markets, stimulated rapid growth of the whiting fishery so that landings rose to 100 million pounds by 1949. Changes in fishing gear, fishing grounds, and utilization added more to the development of this fishery along the Atlantic Coast so that 1957 landings were about 170 million pounds.

Recognizing the need for an understanding of this important fishery, the Atlantic States Marine Fisheries Commission requested the U. S. Fish and Wildlife Service to study the fishery. The program was started in 1954 with funds made available under the Saltonstall-Kennedy Act.

HISTORICAL BACKGROUND: The whiting fishery had its beginning during the early 1840's. Storer (1867) states that some whiting was prepared for the market, but that generally it was not considered very good because it soon became soft and tasteless. Storer also reports that considerable numbers were caught with hook-and-line on Crab Ledge, a few miles from the Boston Lighthouse. He also relates that this species became a general nuisance to the fishermen at Provincetown, Mass., when large quantities were caught in the mackerel nets. Often, 8 to 10 hours were necessary to remove these fish from the nets. However, during September and October the whiting were useful as bait to catch dogfish. Storer (1867) and Nye (1886) reported that large numbers of whiting were stranded on the beach after chasing sand eels or other small fishes.

Very little was published on the whiting from 1900 through the 1920's. Bigelow and Welsh (1925) summarized what little was known of the life history at that time. This account was revised and brought up to date by Bigelow and Schroeder (1953).

GEOGRAPHICAL DISTRIBUTION: The general geographical distribution of the whiting is reported by Bigelow and Schroeder (1953) as the continental shelf of eastern North America, northward to the Newfoundland Banks and southward to the offing of South Carolina. Recently McKenzie and Scott (1956) reported several specimens from the Gulf of St. Lawrence, the northernmost record of this species. Although the range of this fish is extensive, the principal areas of commercial exploitation are along the inshore waters of the Middle and North Atlantic Coast and on Georges Bank.

Year	Maryland	Virginia	Totals Chesapeake Bay
 (1,000 Pounds)		
1957	49	19	68
1956	33	48	81
1955	-	45	45
1954	27	34	61
1953	3	34	37
1952	1	13	14
1951	11	17	28
1950	4	8	12
1949	3	3	6
1948	8	34	42
1947	1,986	112	2,098
1946	680	303	983
1945	567	188	755
1944	145	136	281
1943	-	-	-
1942	6	452	458
1941	-	-	-
1940	6	247	253
1939	1	71	72
1938	-	140	140
1937	-	17	17
1936	-	-	-
1935	-	16	16
1934	-	5	5
1933	-	-	-
1932	-	-	-
1931	-	-	-

REGIONS

The Bureau collects and publishes monthly and yearly summaries^{1/} of United States fishery landings by regions. In this paper, data collected for the Chesapeake Bay, Middle Atlantic, and New England regions are examined and discussed. The data given in tables 1-8 come from various sections of the statistical reports.

CHESAPEAKE BAY: The southernmost commercial fishery for whiting is in the Chesapeake Bay region (fig. 2). The appearance of whiting there from year to year has been very erratic. Hildebrand and Schroeder (1928) reported that two pound nets located in Lynnhaven Roads, Va., from 1908 to 1923, caught a few whiting in some years but none in other years. Pearson (1932) listed the whiting with many other species caught in the winter trawl fishery off the North Carolina-Virginia coast during 1931. Records from 1934 through 1957 show further that the yearly landings have fluctuated considerably in that region (table 1). It can be seen that, during 1947, slightly over 2 million pounds were landed, the largest amount ever recorded from that region.

^{1/}Fishery Industries of the United States, 1932-1938, U. S. Department of Commerce, Bureau of Fisheries; and Statistical Digests No. 1-44, Fishery Statistics of the United States, 1939-1957, U. S. Department of the Interior, Fish and Wildlife Service.

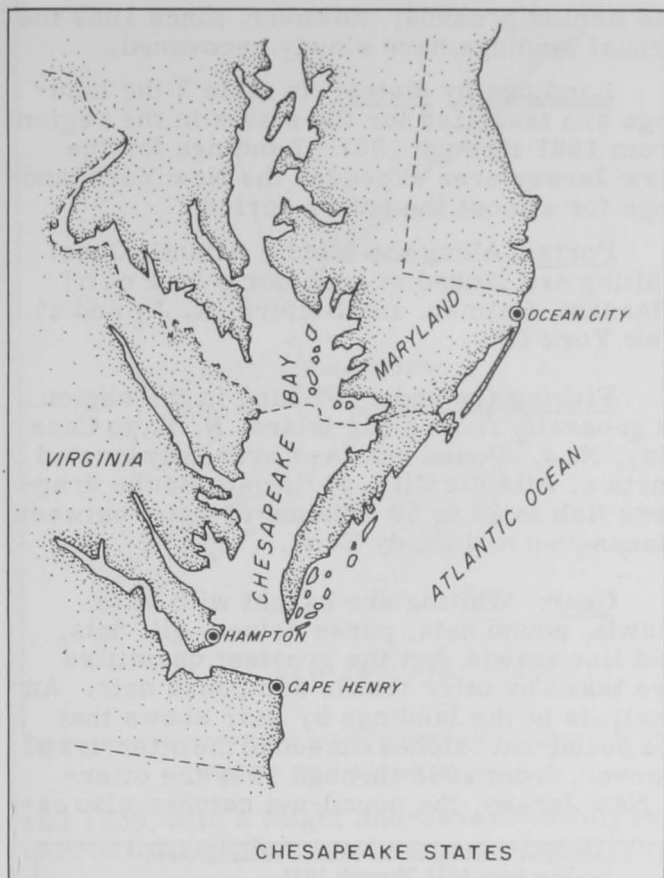


Fig. 2 - Chesapeake Bay States.

Whiting caught in that general region are landed at Ocean City, Md.; Hampton and Norfolk, Va.; and other smaller ports along the coast. Hildebrand and Schroeder (1928) state that the small local catch is easily disposed of in Norfolk markets, where it is known as "winter trout."

During the early years of the fishery in the region, the pound net was the principal gear used. June (1956) reports that during the 1920's there were 14 fishing companies which operated 45 pound nets in the vicinity of Ocean City, Md. Not a single pound net remains in that region today. Along with the decrease in pound nets there was an increase in the number of draggers operating on the grounds. During the past few years, the whiting landings in that region have been primarily from draggers.

MIDDLE ATLANTIC: The Middle Atlantic region includes Delaware, New Jersey, and New York (fig. 3). June and Reintjes (1957) reported that whiting was the predominant species caught by the inshore draggers during 1946 and 1947. In subsequent years,

however, they contributed very little to the over-all catch.

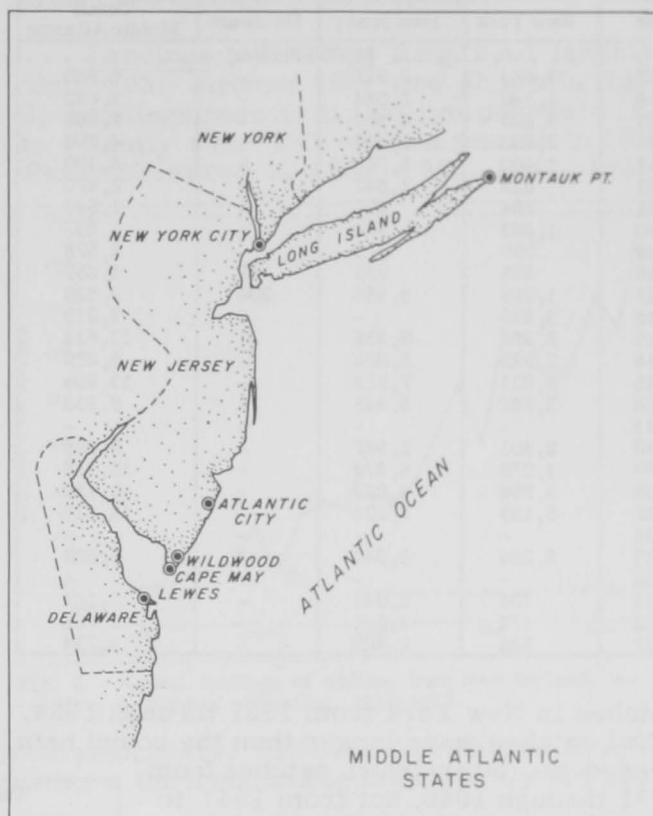


Fig. 3 - Middle Atlantic States.

Annual Landings: Annual landings of whiting in the Middle Atlantic region, 1931 through 1957, are shown in figure 4. It can be seen that the landings increased from 2.5 million pounds in 1931, to approximately 14 million pounds in 1937. From 1937 to 1947, the yearly landings averaged about 10 million pounds, then dropped to 1.5 million pounds in 1948. June and Reintjes (1957) reported that the decline from 1948 to 1951, as shown in figure 4, was associated with a decrease in abundance on

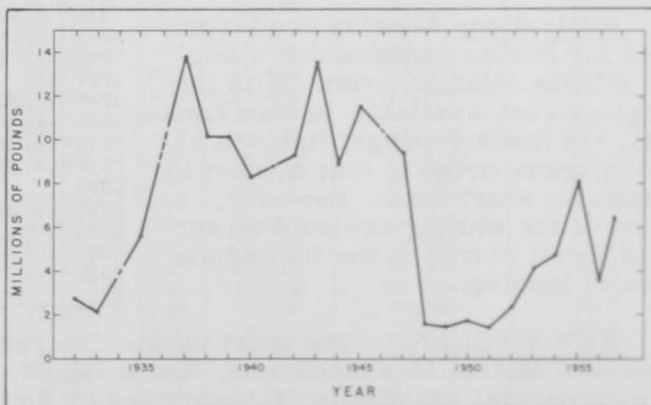


Fig. 4 - Total Middle Atlantic landings of whiting, 1931-1957

Table 2 - Annual Landings of Whiting in Middle Atlantic States, 1931-1957

Year	New York	New Jersey	Delaware	Totals
				Middle Atlantic
(1,000 Pounds)				
1957	3,653	2,887	-	6,540
1956	1,540	2,082	-	3,622
1955	3,800	4,300	-	8,100
1954	2,100	2,600	-	4,700
1953	1,400	2,700	-	4,100
1952	823	1,647	-	2,470
1951	684	897	-	1,581
1950	1,363	474	-	1,837
1949	999	579	-	1,578
1948	845	799	13	1,657
1947	1,265	8,156	204	9,625
1946	3,816	-	-	3,816
1945	2,354	9,236	21	11,611
1944	2,935	5,894	-	8,829
1943	5,921	7,583	-	13,504
1942	2,988	6,345	-	9,333
1941	-	-	-	-
1940	2,501	5,887	-	8,388
1939	4,079	6,839	-	10,918
1938	3,956	6,229	-	10,185
1937	5,189	8,624	-	13,813
1936	-	-	-	-
1935	2,284	3,340	5	5,629
1934	-	-	-	-
1933	106	2,041	-	2,147
1932	171	2,534	-	2,705
1931	326	2,408	-	2,734

the fishing grounds. However, since 1952 the annual landings have slowly recovered.

Landings by States: In table 2 the landings are tabulated for the states in the region from 1931 through 1957. Landings for the New Jersey area exceeded the New York landings for almost the entire period.

Ports: Along the Middle Atlantic Coast whiting are landed at such ports as Point Pleasant, Belmar, and Belford, N. J., and at New York City.

Fishing Grounds: Fishing in the region is generally from Long Island, N. Y., to Cape May, N. J. Pound nets are presently located north of Atlantic City, while most of the draggers fish in 20 to 50 fathoms of water between Manasquan and Sandy Hook.

Gear: Whiting are caught with otter trawls, pound nets, purse seines, gill nets, and line trawls, but the greatest quantities are taken by otter trawls and pound nets. An analysis of the landings by gear shows that the pound-net catches exceeded the otter-trawl

catches in New York from 1931 through 1934. However, from 1935 through 1957 the otter-trawl catches were larger than the pound nets. In New Jersey, the pound-net catches also exceeded the otter-trawl catches from 1931 through 1946, but from 1947 to 1957 the otter trawlers landed more whiting than the pound nets (table 3). June (1956) in his study of the pound-net fishery along the Middle Atlantic coast reports that the number of nets and the catch of this fishery has decreased considerably. He further states that the competition from the more efficient draggers and the decrease in abundance of many food fish are among the factors which have caused the decline of the pound-net fishery.

Utilization: Whiting are largely used for human consumption along the Middle Atlantic coast. With the large market available in New York City, the freshly-caught fish can be easily transported to that market in relatively short time. However, some of the whiting are sold directly to retail stores in the immediate area of landing.

Table 3 - Landings of Whiting in the Middle Atlantic Area by Gear from 1931 Through 1957

Year	New York				New Jersey			
	Otter Trawl	Pound Net	All Others	Total	Otter Trawl	Pound Net	All Others	Total
(1,000 Pounds)								
1957	3,653	-	-	3,653	2,709	290	6	3,005
1956	1,525	9	6	1,540	1,702	447	62	2,212
1955	3,818	35	5	3,858	3,085	1,148	106	4,339
1954	2,111	59	1	2,172	2,106	491	36	2,633
1953	1,425	43	-	1,468	1,359	1,262	132	2,754
1952	776	46	-	822	395	1,229	24	1,648
1951	648	36	-	684	347	550	-	897
1950	1,284	79	-	1,363	137	337	-	474
1949	886	112	-	999	225	354	-	579
1948	756	88	-	844	630	168	-	798
1947	1,134	131	-	1,265	6,365	1,784	7	8,156
1946	3,437	379	-	3,816	-	-	-	-
1945	1,868	486	-	2,354	3,376	5,843	17	9,236
1944	2,533	402	-	2,935	2,622	3,349	12	5,983
1943	5,115	806	-	5,921	2,571	4,947	65	7,583
1942	2,469	505	14	2,988	999	5,343	2	6,344
1941	-	-	-	-	-	-	-	-
1940	1,905	596	-	2,501	523	5,354	9	5,887
1939	3,472	604	2	4,079	354	6,483	2	6,839
1938	3,831	124	-	3,956	304	5,910	15	6,228
1937	4,884	305	-	5,189	376	8,243	4	8,624
1936	-	-	-	-	-	-	-	-
1935	2,020	264	-	2,284	286	3,051	3	3,340
1934	-	-	-	-	-	-	-	-
1933	-	-	-	-	-	-	-	-
1932	-	168	3	171	-	2,534	-	2,534
1931	-	326	-	326	3	2,404	-	2,408

NEW ENGLAND: The most productive region for the whiting fishery is located along the coasts of Maine, Massachusetts, Rhode Island, and Connecticut (fig. 5). The earliest report of commercial exploitation is described by Smith (1897). Large quantities of whiting were reported to be abundant every fall in Buzzards Bay, Mass., and captured at night with spears

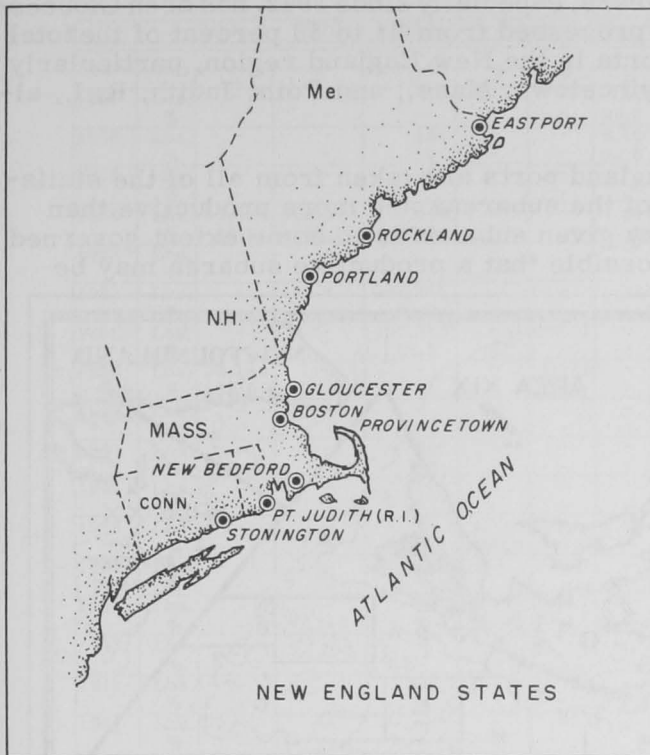


Fig. 5 - New England States.

for home use and for sale in the New Bedford, Mass., market. Since that early beginning the gear used and the landings in the New England area have changed considerably.

Landings: The New England landings from 1931 through 1957 are shown in figure 6. Landings rose from 8 million pounds in 1931 to slightly over 170 million pounds in 1957. Peaks occurred in 1940, 1945, 1949, 1951,

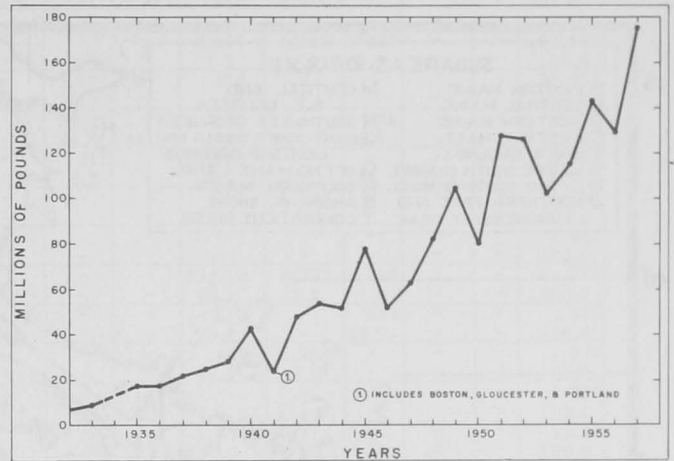


Fig. 6 - Annual landings of whiting from New England, including all types of utilization, 1931-1957.

and 1955, with a slight decrease following each of the peak years. Although fluctuations have occurred through the years, some more severe than others, the trend has been constantly upward.

Landings by States: Landings from 1931 through 1957 for the New England states are shown in table 4. Massachusetts led the other states in total landings with Maine, Rhode Island, and Connecticut following in that order. The expanded processing facilities and the abundance of the whiting along the Massachusetts coast has led to the development of the fishery in that State.

Year	Maine	Massachusetts	Rhode Island	Connecticut	Totals New England
(1,000 Pounds)					
1957	15,810	107,777	2,291	237	126,115
1956	14,835	72,322	2,660	150	89,967
1955	25,128	81,884	3,200	361	110,573
1954	9,300	78,000	2,700	224	90,224
1953	12,600	71,800	704	135	85,239
1952	23,326	81,202	1,232	194	105,954
1951	19,576	97,974	742	174	118,466
1950	15,616	48,831	655	362	65,464
1949	12,580	75,776	660	1,020	90,036
1948	8,655	68,904	2,400	509	80,468
1947	6,015	52,591	2,134	911	61,651
1946	5,697	43,171	1,125	1,086	51,079
1945	5,289	68,577	2,907	891	77,664
1944	3,836	43,537	2,723	1,692	51,788
1943	1,962	46,498	4,051	1,487	53,998
1942	2,634	43,266	763	207	46,870
1941	-	-	-	-	-
1940	4,036	35,954	708	172	40,870
1939	4,046	23,493	251	265	28,055
1938	648	24,203	191	52	25,094
1937	-	21,036	1,017	425	22,478
1936	-	-	-	-	-
1935	13	15,418	1,955	30	17,416
1934	-	-	-	-	-
1933	-	8,678	725	17	9,420
1932	2	6,377	792	30	7,201
1931	6	6,930	1,005	129	8,070

Year	Gloucester	Atlantic Coast	Percent Landed at Gloucester
(1,000 Pounds)			
1957	77,620	132,846	58.4
1956	48,251	93,787	51.4
1955	59,526	118,872	50.1
1954	49,582	95,240	52.1
1953	41,158	89,622	45.9
1952	47,097	108,441	43.4
1951	51,491	120,075	42.9
1950	22,698	67,299	33.7
1949	30,881	91,618	33.7
1948	22,287	82,149	27.1
1947	14,894	73,479	20.3
1946	14,149	55,880	25.3
1945	27,864	90,009	30.9
1944	15,863	60,986	26.0
1943	22,430	67,502	33.2
1942	26,070	56,671	46.0
1941	12,724	No data	-
1940	8,285	49,609	16.7
1939	6,344	39,044	16.2
1938	2,620	35,419	7.4
1937	544	36,311	1.5
1936	4,375	No data	-

Ports: The principal whiting port for many years, especially since 1942, has been Gloucester, Mass. From 1942 through 1957, Gloucester processed from 21 to 58 percent of the total Atlantic coast whiting landings (table 5). Other ports in the New England region, particularly Rockland and Portland, Maine; Plymouth and Provincetown, Mass.; and Point Judith, R. I., also process whiting.

Fishing Areas: Whiting landed at the New England ports are taken from all of the statistical subareas shown in figure 7. Although some of the subareas are more productive than others, the amount of fishing effort expended in any given subarea is to some extent governed by the distance from home port. It is therefore possible that a productive subarea may be

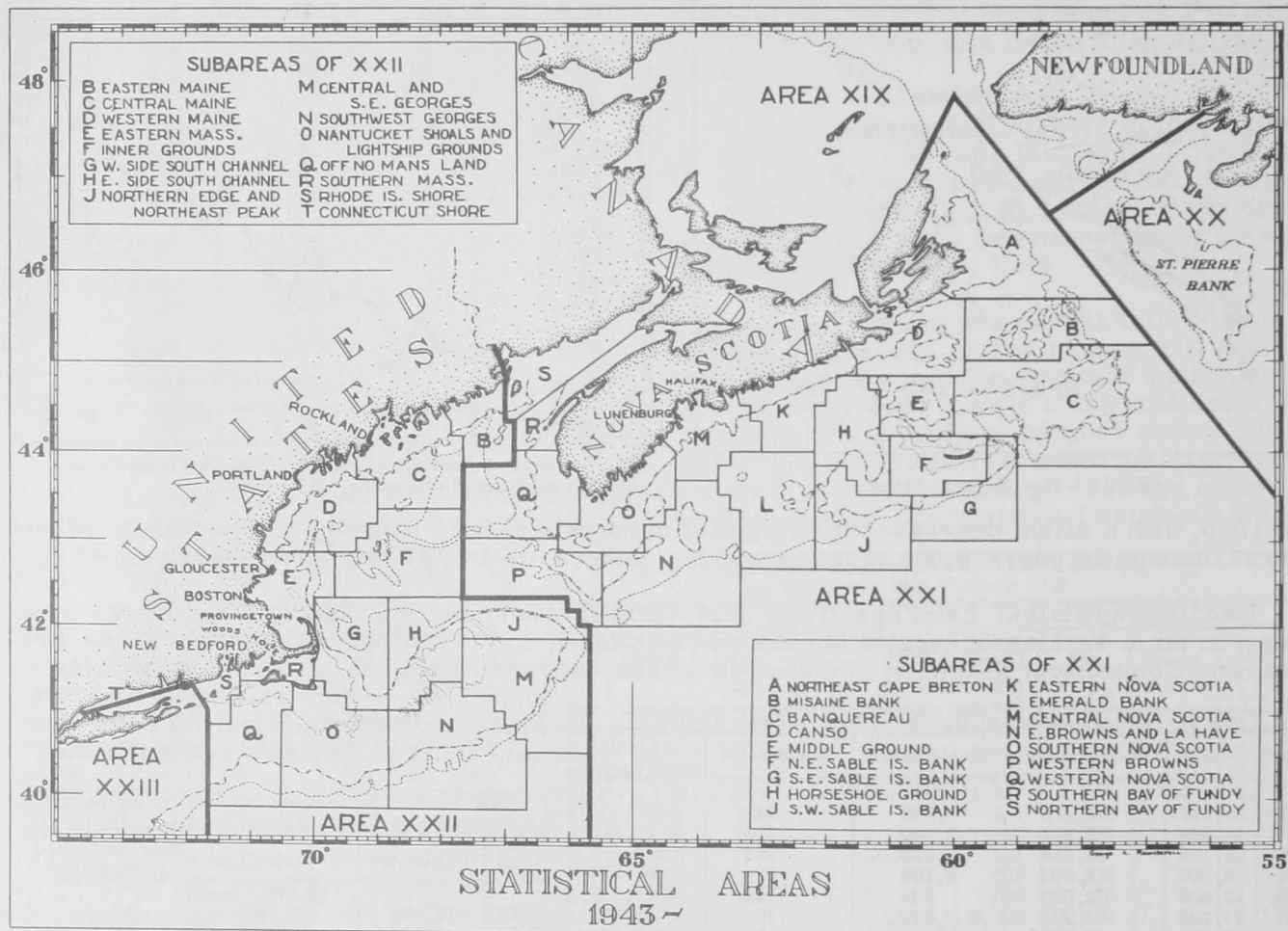


Fig. 7 - Statistical areas and subareas from Long Island, N. Y., to Newfoundland, Canada.

neglected for some time when closer fishing grounds are profitable. Landings from each of the subareas in areas XXI and XXII at certain New England ports for the years 1937 through 1957 are given in tables 6 and 7. Specific fishing grounds referred to will be defined in connection with the subarea under discussion.

AREA XXI: All Subareas: This area is located along the eastern shore of Nova Scotia. Annual landings varied from year to year, with an average catch of 53,000 pounds from 1937 to 1957. At the present time, there are no vessels either from the United States or Canada fishing in this area specifically for whiting. Whiting are caught incidentally by vessels fishing for other species, such as haddock, ocean perch, or cod.

AREA XXII: Subarea B: This subarea contributes very little to the landings. During the 20 years under consideration landings have not exceeded 79,000 pounds. In some years whiting have been caught in the weirs located along the Maine coast.

Subarea C: During the early years, 1938 to 1940, this subarea contributed slightly over 200,000 pounds to the total landings. However, from 1941 through 1957, landings fluctuated considerably reaching a peak of 267,000 pounds in 1951, and decreasing to 1,000 pounds in 1957.

Subarea D: The Isles of Shoals, Casco Bay, and Jeffreys Ledge are the principal fishing grounds in this subarea. Landings during the years 1938 to 1941, ranged from 1.3 million pounds to 3.2 million pounds. During the next 6 years the catch declined, but from 1948 through 1957, the catch increased, reaching an all-time high of 30 million pounds in 1952. These grounds largely support the whiting fleet from the principal Maine ports.

Subarea E: This subarea includes the most productive whiting fishing grounds along the New England coast, such as Ipswich Bay, Stellwagen Bank, and Cape Cod Bay. Vessels from Gloucester, Plymouth, Provincetown, and other Cape Cod ports, fish these grounds regularly. Annual landings from 1937 through 1957 rose from 5.5 million pounds to 54.4 million pounds and accounted for over 50 percent of the total New England landings from 1937 to 1954.

Subarea F: Cashes Ledge, Fippenies Ledge, and the deep water of the Gulf of Maine are the main fishing grounds in this subarea. From 1938 to 1957, annual landings amounted to less than 325,000 pounds. The landings indicate that the catch of whiting is incidental to the capture of other species, such as ocean perch or haddock.

Subarea G: From 1938 through 1957, this subarea contributed from 1 to 20 million pounds to the total landings. The major fishing grounds in this subarea are located along the outside of Cape Cod from Provincetown to Chatham.

Subarea H: This subarea is the major offshore fishing ground for whiting. Prior to 1955, a few vessels from the nearby ports fished this ground with little success. During 1955, large concentrations were found near the Cultivator Shoal and vessels, largely from Gloucester, began to fish this subarea intensively. Since then over 25 million pounds have been landed each year from this subarea.

Subarea S: Draggers from Rhode Island and Connecticut generally fish in this subarea. Landings have fluctuated from 240,000 pounds in 1938 to 5.5 million pounds in 1943. This was followed by a decrease to 850,000 pounds in 1953, and during the next 3 years the landings increased to 3 million pounds. A slight decrease of approximately 1 million pounds was recorded for the landings for 1957. This subarea is an important fishing ground for the growing industrial fishery located at Point Judith, R. I. These figures represent the landings for human consumption and do not include the landings for industrial use and animal food.

Subareas J, M, N, O, Q and R: The total landed averaged less than 23,000 pounds for all subareas combined. This small amount can be considered as incidental to the catch of other fishes.

Gear: Whiting are taken in pound nets, fyke nets, and floating traps, but the greatest quantities are taken by otter trawlers. A typical New England dragger (less than 50 gross tons) is shown in figure 8. These vessels usually fish the inshore waters along the coast, while the medium draggers (51 to 150 gross tons) fish both the inshore and offshore grounds. The trawls are of a conventional design with a small mesh netting, usually $2\frac{1}{2}$ inches stretched measure, or with a fine mesh liner in the cod end.

Landings by Gear: Total landings for the various types of gear from 1931 through 1957 are shown in table 8. It can be seen that the landings at the Maine ports have been largely from otter trawls, with a small amount from the other types of gear. Floating traps and pound nets accounted for more fish from 1931 through 1937 at the Massachusetts ports, but from 1938 on the landings from the otter trawl exceeded all other types of gear. A similar situation existed in the Rhode Island landings with the stationary gear catching larger quantities of whiting from 1931 through 1942, and the otter trawl exceeding all other types of gear after 1942. Landings at Connecticut ports are primarily from small draggers.

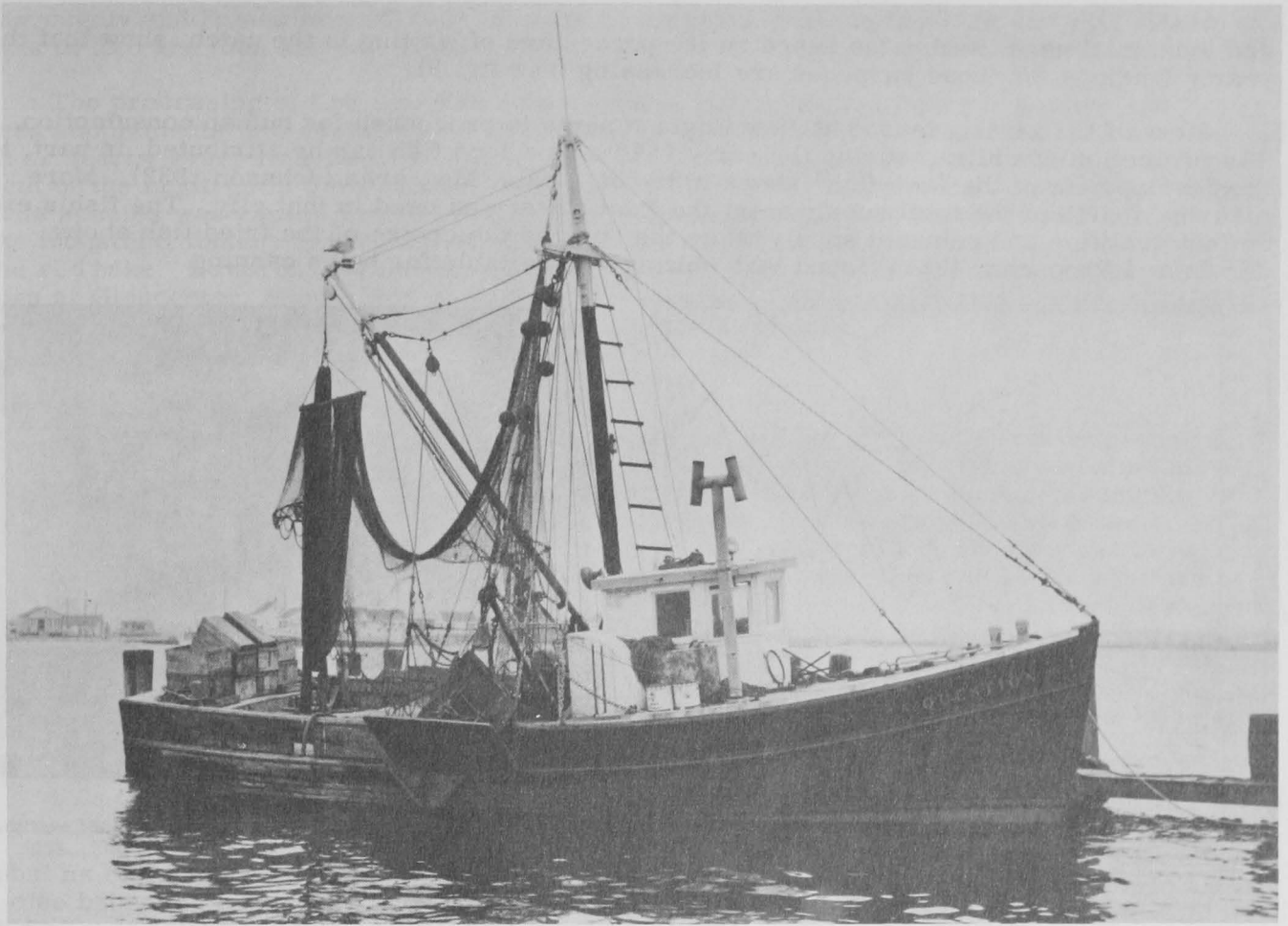


Fig. 8 - Small New England dragger.

Table 8 - Whiting Landings by State and Gear, 1931-1957

Year	Maine					Massachusetts					Rhode Island					Connecticut				
	Otter Trawl	Float. Trap	Pound Net	Other	Total	Otter Trawl	Float. Trap	Pound Net	Other	Total	Otter Trawl	Float. Trap	Pound Net	Other	Total	Otter Trawl	Float. Trap	Pound Net	Other	Total
	(1,000 Pounds)																			
1957	15,809	-	-	-	15,809	107,573	262	80	19	107,934	1,969	322	-	-	2,291	237	-	-	-	237
1956	14,835	-	-	-	14,835	71,291	837	167	24	72,319	1,771	889	-	-	2,660	150	-	-	-	150
1955	25,071	-	-	57	25,128	81,068	248	465	103	81,884	2,891	366	-	-	3,257	361	-	-	-	361
1954	9,318	-	-	-	9,318	77,266	160	511	112	78,049	2,589	204	-	-	2,793	224	-	-	-	224
1953	12,658	-	-	9	12,667	69,913	212	1,534	199	71,858	567	136	-	-	703	134	-	-	-	134
1952	23,321	-	-	-	23,321	79,401	80	1,503	218	81,202	1,141	92	-	-	1,233	193	-	-	-	193
1951	19,575	-	-	7	19,582	97,015	89	745	125	97,974	844	98	-	-	742	174	-	-	-	174
1950	15,579	35	-	1	15,615	46,061	223	2,490	44	48,818	616	39	-	-	655	362	-	-	-	362
1949	12,558	-	-	25	12,583	75,182	133	356	124	75,775	595	84	-	-	679	1,019	-	-	-	1,019
1948	8,645	9	-	-	8,654	65,830	318	2,629	128	68,903	2,098	301	-	-	2,399	503	-	6	-	509
1947	5,968	-	-	19	6,015	50,663	478	1,661	98	52,900	2,033	101	-	-	2,134	904	-	7	-	911
1946	5,679	5	-	13	5,697	41,446	1,394	149	182	43,171	802	323	-	-	1,125	1,080	-	8	-	1,088
1945	5,282	-	-	6	5,288	63,607	1,744	3,088	138	68,577	2,421	487	-	-	2,908	885	-	6	-	891
1944	3,835	-	-	1	3,836	41,899	761	682	74	43,536	2,379	344	-	-	2,723	1,679	-	13	-	1,692
1943	1,948	11	-	3	1,962	44,785	423	1,004	286	46,498	3,171	880	-	-	4,051	1,465	-	22	-	1,487
1942	2,634	-	-	-	2,634	34,073	1,124	7,958	111	43,266	155	608	3	-	764	193	-	14	-	207
1941	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1940	4,034	2	-	-	4,036	24,337	1,378	9,688	650	36,053	75	619	14	-	708	169	-	2	-	171
1939	4,021	1	-	24	4,046	15,540	1,117	6,778	58	23,493	19	217	14	-	250	263	-	2	-	265
1938	625	-	-	23	648	12,202	1,856	10,091	54	24,203	63	118	10	-	191	53	-	-	-	53
1937	-	-	-	-	-	7,371	3,422	10,213	33	21,039	311	682	24	-	1,017	425	-	-	-	425
1936	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1935	-	12	-	-	12	2,439	2,435	10,522	22	15,418	442	1,176	336	-	1,954	-	-	-	-	-
1934	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	30
1933	-	-	-	-	-	343	1,253	6,413	669	8,678	223	339	163	-	725	17	-	-	-	17
1932	-	-	2	-	2	132	1,079	4,578	588	6,377	205	536	51	-	792	29	-	-	-	29
1931	-	6	-	-	6	102	1,434	4,813	781	6,930	61	895	49	-	1,005	-	129	-	-	129

Utilization: Probably few other species are utilized in so many ways as the whiting of New England. This species is processed at ports for human consumption, animal food, and industrial use. Although accurate figures are not available for landings destined for animal

and industrial uses, estimates based on the percentage of whiting in the catch, show that the yearly landings for those purposes are increasing (see fig. 9).

Most of the whiting landed at New England ports is processed for human consumption. The promotion of whiting during the early 1920's as a food fish can be attributed, in part, to the development of the "hot-fish" shops in the St. Louis, Mo., area (Johnson 1932). More than one-fourth of the total supply from the East Coast was used in that city. The fish's excellent qualities and constant supply made the species the choice of the fried fish shops. Jarvis and Puncochar (1940) found that whiting was suitable for home canning.

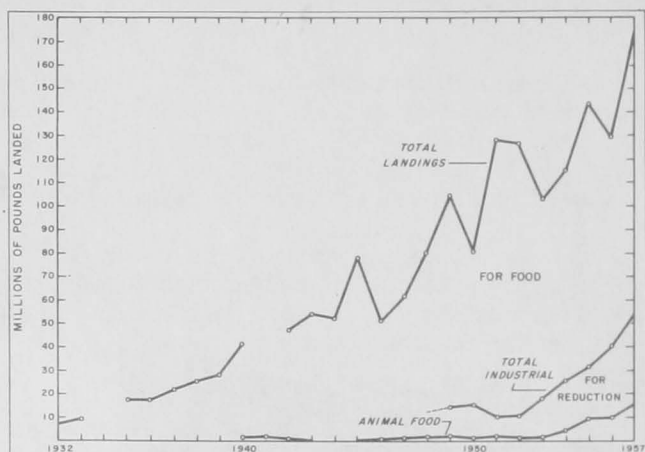


Fig. 9 - Annual New England landings of whiting, 1932-1957.

The development of efficient freezing units and rapid transportation further increased the demand for whiting, from the New England region, and now processing for human consumption has developed into an industry utilizing modern machines and assembly-line methods. The whiting are unloaded onto conveyors that feed to automatic scaling, washing, and heading machines. Trimming and loading of cartons or packages are done by hand. The cartons or packages are then machine-wrapped, frozen, and placed in cold storage for subsequent distribution.

Whiting are also prepared as mink food in several New England ports, among them New Bedford, Sandwich, and Provincetown, Mass. The fish are well-iced at sea in the round with the same care as if for human consumption. After the fish are unloaded, they are washed

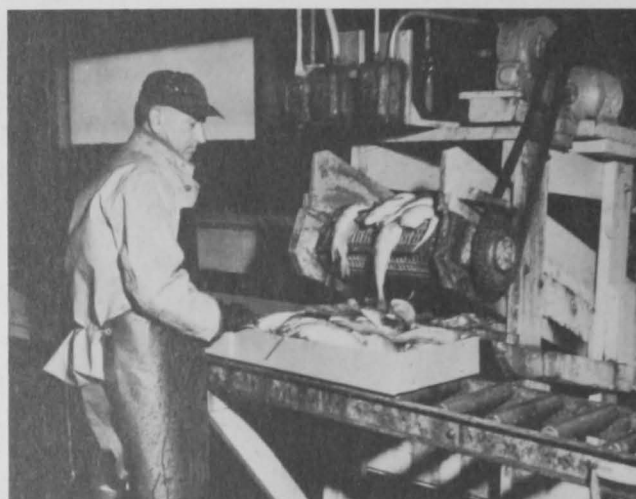


Fig. 10 - Loading whiting for mink food in 50-pound cartons.



Fig. 11 - Whiting frozen for mink food.



Fig. 12 - Fish being delivered to the dehydration plant for processing.

thoroughly and frozen immediately, usually in 50-pound cartons (figs. 10 and 11). The cartons of fish are then shipped to the various mink farms throughout the country.

The processing of fish into fish concentrates, fish meal, and oils for poultry and cattle feed supplements is a rapidly-growing industry. Dehydration or reduction plants are located in or nearby every New England fishing port (fig. 12). Sayles (1951) reported that 10.8 percent of the landings in the southern New England industrial fishery was composed of whiting. This species was ranked fourth in abundance. Recent analysis by Edwards and Lux (1958) of the industrial fishery revealed that whiting is the second most important species, following the red hake. Edwards (1958) computed that approximately 22 percent of the industrial landings at Gloucester, Mass., was composed of the whiting. This significant percentage demonstrates the importance of the species to the industrial fishery.

SUMMARY

The whiting fishery along the Atlantic coast from Maine to Virginia has undergone a number of changes during the past 25 years. In the early years, the fishery was principally an inshore operation with pound and trap nets. During the 1940's an increasing number of draggers began to fish exclusively for whiting along the entire coast. These vessels, being more efficient and versatile, began to land many more pounds of fish than the stationary gear. Changes in gear enabled the exploitation of many new fishing grounds in inshore waters as well as offshore. Along with changes in fishing methods, changes occurred in processing and distribution. The technological developments and improvements of handling and processing fish aided the New England fisheries to produce a better product and also expand the market to many parts of the country. New uses for the whiting in the industrial and animal food market has increased the value of the species. It is evident that the species does and will continue to play an important role in the economy of the New England fishing ports.

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