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Introduction

The Eastern Shore of Virginia is composed of two counties, which divide the Virginia portion of the peninsula between them on an east-west line. Accomack, the northern-most, has more than twice the land area of its southern neighbor, Northampton. They aggregate 696.1 square miles in land area, and 263 square miles in water area. This is divided as follows:

	Land (sq. mi.)	Water (sq. mi.)
Accomack	476.0	137.0
Northampton	220.1	126.0
Total Eastern Shore	696.1	263.0

The land is flat, with the Chesapeake Bay on the western side, and the Atlantic Ocean on the eastern. Both shores are cut and indented by countless bays, inlets, and meandering creeks. The eastern side is protected from the full fury of the Atlantic by a chain of barrier islands, which extend nearly the entire length of the peninsula. These provide cover for extensive salt marshes, shallows, and flats, which are inundated daily by the tides.

The average rainfall for the Eastern Shore is 43 inches, and the average temperatures are 41° in January and 77° in July for Northampton, and 42° and

79° for the same months for Accomack.

Historical

The Eastern Shore was explored by Captain John Smith in 1608, and settled in 1614. From the earliest times, the fishing industry has played a significant part in the economic life of the peninsula. Witness John Rolfe, in 1621:

> At Dales Gift, being upon the sea near unto Cape Charles, about thirty miles from Kecoughtan (Hampton) are seventeen inhabitants under command of Lieutenant Cradock. All these are fed and maintained by the Colony. Their duty is to make salt and catch fish...[1]

Some unusual methods of fishing were employed in the early days. For example, a Col. T. J. Randolph, writing of the years around 1800, reported:

> Rockfish were hunted on the Eastern Shore on horseback with spears. The large fish coming to feed on the creek shores, overflowed by the tide, showed themselves in the shallow water by a ripple before them. They were ridden on behind and forced into water too shallow for them to swim well, and were speared.[2]

The economic history of the Eastern Shore has been greatly affected by both its natural characteristics and its location. Each has had both good and bad effects, with the very advantages carrying with them serious disadvantages in a bewildering juxtaposition. For instance, the sea and bay provide a boundless resource of commercially desirable species, yet lead to isolation from major markets of the area. The very isolation of the Eastern Shore and its low population density lessens the possibility of pollution, thus preserving the enviroment on which estuarine animals are dependent. The long narrow shape of the peninsula permits an enormous amount of waterfront with its attendant advantages; one is never further than about ten miles from the

water. On the other hand, problems arise with the distribution of services, labor, and electric power.

Then, too, the migratory habits of the finfish, and the seasonal nature of the shellfisheries[3] cause problems by producing peaks and valleys in the supply of fish. This was especially true prior to the introduction of artificial refrigeration, and was not confined to the Eastern Shore. George Washington commented:

> In the height of the fishery they are not prepared to cure or otherwise dispose of them as fast as they could be caught; of course, the seines slacken in their work, or the fish lie and spoil when that is the only time I can make anything by the seine, for small hauls will hardly pay the wear and tear of the seine and the hire of hands.[4]

And again in 1794:

> ...I again repeat that when the schools of fish run you must draw night and day; and whether Smith is prepared to take them or not, they must be caught and charged to him; for it is then and then only I have a return for my expenses; and then it is that the want of several purchasers is felt; for unless one person is extremely well prepared he cannot dispose of the fish as fast as they can be drawn at those times...[5]

The problem continues today, however, with the emphasis on labor and capital outlay. The fluctuating abundance produces many "part time" fishermen and processing personnel, and mitigates against the investment of large sums in plants and equipment which lie useless during certain parts of the year, unless they, like the people, can find alternate employment.

The Eastern Shore has been a relative backwater despite its proximity to major population centers[6], and the collection of fisheries statistics severly

neglected. It was not until after the War Between the States that any real attempt was made, and then only on a partial basis. This is not really surprising: the United States Commission of Fish and Fisheries was not established until February of 1871.

The earliest collection of fishery statistics for the area was offered by the United States government in the year 1880; these are disjointed and fragmentary, but of considerable interest. Many of the statements made concerning economic conditions in the Eastern Shore fishing industry have a remarkable similarity to those made today. Some of these concern the lack of suitable transportation, the lack of a convenient market, the presence of many part-time fishermen, and "green gill" oysters.

The report states that the clam and terrapin fisheries were extensively developed, with the latter producing 23,000 dozen terrapin valued at "nearly $10,000" annually.[7] The produce of these fisheries was held until a selling opportunity, or convenient transportation to more distant markets, presented itself.

During this period, also, the "fisheries proper" (finfisheries) was confined largely to bayside. Handlines were much in evidence, with about 300 men engaged in their use with a catch value of $39,250.[8] Gill nets had been little used except for shad, but in 1878 were introduced for the capture of mackerel, and were soon adapted to other species.

The first pound nets were introduced on the Eastern Shore by Messrs. Shediker and Warren in the Spring of 1877, and were found to be extremely

effective and profitable. By 1879, there were seventeen of these nets, utilizing the labor of sixty-four men, and returning a catch valued at $57,000.[9]

Haul seines, of course, had been used in the area since the early days of colonization. Due to declining shad catches, however, by the summer of 1879 there were only 12 seines in operation, employing 85 men, and taking only $16,000 worth of fish.[10]

Another interesting comment from this report concerns the infant menhaden industry which "...promises to become quite important...". The first "oil and guano" (menhaden) factory in Virginia was built on the Eastern Shore near Cape Charles by two gentlemen named Gallup and Kenniston "...in 1866 or 1867, but owing to its exposed location it was abandoned..."[11]

Unfortunately, very limited figures are given in this report for the Eastern Shore oyster fishery, which merely indicate the numbers of vessels utilized, (895 "canoes and skiffs", and 320 "larger vessels") and the number of men employed (total 2945).[12]

In the same time frame (1878-79), Lt. Francis Winslow USN, attached to the Coast and Geodetic Survey, made a detailed survey of the oyster grounds of Tangier and Pokomoke Sounds, and calculated the number of oysters per square yard. The incidence of living to dead shells was taken as "tangible proof" of depletion by overfishing.[13]

In 1889-90, the fisheries of the Cape Charles City area were surveyed. It was noted that the principle method of fishing was by the pound net, and:

> Owing to ample facilities for shipment by rail and water, the favorable character of the shore, proximity of the ocean, and general abundance of fish,

> this is perhaps the finest region for pound net fishing in Chesapeake Bay as regards marine species.[14]

The Spanish mackerel was listed as the leading catch, followed by bluefish and squeteague. It was indicated that catch of mackerel per pound net was probably higher here than anywhere on the Atlantic Coast.

Also of interest is the note that pompano were very abundant at some seasons, and "undoubtedly spawn in the Chesapeake".[15] Rock were noted as being much less abundant than formerly, with only 15,512 pounds (value $556.. about 3 1/2 cents a pound) caught.[16] Statistics were given for the pound net fishery of the area as follows:[17]

Year	Number of Pound Nets	Total Catch Pounds	Value ($)
1889	17	934,835	16,155
1890	16	1,169,033	15,988

The value of the catch, which is in apparent disagreement with the relative weights of the two years, is undoubtedly related to the amounts of the various species caught.

Ingenuity was not lacking. Mr. A. A. Freeman, owner of the International Oyster Company, Cape Charles, was reported to have developed a method of "wiring" oysters, whereby the two valves were held firmly together by a piece of wire wrapped around them. Initially, this was done by hand with pliers, and then by a special machine which could wire up to 48 oysters per minute. A noted biologist of the time, Professor John A. Ryder, was prevailed upon to say:

> I have examined and had in my possession a number of wired oysters, and I am satisfied that the oyster can be preserved when the shells are thus wired for a considerable length of time. I have carefully examined

> oysters which I am satisfied have been wired for sixty days, and I find their vitality is fully preserved and the oysters in no way deteriorated in quality or flavor. I think the process of preserving oysters by placing a wire around them is a practically useful process, and in my opinion would lead to the transportation of oysters to distant points as an article of commerce, when it would be otherwise impossible to transport them alive in the shell.[18]

No mention was made of temperatures or other conditions that prevailed during the "sixty days" however.

In the Bulletin of the United States Fish Commission for 1894, very complete statistics for the fisheries of the Eastern Shore are given. These figures, for the years 1890 and 1891, may serve as a base line for economic discussions of the industry, and are the first entrants in Table I.

Explanation of Tables

All basic statistics utilized in this paper have been extracted from the official publications of the United States Commission of Fish and Fisheries, and the Bureaus which succeeded it. These publications have had various titles since their inception.

Table I shows some paramenters of the fishing effort of the Eastern Shore for certain years between 1890 and 1960, inclusive. Since their inception, the statistics collected by the United States Government on this area have varied considerably in frequency of collection, method of arrangement, and data contained. For instance, in the earlier years, statistics were collected from various parts of the United States on a sort of "round robin" basis, and often several years would go by with no collection from the Eastern Shore, or ,

indeed, from Chesapeake Bay.

Computations of personnel have proved complex. It was decided early on to utilize figures for fishermen only, since data on persons who worked in other phases of the industry are not generally available. This decision, while providing an overall simplification, led to certain problems of its own. For instance, for the years 1920 and before, industry personnel were broken down as follows:

On fishing vessels:
On transport vessels:
Inshore and boat fishermen:
Shoresmen:

No further explanation is given for each category. I have excluded those persons listed as "On transport vessels" and "Shoresmen" from my computations.

In 1925 alone the heading "Persons Engaged" is employed, without definition. I believe this figure, which is relatively high, represents the total industry, and therefore is not in consonance with the personnel figures for other years. All computations for the year 1925 relating to the number of persons involved should be viewed with skepticism.

In 1929 the following headings were adopted:

On vessels:
On boats and shore:

This last was broken into two sub-headings, "regular" and "casual", with figures for each. All these, I have assumed, are "fishermen".

Frequently, also, particularly from 1939 onward, the annual statistics are not broken down by counties, but rather into "Chesapeake Bay Waters" and "Ocean Waters". This format does not lend itself to the abstraction of

figures for the Eastern Shore as a unit, and accounts for the missing data for some of the years before 1939, and all those afterwards.

The values in Table I are given both as "current" (reported) dollars, and as "adjusted" dollars. The Wholesale Price Index for "All Commodities" based on Bureau of Labor Statistics calculations was utilized. This was adjusted to 1960 as a base (1960 equals 100).[19]

The statistics on oyster catch value were included because they are historically the single most valuable species in the Eastern Shore catch. Figures for seed oysters posed a special problem. Prior to 1920 they were not reported, although it was common practice in the 19th and early 20th centuries to ship small oysters to northern waters for the final stages of their growth and subsequent sale.

From 1920 on, reporting of seed oyster harvests was sporadic. As an example, in 1930 no seed oysters were reported from Accomack County, although 1929 showed a value of $1380, and 1931 a value of $21,153.

Similarly, Northampton County reported no seed oysters in 1934, with a catch worth $20,440 in 1933, and $9,800 in 1935. Neither Accomack nor Northampton reported any in 1937, although other Virginia counties did.[20]

After 1938, seed oysters were not separately listed.

In this paper, seed oysters values, where listed, were included in the value of the total oyster catch for the year. It can be argued that seed oysters, which are replanted to be recovered later as market oysters, are thus counted twice. If we were attempting to determine the total number or weight of oysters caught, this point would certainly be valid. Since, however, watermen are

paid for the oyster each time they recover it, and our object is to discover economic returns, the adopted method seems the more logical. Notice that values only are considered for oysters.

Table II shows the total catch for the state of Virginia in weight and value, for comparison with Eastern Shore figures for the same years.

Table III is composed of computations based on the figures from Tables I and II. All columns are self-explanatory, but comment on two of them is appropriate.

"Dollar Return per Fisherman" may be taken as a partial indicator of the economic success of year's fishery; similarly, "Pounds Caught per Fisherman" may be considered a partial indicator of biologic abundance. Of course, many other factors must be considered for each. Such things as weather which hinders or enhances fishing, the relative amounts of the various species caught, the many conditions which may cause migratory fish to vary from normal patterns, and the innumerable complex relationships, even now not clearly understood, which affect the behavior of fish, are all of importance. "Luck of the chase", even, must certainly be included. Economic success and biologic abundance are, of course, highly interrelated; if too many fish are caught, the price drops, and dollar return per man may be lowered. On the other hand, if prices are initially low, less effort will be expended, resulting in a smaller catch.

Discussion of Figures

Certain portions of all three tables, notably Table III, are presented in

the form of graphs (Figures I-IV). While year-to-year variance may be regarded as inconclusive, overall trends are of interest. In some cases, the lack of statistics is unfortunate; one would enjoy, for instance, seeing charted all the figures for the period of World War II (1941-45) and slightly after, which has been referred to as the "Golden Age of the Chesapeake Bay Seafood Industry". Certainly, if the graph of "Dollar Return per Fisherman" (Figure II) for 1945 is any example, it is easy to see why the industry, in years since, has been regarded as depressed. The period of World War II was unique for several reasons; among these are the rationing of meats other than seafoods, the limited availability of men to fish, and the relative lack of competition from off-shore fisheries. However, the statistics are not broken down by counties for this period, except for 1945.

In figure I, we note that fishing effort as indicated by the number of fishermen was highest around the turn of the century, leveling off in the 1920's and remaining relatively constant after that time. (As previously mentioned, personnel data for 1925 are believed incongruous.) The success of the fishery from a peak at the turn of the century also gradually declined to a low in the early 1930's, remaining almost constant with a somewhat upward trend after that time. It must be remembered that these figures are simply "pounds caught" with no differentiation made as to species.

Figure II, which is a measure of return per unit effort, is of considerable interest. Since there have been no major break-throughs in methodology or equipment to greatly enhance productivity, pounds caught per fisherman is a partial measure of biologic abundance plus favorable fishing conditions, as

previously stated. Dollar return per man is a somewhat better measure of economic success, and, viewing the overall range, it can be seen that the years from 1950 on are somewhat better than average, except when compared to the phenomenal year of 1945. Economically, then, in the time frame considered, the period 1955 through 1960 may be held to be more than moderately successful in relation to earlier years, considering the Eastern Shore alone.

Figure III, which graphs statistics for the entire state of Virginia, shows an overall upward tendency over the years in weight of catch, ignoring short term cyclic changes, Not so those of the Eastern Shore, which tend downward. This effect is particularly noticeable from 1938 onward. Even 1945 was not a particularly good year for the Eastern Shore in terms of pounds caught. A phenomenal oyster catch, however, (the highest, by nearly one million dollars, of any year considered -- see last column, table I) with its high value, pushed the dollar return per man to a high figure.

Figure IV, however, is the most interesting and revealing of all. It clearly indicates, both in percentages of dollars and pounds, the relative decline of the Eastern Shore fisheries in comparison to those of the state of Virginia as a whole. The downward trend is long term, clear, and uncompromising.

Comclusion

The overall conclusion may be drawn from the foregoing that the fisheries of the Eastern Shore declined relative to the rest of the state rather steadily since the first statistics were collected. This is, however, only a relative

decline. The Shore catch in terms of weight caught has remained relatively constant since 1931, ranging up and down between about 18.2 and 27.1 million pounds.

For the years considered, the value of the catch (in dollars adjusted to 1960) was constantly high after World War II. For the years for which statistics are available, only 4 years (1901, 1925, 1929, and 1930) exceeded even the lowest year since the war (1960). All years since the war pale, however, in the light of the halcyon days of 1945, which conveys the feeling of later depression. This is even more apparent in terms of dollar return per fisherman, where the figures from 1938 onward are exceeded only twice previously (1929 and 1930). Again, the figure for 1945 towers over the others, being more than twice all the rest except 1930. This reinforces the concept of latter depression, when, in fact, returns were relatively high.

TABLI

		Eastern Shore Total Catch			Oyster Catch Value	
			Value			
Year	Fishermen	Weight (Pounds)	Current Dollars	Adjusted Dollars * (1960=100)	Current Dollars	Adjusted Dollars * (1960=100)
1890	3784	50,764,553	955,073	3,128,310	738,487	2,418,890
1891	3880	44,731,327	968,568	3,194,485	736,166	2,427,988
1897	4225	47,585,412	692,991	2,736,931	472,467	1,865,983
1901	4914	89,777,304	1,186,177	3,948,658	821,165	2,733,572
1920	2373	76,270,905	1,916,851	2,284,958	475,363	566,650
1925	4391	53,980,560	2,219,268	3,946,769	Not Available	Not Available
1929	2292	37,149,921	1,896,568	3,664,158	464,237	896,903
1930	2200	35,712,077	1,929,542	4,113,285	531,958	1,133,997
1931	2341	27,760,324	1,063,914	2,684,618	228,251	575,955
1933	2106	18,280,091	749,341	2,093,716	283,811	792,990
1934	2206	21,487,500	868,851	2,133,721	258,853	635,690
1935	2134	21,607,000	809,439	1,861,635	231,222	531,789
1936	2073	25,301,600	931,491	2,121,847	334,748	762,524
1937	1949	24,478,400	834,053	1,777,986	214,130	456,470
1938	1894	27,198,700	1,009,315	2,362,076	231,679	542,193
1945	1959	20,974,700	4,034,410	7,012,706	2,117,055	3,679,915
1950	2510	26,834,000	3,229,091	3,746,045	955,390	1,108,341
1955	2482	18,435,700	3,553,249	3,838,860	2,314,625	2,500,675
1960	2711	27,388,600	3,616,960	3,616,960	1,695,893	1,695,893

*to the nearest dollar

TABLE II

Total Virginia Catch

Year	(Pounds) Weight	Value Current Dollars	Value Adjusted Dollars* (1960=100)
1890	185,283,000	3,637,000	11,912,873
1891	183,994,000	3,648,000	12,031,662
1897	277,994,000	3,180,000	12,559,242
1901	387,184,000	4,613,000	15,356,192
1920	471,219,089	8,541,724	10,182,053
1925	276,228,000	9,085,000	16,156,856
1929	211,285,829	7,285,669	14,075,867
1930	245,294,380	7,487,302	15,960,993
1931	226,636,917	4,732,128	11,940,772
1933	217,018,263	3,326,974	9,295,820
1934	246,800,900	4,176,923	10,257,669
1935	217,592,000	3,520,938	8,097,833
1936	270,304,000	4,312,000	9,822,323
1937	242,291,800	3,829,205	8,162,876
1938	237,331,000	4,403,000	10,304,236
1945	252,786,600	21,518,272	37,403,567
1950	313,799,400	16,118,602	18,699,074
1955	440,959,000	20,454,000	22,098,099
1960	366,684,000	20,925,000	20,925,000

*To the nearest dollar

TABLE III

Year	Dollar Return Per Fisherman*			Percentage of Total Virginia Catch		
	Pounds Caught Per Fisherman+	Current Dollars	Adjusted Dollars (1960=100)	Percentage of Catch Value From Oysters	Weight	Value
1890	13,416	252	827	77.32	27.40	26.26
1891	11,529	250	823	76.00	24.31	26.55
1897	11,263	164	648	68.18	17.12	21.79
1901	18,270	241	804	69.23	23.19	25.71
1920	32,141	808	935	24.80	16.19	22.44
1925	12,293	505	899	Not Available	19.54	24.43
1929	16,209	827	1,599	24.48	17.58	26.03
1930	16,233	877	1,870	27.57	14.56	25.77
1931	11,858	454	1,147	21.45	12.25	22.48
1933	8,680	356	994	37.87	8.42	22.52
1934	9,740	394	967	29.79	8.71	20.80
1935	10,125	379	872	28.57	9.93	22.99
1936	12,205	449	1,024	35.94	9.36	21.60
1937	12,559	428	912	25.67	10.10	21.78
1938	14,360	533	1,247	22.95	11.46	22.92
1945	10,707	2,059	3,581	52.47	8.30	18.75
1950	10,691	1,286	1,492	29.59	8.55	20.03
1955	7,428	1,432	1,547	65.14	4.18	17.37
1960	10,103	1,334	1,334	46.89	7.47	17.29

+To the nearest pound
*To the nearest dollar

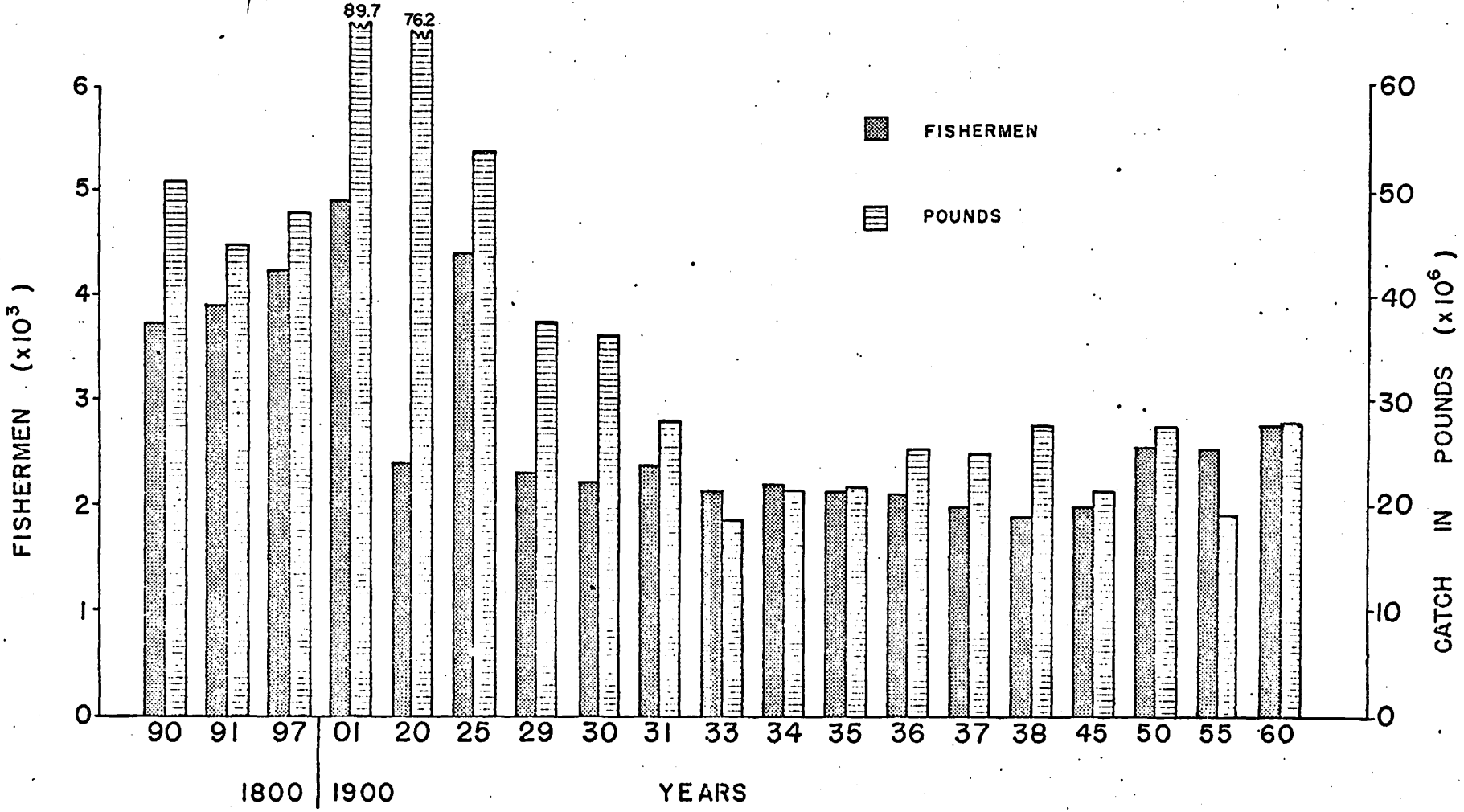

FIGURE I

Eastern Shore Total: Fishermen and Catch in Pounds. (Selected Years, 1890 - 1960)

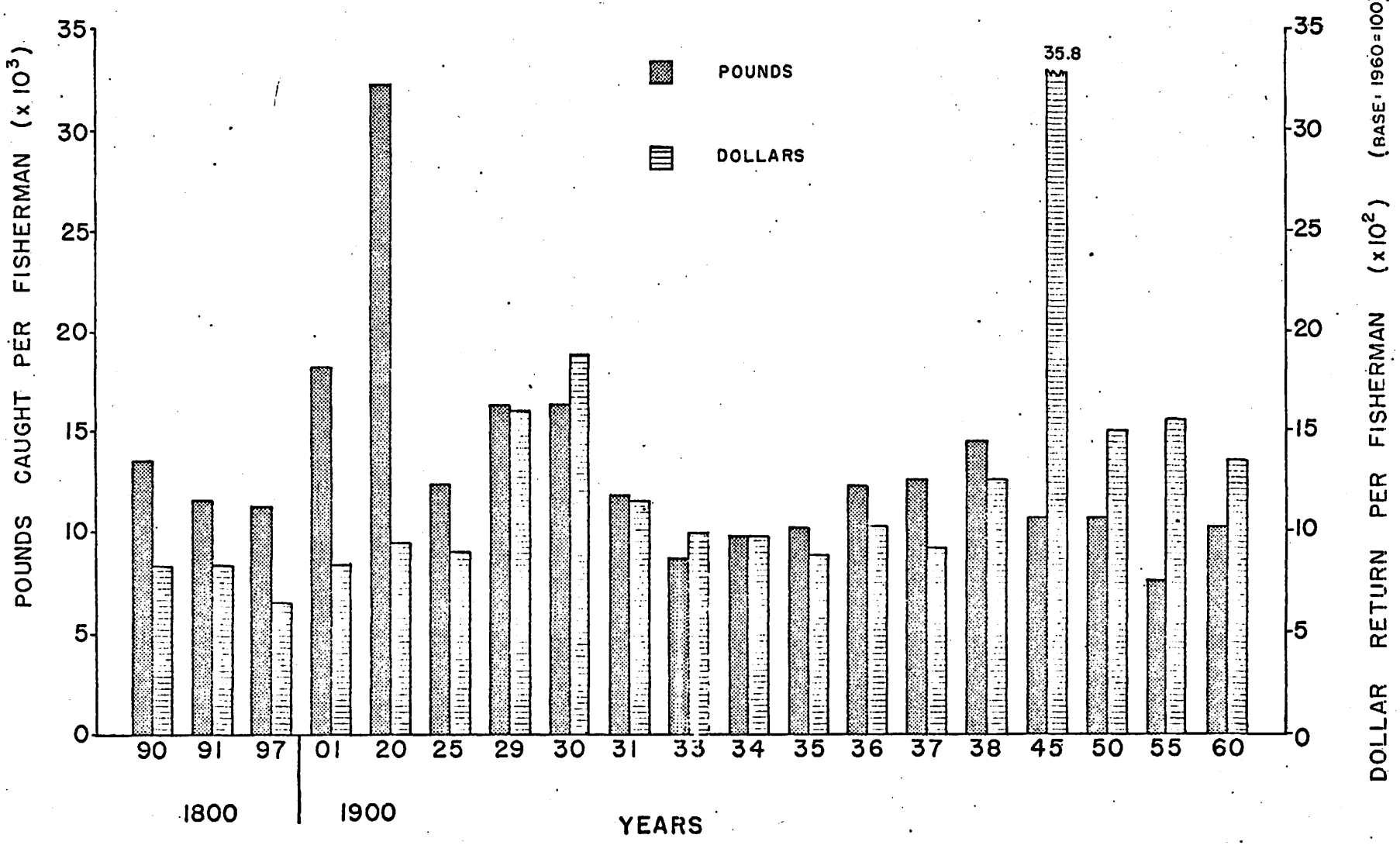

FIGURE II

Eastern Shore: Pounds Caught and Dollar Return per Fisherman. (Selected Years, 1890 - 1960)

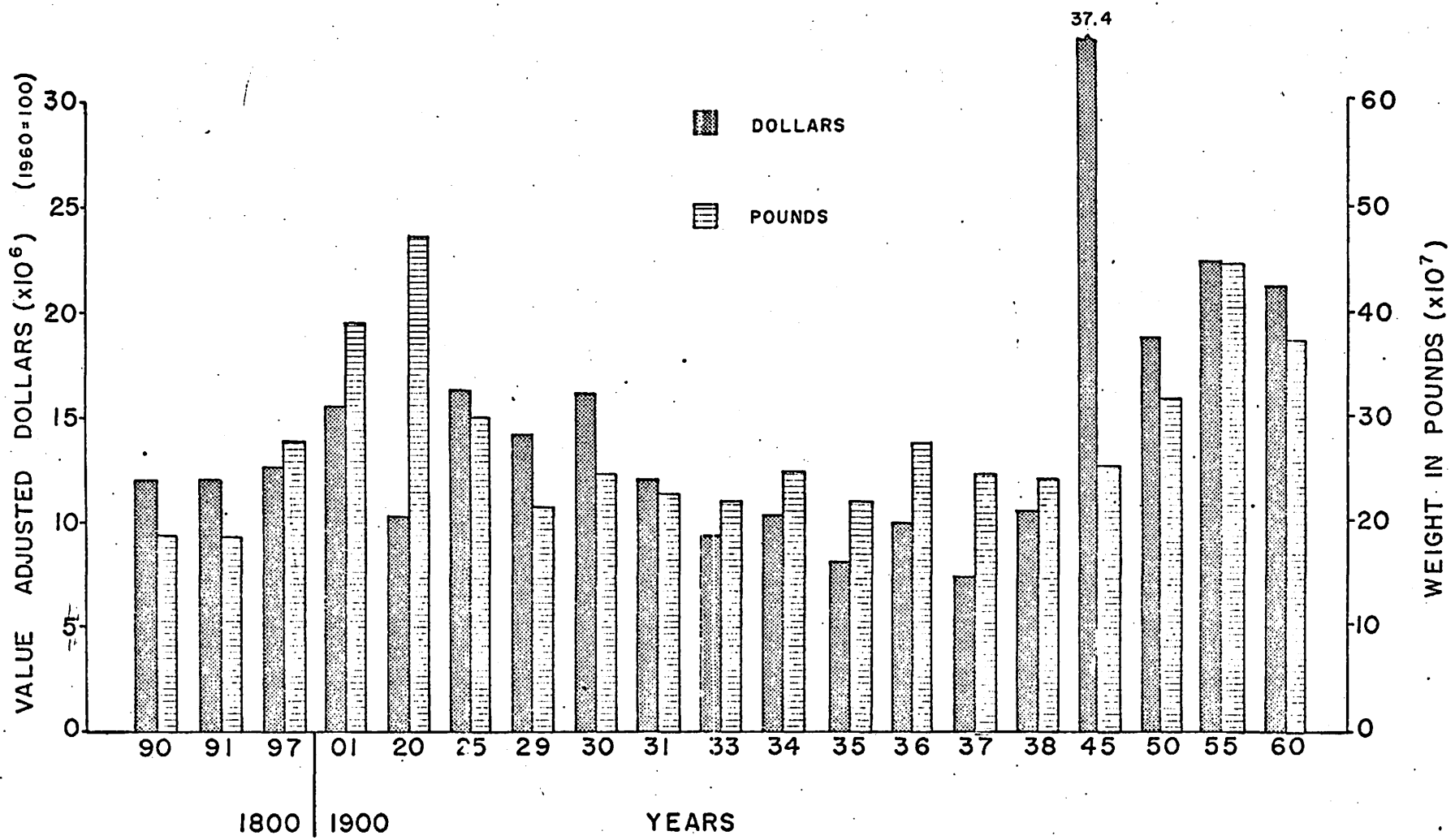

FIGURE III

Virginia's Total Catch (Selected Years, 1890 - 1960)

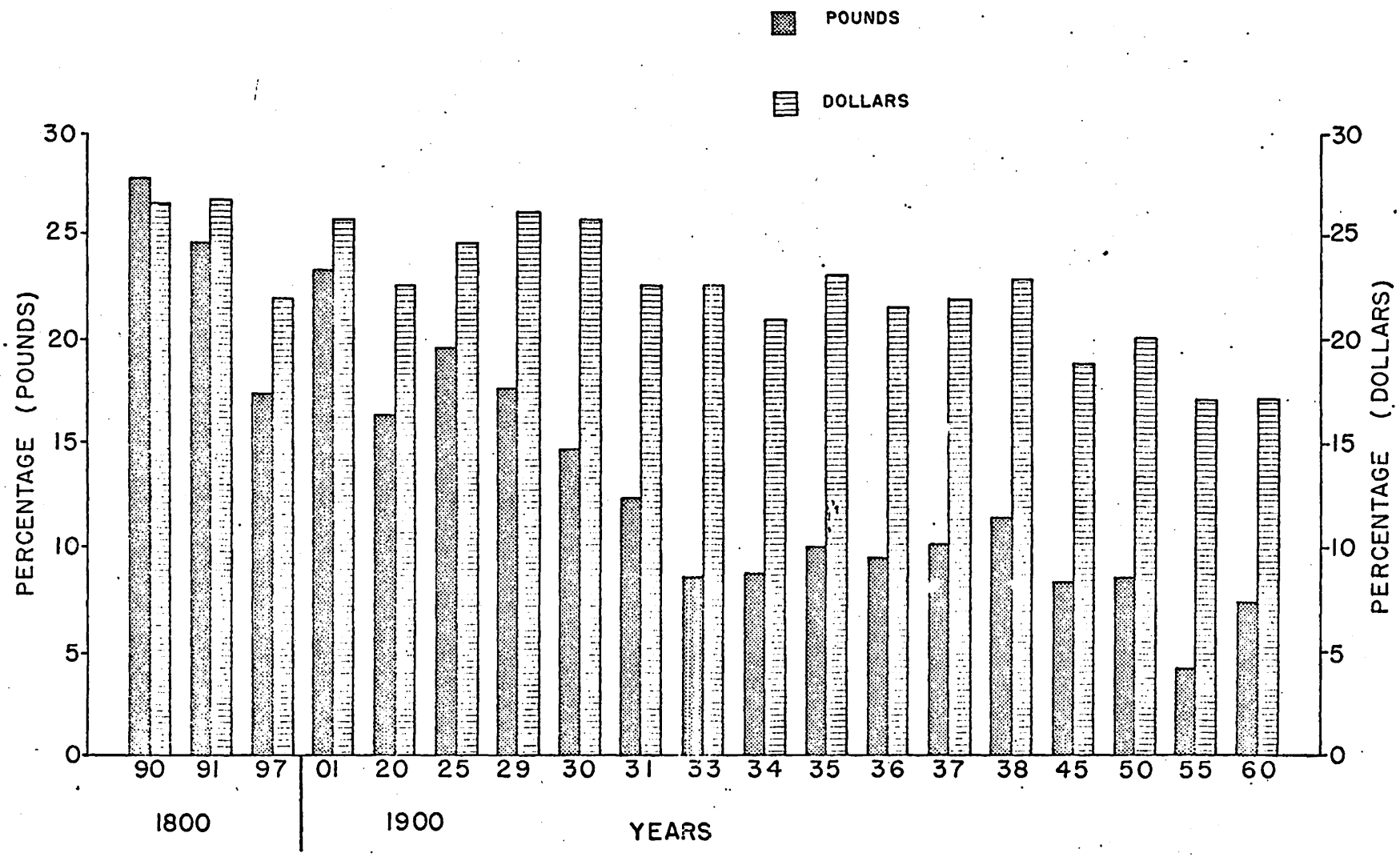

FIGURE IV

Eastern Shore Catch as a Percentage of Total Virginia Catch, in Dollars and Pounds. (Selected Years, 1890 - 1960)

FOOTNOTES

[1]James Wharton, The Bounty of the Chesapeake, Fishing in Colonial Virginia (Williamsburg, Virginia: The Virginia 350th Anniversary Celebration Corporation, 1957) p. 21.

[2]Ibid., p. 70.

[3]With the possible exception of the fishery for clams.

[4]Wharton, op. cit., p. 61.

[5]Ibid., p. 62.

[6]Based on figures for 1966, over 750,000 people reside within 50 miles; over 31 1/2 million, nearly 16% of the U. S. population, are within 250 miles. The isolation mentioned previously remains. Bureau of Outdoor Recreation and Department of Interior. Virginia's Barrier Islands and Appendix. p. IV-1.

[7]The values given in footnotes 7 through 12 are in current (reported) dollars. The Fishery and Fishery Industries of the United States. Geographical Review of the Fisheries Industries and Fishery Communities for the year 1880 (Washington, D. C.: 1887), Section II-A, p. 462.

[8]Ibid.

[9]Ibid., p. 463.

[10]Ibid.

[11]Ibid.

[12]Ibid., p. 465.

[13]United States Commission of Fish and Fisheries. Report of the Commissioner for 1889 to 1891. (Washington, D. C.: 1893), Part XVII, p. 123.

[14]Ibid., p. 188.

[15]Ibid., p. 191.

[16]Ibid., p. 192.

[17]Ibid., p. 188.

[18]Ibid., p. 194.

[19]Early Wholesale Price Indices (All Commodities) from the statistics of the Bureau of Labor Statistics are based on 1926 as 100. Later, the period 1947-49 is used as a base. Calculations established 1.53892 as a close approximation of the conversion factor between the two. Dividing the dollar values based on 1926 as 100 by this number established 1947-49 as a common base. The year 1960 was then chosen to give a better perspective, though, of course, any year could have been used.

With 1947-49 as 100, 1960 was given as 119.6. Therefore, all values based on the 1947-49 era were divided by 119.6 to establish 1960 as a base.

[20]The values given in this and the preceeding paragraph are in current (reported) dollars.

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