David R. Baumer. FISHING VESSELS OF THE NORTHERN GULF OF MEXICO RED SNAPPER INDUSTRY (Under the co-direction of Drs. Donald Parkerson and William N. Still, Jr.), Department of Maritime History and Underwater Research, July 1991.

This study demonstrates that the evolution of working watercraft is best viewed in an historical analysis of the cultural, economic, environmental, and technological aspects that effect an industry and the work of its watercraft. The method used to demonstrate this statement is an historical discussion of the red snapper industry including its origins, development, economics, fishing grounds, fishing methods, and watercraft.

This study found that the evolution of working watercraft in the Gulf of Mexico red snapper and grouper fishery paralleled the type of vessels used in the offshore New England market fisheries. Connecticut fishermen pioneered the red snapper and grouper fisheries and introduced well smacks into southern offshore fisheries. Well smacks, a highly evolved class of offshore fishing vessel, served snapper fishermen well until the fishery rapidly expanded wholesale operations. Well smacks limited fishing areas to shallow waters which fishermen overutilized as the wholesale market grew. The fishery was forced to abandon live wells in the 1880s and adopted tight bottomed vessels. This change resulted in a transition from the use of Connecticut built well smacks to northern New England tight bottomed vessels built in Maine and Massachusetts.

After the transition from well smacks to fishing schooners

imported from the northern New England offshore market fisheries the red snapper industry continued in a period of growth. Further overutilization of snapper resources resulted in the exploitation of increasingly distant fishing grounds until the late 1890s when Campeche Banks became the industry's primary fishing area. The fishery shifted to the acquisition of larger northern New England offshore fishing schooners as result of the utilization of fishing grounds at greater distances from the wholesale markets. Additionally, in the twentieth century, the fleet split into two groups: large vessels that fished Campeche Banks, and a smaller class of vessels, known as chings, that fished banks along the northern Gulf of Mexico.

In twentieth century fishermen introduced engine power in red snapper fishing vessels to extended their fishing range and to increased their ability to focus fishing effort into specific reef environments. Vessel owners installed small gasoline engines into their existing fleets. Reliance on engine power caused fishermen to change both the rig and shape of snapper fishing fleets. As fishermen introduced larger engines, reductions sail plans followed until sails became auxiliary to power and functioned only to steady the watercraft.

In summary, culture, economics, environment, work, technology are aspects that must be analyzed in order to evaluate the evolution of working watercraft types. The underlying causes for the changes in snapper fishing vessels were the New England influence in the fishery, the technological advances in refrigeration and transportation that

allowed the expansion of wholesale fishery operations. Subsequently overfishing forced the fishermen to exploit deeper and more distant fishing areas which required larger faster vessels with greater fishing ranges.

FISHING VESSELS OF THE NORTHERN GULF COAST RED SNAPPER FISHERY

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By
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FISHING VESSELS OF THE NORTHERN GULF OF MEXICO
RED SNAPPER INDUSTRY

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INTRODUCTION

This thesis is an historical investigation of the northern Gulf of Mexico red snapper industry and its fishing vessels. This document demonstrates how changes within and outside the industry affected its watercraft and examines the major factors influencing this fishery's commercial origins, development, growth, and economic stability. In addition, this thesis argues that changes in working watercraft are best viewed in relation to an historical analysis of the following four factors. The first is the social history and background of the people connected with the watercraft. The second is the local and regional economic trends that affect the industry dependent upon the watercraft. The third are demands that the environment of use place on the watercraft and its work. The fourth is the technological trends and innovations affecting the watercraft.

The following chapters present an historical discussion of the red snapper industry, its fishing methods, and the evolution of its fishing fleet and addresses the above four factors influencing the changes in working watercraft as they specifically relate to the red snapper fishery. The purpose of this thesis is to demonstrate that the analysis of a fishery's historical background, economics, environment of operation, fishing method, and technological advances enable changes in working watercraft to be understood.

RED SNAPPER FISHERY: HISTORICAL BACKGROUND

The first chapter of this thesis outlines the history of the red snapper industry in order to demonstrate how historical situations can affect changes in working watercraft. This chapter focuses on the New England origin, commercial development, growth, and economic stability of the red snapper fishery.

The origin of the northern Gulf of Mexico's red snapper industry is rooted in the activities of Connecticut fishermen who migrated to south Florida, fished for the Havana market, and engaged in wrecking on the Florida reefs. Further, New England influence on both the origin and commercial development of the red snapper industry dominated the selection of watercraft used in the snapper fishery. Connecticut fishermen introduced the Noank smack, a southern New England type of offshore fishing vessel, into Gulf of Mexico fisheries. In addition, New England entrepreneurs, who guided the industry's early commercial growth, replaced well smacks with northern New England fishing schooners, as the former became outmoded in the fishery.

Economic factors related to the growth of the industry and the fishery resource also affected the snapper fleet. Economical railroad transportation and ice production methods led to rapid growth of the snapper industry resulting in both an expanded market and larger fishing fleet. Changes in resource utilization created a need for larger, faster schooners with greater carrying capacity. Furthermore, the standard preservation method on board the fishing vessel became

obsolete and its change caused a different class of vessel to be adopted by the fishery.

The analysis of the red snapper fishery and its watercraft begins with the official annexation of Spanish Florida by the United States in 1821. The annexation is important because it transferred the Florida reefs to the United States and stimulated the activities of a small group of Connecticut fishermen in this area. The Florida reefs, coral and limestone rock formations in the Straights of Florida, lie just offshore in an arc-shaped chain of islands stretching from Cape Florida (Key Biscayne) to the Dry Tortugas (Figure 1). The Straights of Florida are the principal entrance and exit to the Gulf of Mexico and lie between the Florida reefs, to the north and west, and the Bahama Islands and Cuba, to the east and south. The straights are about forty-five miles wide between Cape Florida and the Bahamas, and are about eighty-miles wide between Key West and Havana.

The islands along the Florida Reef were settled when the United States took control of the Florida Territory. John W. Simonton, of Mobile, Alabama, purchased the island that the Spanish called *Cayo Hueso* (Bone Key) on 19 January 1822. He then sold seventy-five percent of his interest and, along with the new owners, developed the island that its new inhabitants called "Key West."

Prior to 1821, wreckers from the Bahama Islands cruised the Florida reefs and salvaged large amounts of shipwrecked cargo which they carried to Nassau. The Acting Governor of East Florida, W. G. D. Worthington, reported to the Secretary of State, John Quincy Adams,

that as of 18 March 1822, thirty-seven to forty English vessels of between sixteen and eighteen tons found employment wrecking on the Florida reefs.[1] Sailing ships that navigated the Straights of Florida generally hugged the Florida shore while sailing both in and out of the Gulf of Mexico. Vessels sailing into the Gulf of Mexico skirted the Florida reefs to avoid the Gulf Stream, while outbound traffic generally regarded the northwest Cuban Coast and the Bahamas side of the channel as more perilous than the Florida reefs.[2] Consequently, the Florida reefs offered greater opportunities in the wrecking business than Cuba or the Bahamas.

In addition to wrecking, Worthington reported that American fishermen engaged in grouper fishing for the Havana market. Eight or nine American fishing smacks, from thirty-eight to forty tons each, fished off Cape Sable and made regular trips from Havana lasting seven to eight days each. Fishing smacks were equipped with live wells—a free flooding fish hold that allowed the fish to be transported alive to a distant market and assured a fresh quality product. The groupers ranged from three to eighteen pounds and, if alive, sold for one to one and a half dollars per fish. The fishermen averaged three to four hundred dollars a trip and continued this activity year around. Worthington described a lucrative fishing business for these Americans

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[1] W. G. S. Worthington to John Q. Adams, Secretary of State, 18 March 1822, Clarence E. Carter, ed., *The Territorial Papers of the United States: The Territory of Florida, 1824-1828*, Vol. XXIII (Washington: Government Printing Office, 1958), 382.

[2] S. R. Mallory, "Coast and Keys of Florida," a letter from S. R. Mallory to Professor Bache of the Coast Survey, published in *De Bow's Review*, July, Vol. VII (Old Series), Vol. 1, No. II (New Series), 1849, 96-97.

who likely had little or no competition from the Spanish and English fishermen in the area. The Cuban fishermen in Florida sold dry salted fish and turtles in the Havana market, whereas the English concentrated in the wrecking business and fishing for turtles from Nassau.[3]

Although Worthington suggested to Adams that "wrecking, turtleing, and fishing be put on a footing to ensure a monopoly or first preference to our own citizens," he envisioned a permanent Naval base and port of entry at Key West.[4] At this time English wreckers salvaged thousands of dollars worth of property from United Stated territory and took it to Nassau. The unregulated activities of the Bahama wreckers resulted in the establishment of a customs house at Key West in 1822.[5] In April 1823 a collector and inspector of customs arrived. Further, in 1825 Congress prohibited the carrying of wrecked goods out of the country and required all such goods to be brought to a port of entry.[6] With the establishment of a port of entry in Key West, Americans engaged in the business of saving ships and cargos and soon excluded the English from wrecking on the Florida reefs.

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[3] Worthington to John Q. Adams, 18 March 1822, *Territorial Papers*, 382.

[4] *Ibid.*

[5] James W. Covington, "Trade Relations Between Southwestern Florida and Cuba 1600-1840," *Florida Historical Quarterly*, Vol. XXXVII (October 1959):122.

[6] William Marvin, *A Treatise on the Law of Wreck and Salvage* (Boston: Little Brown and Company, 1858), 4.

Little is known about the Americans that Worthington described, but evidence suggests, that they were southern New England smackmen who traveled widely in the trade of catching and delivering fish and lobsters to market alive. The Florida Reefs provided a productive ecosystem abundant in food fishes, and the Connecticut fishermen found the best fishing grounds in the narrow channels through the reefs, and about the submerged coralline rocks.[7] In addition to the fishery resources, the Florida reefs offered to Connecticut fishermen the enticement of thousands of salvage dollars made by saving wrecked ships and cargos.

Lured by a lucrative fishery and profits made from saving ships and cargo on the Florida reefs, Connecticut fishermen migrated to the south Florida waters. By 1822 Connecticut smackmen operated from Key West, fishing and wrecking. The *Mystic Press* published a list of twenty fishing vessels and captains from the Mystic area that were based in Key West from 1822 through 1829 (Table 1).[8] These vessels engaged in a seasonal migration leaving the New York fisheries in October for the wrecking business and fishing for the Havana market until around May. In the spring the fishermen returned with their smacks to the New York fisheries.

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[7] Silas Stearns, "The Red Snapper Fishery and the Havana Market Fishery of Key West Florida," in *Fisheries and Fisheries Industries of the United States.*, ed. George Brown Goode, Seven Volumes, 47th Cong., 1st sess., Senate Doc. 124 (Washington: Government Printing Office, 1887), 592-594.

[8] A.C.T., "Key West Items," *Mystic Press*, 12 April 1875.

Hiram Clift, a crew member of the sloop smack *Gallant*, documented this transient activity during the 1824-1825 season. He noted that the smack *Gallant* sailed from New York on 12 October 1824 with E. Spicer of Mystic, Connecticut, as her master. By the 23rd of October, Spicer and his crew had sailed past Cape Florida and anchored inside the Florida reefs. On 24 October the fishermen on the *Gallant* began fishing their way westward along the Florida reefs to the Dry Tortugas. The *Gallant* fished at different spots along the reef and anchored each night. On 30 October she lay at anchor in Tortugas Harbor all day due to strong winds, but the *Gallant* spent the next four days fishing back down the reef eastward towards Logerhead Key. After eight days in the area she made one more day of fishing on the Quicksand Bank and caught 220 fish. At 5 P.M. the Gallant sailed for Cuba in company with two other Connecticut smacks—the *Energy* and the *Florida*. All three made Havana at 10 A.M. the next day where they found three other New England smacks: the *Enterprise, [Sanborg],* and *Loreta*.[9]

At Havana, Spicer and his crew transferred their fish from the *Gallant's* live well to floating fish pens called "cars." Clift noted that because the weather was "very warm," 100 fish died in the car. Consequently, the loss trimmed fifty dollars from the *Gallant's* gross profits and lowered Clift's spirits. Cuban fish dealers only paid

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[9] Hyram Clift, "Journal of the voyage from New York to the West Indies in the *Gallant* of New London, E. Spicer of Mystic (master)," 12 October 1824 to May 31 1825, Manuscript Collections, G. W. Blunt White Library, Mystic Seaport Museum Inc., Mystic, Connecticut.

premium prices for live fish. The *Gallant* sold her remaining 280 fish at four bits a piece (1 bit=$0.125) and made $140.

It is evident from *Gallant's* activities in the 1824-1825 winter season that wrecking was preferred to fishing. No figures are available regarding the money the *Gallant* made wrecking, but she, and every other smack on the reef, abandoned all fishing activities when any ship became stranded on a reef. When wrecking, the smacks worked in consort and generally traveled together in small groups while fishing.

For example, on 25 April 1825 the *Gallant* and six other Connecticut smacks went to the aid of the ship *Henry*, of New York, bound to Liverpool from New Orleans with a cargo of cotton. The *Henry* had stranded off the Dry Tortugas the night before. The smacks *Loreta, Tickler, Energy, Dread, Florida,* and *Evergreen* off-loaded her cargo of cotton and transported it to Key West. Spicer and his crew freed the *Henry* from the reef, but the ship leaked profusely. The *Gallant's* crew pumped constantly through the night but were unable to keep the *Henry* afloat. To prevent the ship from sinking, she was grounded on a reef on the north side of Logerhead Key. The smackmen/wreckers stripped the ship of her valuable contents and equipment, transported them to Key West, and filed a document with the court in Key West that arrested the salvaged goods until a payment was made to the wreckers.

Table 1. A List of Fishing Smacks and Masters, Fishing from Key West between 1822 and 1829.

Fishing Smack	Master
Tickler	James Sawyer and Geo. Woodard
Mary Ann	Benj. Sawyer
J. B. Adams	N. J. Sawyer
Dread	J. S. Sawyer
George	Jas. A. Sawyer
Eagle	Capt. Jno. Burrows
Independance	John S. Burrows
Trimmer	Hubbard H. Burrows
Loreta	Lemuel Burrows
Charles Henry	Geo. Eldredge, Jr. and Capt. Welch
Energy	Elam and Thomas Eldredge
Alert	M. R. Packer
Gallant	G. Packer
James Monroe	J. Packer, Jr.
Florida	Austin Packer
Relief	Geo. W. Packer
Liberty	Nathan Wilber
Cuba	Moses Wilber
Morning Star	R. Burnett
Mystic	Wm. Kemp
Enterprise	I. D. Miner
Evergreen	John A. Appleman
Felix	Jesse Beebe
Mary Ellen	Austin Lester and Charles Wolf

Note: This list has been regrouped by the family name of the master(s) listed for each vessel.

Source: This list was compiled by a Key West resident identified as A.C.T. and published in the *Mystic Press*, 12 April 1875.

Clift records in his log the *Gallant's* interaction with sixteen other fishing smacks: *Alert, Deby, Decater, Dread, Eagle, Energy, Enterprise, Evergreen, Fair Play, Florida, George, Loreta,*

Perseverance, Tickler, Two Brothers, [Sanborg]. Eleven of these vessels appear in the list published in the *Mystic Press* (Table 1). At the end of the *Gallant's* season (19 May 1825), she sailed for New London, Connecticut, in the company of the *Dread, Energy, Eagle,* and *Evergreen.*

Examination of the 1829 *Key West Register and Commercial Advertiser* concerning vessels that cleared Key West provides additional evidence of the transient activities of Connecticut fishermen from Key West. Ten of the vessels listed in Table 1 cleared for New London or New York between the 9 April and 6 May, and all but one were in ballast. In 1831 a similar pattern is evident with New London vessels arriving in October and leaving in March.[10]

This transient fishing activity continued after 1829. William A. Whitehead, a Key West collector of customs, recorded that, in 1831, a fleet of about thirty fishing vessels, owned by New England masters, regularly caught fish and turtles during the winter months. This catch was taken live to the Havana market and was valued to be an estimated $20,000 to $25,000 annually.[11]

Connecticut fishermen extended their activity northward along the west Florida coast and into the northern Gulf of Mexico by the 1830s. Connecticut fishermen became seasonally active in the shore

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[10] Albert M. Barnes, notes taken from the *Key West Gazette* (March and October 1831) and the *Key West Register and Commercial Advertiser* April and May 1829, Albert M. Barnes Papers, Mariner's Museum, Newport News, Virginia.

[11] E. A. Hammond, "The Spanish Fisheries of Charlotte Harbor," *Florida Historical Quarterly* (April 1973), 363.

fisheries where they found business fishing for and transporting a wide variety of "beach fish" (including pompano, sheepshead, and redfish). Caught from the beach with seines, fishermen transported the beach fish in sloop smacks to Mobile and New Orleans market.[12]

Between 1845 and 1850 Connecticut fishermen, introducing red snapper (Figure 2) into the markets of Mobile and New Orleans, established red snapper as a commercial fishery on the northern Gulf Coast (Figure 3). Joseph William Collins, a contemporary fisheries historian, reformer, and statistician, documented the following story concerning the activity of Connecticut fishermen and the expansion of the red snapper fishery on the northern Gulf Coast. Captain James Kenny took the smack *Mississippi* to the Gulf of Mexico each winter beginning in the late 1830s. Captain Kenny inadvertently discovered a school of red snappers:

> On one occasion when I was on my way to New Orleans with a cargo of beach fish (pompano, sheepshead, red fish &c.), I got becalmed when several miles off shore. We had just finished eating and the cook came on deck and threw over some refuse from the table. The vessel lay motionless, and very soon many strange looking red fish were seen in the water along side eagerly feeding on the material the cook had thrown overboard. We quickly baited some lines and threw them out, and the fish bit a fast as we could haul them in. Nearly two hundred snappers were caught, which we took to New Orleans, where they sold like hot cakes.[13]

At this time fishermen along the northern Gulf of Mexico lacked experience in locating snapper. Finding snapper required a

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[12] J. W. Collins, "Notes on the Red Snapper Fishery," *Bulletin of the United States Fish Commission for 1886* (Washington: Government Printing Office, 1886, 299-300; and Silas Stearns, "The Red Snapper Fishery and Havana Market Fishery," 587-588.

[13] Collins, "Notes on Red Snapper Fishery," 299-300.

knowledge of bottom environments where snappers lived and a system of dead reckoning sailing directions to locate them. Only by the 1840s did the demand for red snapper increase to a level sufficient to warrant the exploration of offshore resources and consequent commercial exploitation.

Between the 1840s and the late 1860s, the northern Gulf of Mexico red snapper industry operated only on a local retail basis, with New Orleans and Mobile providing the major markets. Connecticut fishermen filled this demand during the winter and returned to New England fisheries in the spring. Snapper fishing took place off the northwest coast of Florida and south of Mobile Bay, and the catch was delivered to New Orleans or Mobile.

In 1869, Pensacola, Florida, joined Mobile and New Orleans as a red snapper market, when a distributor of imported ice entered the snapper business. Previous to 1869 S. C. Cobb and Major John C. Ruse purchased an ice company, which sold imported New England ice in Florida and Alabama—the Pensacola Ice Company. Competition from ice making factories in the interior of Alabama forced the Pensacola Ice Company out of the Alabama market and compelled a diversification into the business of catching and selling red snapper. In 1869, as Pensacola's first red snapper dealer, the company bought the sloop smack *Gladiator* and began to fish for red snapper, marketing only on a retail basis.[14]

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[14] J. W. Collins, "Report on the Discovery and Investigation of the Fishing Grounds, Made by the Steamer *Albatross* During a Cruise Along the Gulf of Mexico; With

After the death of Ruse in 1871, Andrew F. Warren purchased his interest in the business, and the company reorganized as the Pensacola Ice Company. The company then shifted its red snapper marketing efforts toward wholesale distribution. High railroad freight rates hampered the growth of the wholesale market until 1876 when L. H. Sellers became an active stockholder in the company and obtained concessions from the railroad express company. The Pensacola Ice Company bought most of its red snapper from the New England fleet during the winter months, packed the fish in ice, and shipped them to retailers via express rail.[15] In 1878 the Pensacola Ice Company was sending fish by express rail to St. Louis, Chicago, Cincinnati, New York, and Washington D.C.[16]

Pensacola, Florida, soon became the leading red snapper distribution center. The city offered a fine deep water harbor with close proximity to the fishing grounds, good railroad transportation, and sufficient salinity to keep red snapper alive until they reached the packing houses. Between 1880 and 1885 four new snapper fishing firms established themselves in Pensacola, including the Warren and Company (1880), Vesta and Mathews (1880), the Santa Rosa Fish Company (1882), and the E. E. Saunders Company (1885). Andrew F. Warren and Silas Stearns separated from the Pensacola Ice Company

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Notes on Gulf Fisheries," *Annual Report of the United States Fish Commission For 1885* (Washington: Government Printing Office, 1887), 296.

15 *Ibid.*

16 Silas Stearns to Spencer F. Baird. 11 May 1879, typescript notes concerning the correspondence of Silas Stearns at the Smithsonian Archives, Silas Stearns Papers, Special Collections, John C. Pace Library, University of West Florida.

and established Warren and Company (Warren Fish Company). Although little is known about Vesta and Mathews or the Santa Rosa Fish Company, neither company owned fishing vessels during the 1884-85 season. Vesta and Mathews essentially bought fish from whomever they had the opportunity, whereas the Santa Rosa Fish Company chartered the schooner *John Di Lustro* for their fish supply.[17]

As the business of Pensacola red snapper wholesalers increased, they became unsatisfied with their dependence upon on the transient Connecticut fishermen for their supply. In the summer months, the transient fishermen returned to New England to fish for the New York Market, and the Pensacola dealers had to suspend their sales as the fleet departed. This problem led most Pensacola fish companies to purchase their own vessels and control the supply of red snapper entering the markets. In 1879, the Pensacola Ice Company purchased the smack *J. W. Wherrin*, the smack *Ripple* in 1880, and the *Nantic* and steamer *Millie Whales* in 1881.[18]

In addition to the vessels owned or chartered by the firms engaged in marketing red snapper, three independent operations fished for red snapper in the Pensacola area during the 1879-1880 season. Two of these operators owned boats which fished close to Pensacola. The 5.64-ton sloop *Hope* fished for snapper off the mouth

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[17] Collins, "Report on the Fishing Grounds," 284-297.

[18] *Ibid.* 269-296; Andrew F. Warren, "The Red Snapper Fisheries: Their Past Present and Future," *Bulletin of the United States Fish Commission for 1897* (Washington: Government Printing Office, 1898, 332.

of Pensacola Bay, and the sloop *Wanderer* (approximately three tons) engaged in both the seine fishery and red snapper fishery "off and about Choctawhatchee Inlet." Both boats sold their fish in Pensacola. The Brent brothers owned the *Hope* with Gaines McCullam being her master. Richard S. Mundy both owned and mastered the *Wanderer.* The third independent operator, James Dillion, owned and mastered the 20.55-ton schooner *Carolyn Kege.* According to Silas Stearns, Dillion fished for snappers off Cedar Keys and sold his fish there as well.[19]

The number of vessels engaged in the red snapper fishery grew significantly between 1880 and 1885. Between 1875 and 1880 Pensacola's fleet (including transient vessels) had ranged in size from eleven to fourteen vessels, but the 1880-1881 season brought a fifty percent increase in the size of the fleet. In the fishing season of 1880-1881, Pensacola's fleet grew in size from fourteen to twenty-one vessels. In the following season, the size of the fleet increased to twenty-six vessels in number, an increase of twenty-four percent. From the 1882-1883 season until the 1885-1886 season, the number of vessels stablized between twenty-four and twenty-seven vessels.[20] The increases in fishing vessels reflects the industry's rapid growth in landings and product distribution.

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[19] Silas Stearns, "U.S. Fish Commission and Census of 1880, Statistics of Fishery Marine," field notes. Silas Stearns Papers, Special Collections, John C. Pace Library, University of West Florida, Pensacola Florida.

[20] Isaac C. Camber, *A Survey of The Red Snapper Fishery of the Gulf of Mexico, with Special Reference to the Campeche Banks,* State of Florida Board of Conservation Technical Series, No. 12 (Coral Gabels, Florida: University of Florida, 1955), 40.

In addition to a larger number of vessels in the fleet, the 1880-1881 season saw the introduction of ice preservation on board fishing vessels in Pensacola's red snapper fishery. The Pensacola Ice Company implemented the use of ice on snapper fishing vessels.[21] Previously, fishermen had kept red snapper alive until the fishing vessel reached port, but in the 1880s live wells became unsatisfactory. Fish caught at depths exceeding twenty fathoms and quickly pulled to the surface suffered internal injuries that resulted in their death a few days after being caught. Such a depth restriction limited the well smacks to fishing in relatively shallow water. Fishermen considered red snappers to be unmarketable and subsequently discarded the fish that died during capture or in the well.[22]

Owners realized the tremendous waste of discarding fish and began carrying ice on board in which to pack those that died or were taken from the well during rough weather. A smack's motion in heavy seas often damaged fish in a well and lessened their value.[23] Further, the capacity of the well limited the size of the catch. A tight bottomed vessel which preserved its catch in crushed ice could deliver to market about four times more fish than could be kept alive in a well on

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[21] Stearns, "The Red Snapper Fishery," 588.

[22] According to Silas Stearns, only fish caught in less than ten fathoms of water would live in the well long enough to be taken to the Havana market. Fish had to be healthy and were left in cars overnight before they could be sold to the Cuban dealers. Stearns added that fish caught in excess of 20 fathoms had to be pricked, treated very carefully, and then were expected to only live a few days. Stearns, "The Red Snapper Fishery," 593.

[23] B. H. P., "Red Snapper Fishing in the Gulf of Mexico," *Forest and Stream*, Vol. 9, No. 4, (30 August 1877), 63.

a comparable size smack.[24] At first, the smacks carried one or two tons of ice, which proved to be so satisfactory that within five months they carried five or six tons and made little use of their wells.[25]

By the winter of 1884, there were five companies engaged in the red snapper industry from Pensacola. During the 1884-1885 season, sixteen vessels known to be owned, chartered, or fishing independently, landed their fish at specific Pensacola firms. Table 2 summarizes the ownership of the Pensacola fleet and gives an idea of the relative size of each of the Pensacola red snapper dealers.

Pensacola provided such a convenient shipping point that a number of the Mobile and New Orleans based smacks found it advantageous to unload their catch there. Fish companies in Mobile and New Orleans packed snapper in boxes of ice and shipped them by steamer or rail car to their home markets.[26] In the 1884-1885 season, four New Orleans owned vessels landed their catch in Pensacola: the schooner smacks *Albert Hayley, Emma B.*, and *Frances*

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[24] Charles Robert Mc Neil, "The Red Snapper Industry of Pensacola, 1845-1965, An Historical Perspective" (Masters Thesis, University of West Florida, 1974), 14.

[25] Stearns, "The Red Snapper Fishery," 588.

[26] *Ibid.*, 294.

Table 2. Fishing Vessels Marketing Their Catch at Pensacola During the 1884-1885 Season

Pensacola Ice Company
- Vessels owned:
  - Schooner well smack *Niantic*
  - Schooner well smack *J. W. Wherrin*
  - Schooner well smack *Ripple*
  - Schooner *Ada* (preservation method unknown)
- Transient and chartered vessels:
  - Steamer *Millie Wales*, Burned in December of 1884.
  - Schooner well smack *Comet*, of Stonington, Conn.
  - Schooner well smack *Mary Potter*, of Stonington, Conn.

Messrs. Warren and Company (Warren Fish Company)
- Vessels owned:
  - Sloop well smack *Maria Antonia*
  - Schooner *Clarence Barclay* (tight bottomed)
  - Schooner *Sarah L. Harding* (tight bottomed)
  - Schooner *John Pew* (tight bottomed)
  - Schooner *H. S. Rowe* (tight bottomed)
  - Sloop *Hope* (preservation method unknown)
- Vessels chartered:
  - Schooner *Henrietta Frances* (tight bottomed) of Boston, Massachusetts

E. E. Saunders & Company
- Vessels owned:
  - Schooner well smack *Estella*
  - Schooner well smack *Caro Piper*

Santa Rosa Fish Company
- Vessels Owned:
  - Schooner *John Di Lustro* (preservation method unknown)

Source: J. W. Collins, "Report on the Discovery and Investigation of Fishing Grounds, Made By the Steamer *Albatross* During a Cruise Along the Gulf of Mexico; With Notes on the Gulf Fisheries," *Annual Report of the United States Fish Commission For 1885* (Washington: Government Printing Office, 1887), 284.

Ellen, and the sloop smack *Charles Henry*. The sloop smack *Challenge* from Mobile landed her fish in Pensacola, while the schooner smacks *Laurel* and *Leonora*, also from Mobile, landed their catch mostly at their homeport but occasionally at Pensacola. Excluding the *Millie Whales*, a steamer destroyed by fire, and the *Frances Elleen*, a schooner which capsized and was lost in January of 1885, twenty-one identifiable vessels fished in the northern Gulf of Mexico Snapper fleet during the 1884-1885 season.[27]

The northern Gulf of Mexico red snapper fishery lost its lucrative advantage for the transient New England fleet during the 1884-1885 season. Red snapper population on the banks closer to Pensacola dropped to unprofitable proportions, and the fishermen were forced to travel greater distances to catch fish. In addition, rough weather throughout the season made the search for new fishing grounds difficult.[28]

The Warren Fish Company experimented with larger fishing vessels and imported two New England mackerel seiners for the 1884-1885 season. The Company chartered the *Henrietta Frances*, of Boston, Massachusetts, and in November of 1884 purchased the *H. S. Rowe*, of Portland, Maine. These vessels were the season's two largest schooners engaged in the snapper fishery. *Henrietta Frances* and the

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[27] *Ibid.*, 285; Silas Sterns reported 27 vessels in the Pensacola Fishery for 1884-1885, Stearns, "The Red Snapper Fishery," 590.

[28] Silas Stearns, "The Fisheries of Pensacola, Florida," *Bulletin of the United States Fish Commission for 1885* (Washington: Government Printing Office, 1885), 245-246.

H. S. Rowe measured 77.7 and 59.5 gross tons respectively, compared with an average tonnage of 37.05 for the Pensacola fleet. The *Henrietta Frances* proved to be too costly to operate and returned to New England after the end of the season.[29]

The Warren Fish Company also found the large schooners which carried crews of ten to twelve men to be extremely expensive to outfit as well as costly to operate. Silas Stearns of the Warren Fish Company reported that the tight bottomed schooners in the thirty-five to fifty ton range, with crews of eight or nine men, proved able to be the most profitable, especially those vessels without live wells.[30] Stearns based his conclusions on three considerations. First, red snapper found only in small isolated locations, were caught from the vessel's rail using hand-lines. Second, the thirty to fifty ton vessels fished the same areas as the large vessels (no further than two hundred miles from Pensacola). Third, crews of eight and nine men proved to catch nearly as many fish as the larger crews and offered little, if any, corresponding increase in production to match the extra expense incurred by the larger vessels and crews.[31] The two larger vessels that

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[29] Albert M. Barnes, hand written notes on the activities of the schooner *Henrietta Frances* in from the Portland *Transcript*, 19 November 1884, Albert M. Barnes Papers, Mariners' Museum, Newport News, Virginia.

[30] Stearns, "Fisheries of Pensacola, Florida," Bulletin of the United States Fish Commission for 1885 (Washington: Government Printing Office), 245; Collins, "Report on the Fishing Grounds," 284-285.

[31] Collins, "Notes on Gulf Fisheries" 283-284.

could make longer and quicker passages had plenty of room for ice storage, which increased the time a schooner could stay at sea.[32]

Although Stearns did not specify why the welled vessels were at a disadvantage, the use of well's restricted them to fishing grounds in relatively shallow water (less than twenty fathoms), while the rest of the fleet likely fished in deeper water. Also, if the smacks packed their catch in ice, then the unutilized space taken up by the live well in the hold severely reduced both ice and fish storage capabilities of the vessel. In Stearns words: "The smaller 'well' smacks made small and infrequent catches throughout the winter, and the market would have been bare much more than it was, had the dependence been wholly on them." It is also of interest that the transient Noank vessels suffered financial losses in the 1884-1885 season, which was likely because they were smacks.[33]

The 1885-1886 season ended the lucrative advantage that past transient fleets had enjoyed. Some vessels were left in debt for their outfit in New England and for ice and bait in Pensacola. The reasons for these losses included: bad weather, increased utilization of the banks, and the absence of red snapper in the regular fishing areas from Pensacola to Cape San Blas. Bad weather often kept the entire fleet in port (both large and small) and made finding fish on the banks difficult.

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[32] Stearns, "Fisheries of Pensacola," 245.

[33] *Ibid.*

The size of the fleet also increased during the 1885-1886 season from twenty seven vessels the year before to thirty-three. This resulted in added competition for the red snapper resources.[34] At this time the fleet fished snapper banks about 215 to 230 miles to the southeast of Pensacola. This distance was considered to be the practical limit from Pensacola that the fleet could fish. At best, fish were hard to find, and trips took twice as long as they had in previous years. Instead of taking one week, trips took two, essentially doubling the price of wages with respect to receipts from the fish landed. The longer trips increased the length of time the catch remained in the vessels' hold, which consequently reduced the quality and value of the fish.[35] In general, the 1884-1885 season was a financial failure.[36]

In the winter of 1885, the United States Fish Commission investigated the snapper fishing grounds on a cruise made by the steamer *Albatross.* The Commission discovered new fishing grounds with an abundant supply of fish from an area south of Tampa to the Dry Tortugas. The new grounds opened up fishing areas for the larger vessels in the fleet and helped to relieve some of the pressure from

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[34] Silas Stearns included as a note in his chapter, "The Red Snapper Fishery and the Havana Market Fishery of Key West, Florida," in Goode's *Fisheries and Fisheries Industries of the United States* the number of fishing vessels, tonnages, and number of men engaged in the red snapper industry from 1874 to 1886. For the 1884-1885 season Stearns reports twenty seven vessels while Collins reported twenty one vessels, the larger is likely the more reliable figure.

[35] Silas Stearns, "Notes on the Fisheries of Pensacola, Florida," *Bulletin of the United States Fish Commission for 1886* (Washington: Government Printing Office, 1887), 76-78.

[36] Silas Stearns, "The Red Snapper Fishery," 590.

over-fishing on the older banks. The greater distance to these banks made larger vessels of forty-five to fifty tons even more desirable because of their ability to make quick passages and to store larger quantities of ice and fish. Also, such vessels were not large enough to significantly drive up operational costs.[37]

In 1881 Galveston, Texas, began a red snapper fishery, but only in a small and infrequent manner. A number of harbor and freight boats took up the fishery from Galveston during their off season. The boats usually had crews of around five men and fished on the patches of small reefs no farther than eighty-five miles from Galveston. Between 1887 and 1889, three freight vessels regularly made trips to the snapper banks, while only two fished from this port in 1890. The 1889 catch was 22,000 pounds while in 1890 it dropped to 4,800 pounds.[38]

As in Pensacola, fishermen in Mobile, New Orleans, and Galveston used New England-built vessels in the red snapper fishery. The New York City built schooner *Edna C.* was the earliest known northern built vessel engaged in the red snapper fishery from Galveston, having changed her registry from New York City in 1872. She was of 24.27 gross tons, 58.4 feet in length, 15.0 feet in breadth, and 5.0 feet in depth of hold. The *Edna C.* was reported to be one of the best snapper fishing vessels which fished from Texas but was lost

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[37] Collins, "Report on the Fishing Grounds," 298.

[38] Charles H. Stevenson, "Report on the Coast Fisheries of Texas," *Annual Report of The United States Fish Commission for 1889-1891* (Washington: Government Printing Office, 1893), 401.

during a storm on 18 September 1885 while on a snapper fishing voyage. After her loss, the snapper business in Galveston fell off considerably.[39]

The red snapper fishing grounds remained relatively close at hand for the Galveston fishery until December of 1890 when Captain Benjamin Latham, of Noank, Connecticut, took the schooner *Gertrude Summers* to Campeche Banks. Up to this date, fishermen supplying northern Gulf Coast markets never fished the grounds on the Campeche Banks. This area, located to the north and west of Yucatan, proved to be abundant with red snapper and groupers. Captain Latham and a crew of seven men caught 22,000 pounds of red snapper in two days of fishing. In January 1891 the *Gertrude Summers* made another trip to Campeche Banks and delivered 15,000 pounds of red snapper to the Galveston market. Both catches unfortunately sold at a low prices because the Galveston market was unable to dispose of such a large quantity of fish. Additionally, the fish Latham landed in Galveston averaged approximately ten pounds each which was considered to be too large and further reduced the value of the catch.[40]

Even though Captain Latham was not as successful as he had hoped on his first voyages to Campeche, other Galveston interest took note of his catches. In August of 1891, the Red Snapper Fishing Company of Galveston acquired Mexican permission to run a fishing

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[39] *Ibid.*

[40] *Ibid.*, 348.

operation in the area of Arenas and Alacran Cays. The company planned to station well smacks on the Campeche Banks and to operate a steamer to supply the smacks and deliver their fish to Galveston.[41]

During the following season, the Red Snapper Fishing Company implemented this plan with three smacks: the *Estella, Caro Piper,* and *Storm King.* Each smack carried a crew between between eight and twelve men. The smacks' live wells became unusable because the fish were caught in forty to sixty fathoms of water and the pressure change during ascent killed the fish. Consequently, the fish were packed in ice which made the schooners at Campeche dependent on the steamer to both supply ice and deliver their catch to Galveston before it spoiled. The steamer was unable to operate on a regular basis due to difficulty in securing ice, recruiting crews, and mechanical problems, and after five months the Red Snapper Fishing Company recalled the schooners.[42]

These early fishing activities established Campeche Banks as a prime natural resource for red snapper at a time when the stocks off the Florida coast approached depletion. The need for new snapper resources motivated fishermen to overcome the Campeche Banks' distance from the market distribution centers. Schooners that fished Campeche had to be fast sailors and had to carry large amounts of ice for preserving their catch. In fact fish preservation proved to be the

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[41] Huge M. Smith, "Report of the Division of Statistics and Methods of the Fisheries," *Annual Report of the United States Fish Commission for 1892* (Washington: Government Printing Office, 1894), CLXXXIII-CLXXXIV.

[42] Smith, "Report of the Division of Statistics," 68-70.

greatest obstacle in exploiting Campeche snapper stocks. Fishing trips lasted from twenty five to thirty days, with a voyage of five to six hundred miles to Campeche Banks combined with fishing time, and the return leg.[43] Despite the distance, the majority of the Pensacola, Mobile, and Galveston fleets began to fish Campeche during the period between 1897 and 1910.[44]

Due to the threat of hurricanes, Campeche was not fished in the summer and early fall. The northern Gulf of Mexico fleet fished in the areas between Mobile and Cedar Key and also the area off the Texas coast known as the "Galveston Lumps." When the threat of hurricanes passed, the fishing effort returned to Campeche. This pattern was productive and eased the pressure previously imposed on the snapper banks between Mobile and Cedar Key.

The utilization of the Campeche Banks opened new opportunity to northern Gulf of Mexico fishermen. Between 1897 and 1902 existing Pensacola and Mobile firms expanded while new firms in Mobile and Galveston became established. Expanded fishing effort significantly increased landings of red snapper for the states of Florida, Alabama, and Texas (Figure 4). Alabama's increase was the largest at 3.1 million pounds, followed by Escambia County with a 2.3 million pound increase, and Texas with a 1.6 million pound increase.

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[43] Frederick William Wallace, *Roving Fisherman, an Autobiography Recounting Personal Experiences in the Fishing Fleets and Fishing Industry of Canada and the United States, 1911-1924* Gardenvale, Quebec, Canada: Canadian Fisherman, 1955), 447-448.

[44] Camber, *A Survey of the Red Snapper Fishery*, 13.

In 1902, Galveston and Mobile reached a peak in landings and never reached that level again.[45] The increase in landings reflect the fishing potential of under-utilized stocks on the Campeche Banks and an increased fishing effort by Pensacola, Mobile, and Galveston fish companies.

E. E. Saunders and Company and the Warren Fish Company of Pensacola switched the focus of their winter fishing efforts to Campeche and continued to purchase clipper fishing schooners from the Gloucester and Boston fleets. By 1906 both companies had a combined fleet of fifty-five vessels.[46] For example in 1899 the E.E. Saunders and Company and the Warren Fish Company added four additional schooners to the Pensacola fleet and had two schooners completely rebuilt.

The schooners added in 1899 included the *Edith L. Conley, Lottie S. Haskins, Clara P. Sewall,* and *Mary S. Harty.*[47] Excluding the *Mary S. Harty,* whose enrollment information is not available, the schooners ranged in size from fifty-two to fifty-eight gross tons and from seventy to seventy-five feet in length on deck. It is interesting to note that the two companies bought vessels built in Gloucester and Essex, Massachusetts, that varied in age and likely in style. When the E. E. Saunders and Company bought *Edith L. Conley,* she was twenty

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[45] *Ibid.*, 32-46.

[46] "The Pensacola Fishing Fleet," *Shipping Illustrated,* 3 February 1906. The cited article the provided hand written source information was photo-copyed from the Albert M. Barnes Papers, The Mariners' Museum Library, Newport News Virginia.

[47] *Pensacola Daily News,* 11 November 1899.

three years old, while the the *Lottie S. Haskins* was nine years old. The *Clara P. Sewall* was four years old when the Warren Fish Company purchased her.

The vessels rebuilt for the Pensacola fleet in 1899 included the *Wm. H. Warren* and the *Nellie T. Campbell.* Mr. Aron Langley rebuilt the *Wm. H. Warren* for the Warren Fish Company at his shipyard on the east bank of the Blackwater River, approximately three miles southeast of Bagdad, Florida.[48] The E. E. Saunders and Company had the *Nellie T. Campbell* rebuilt in Pensacola and renamed *Henry P. Chapman* after an honored employee of the company.[49] *Henry P. Chapman* and *Wm. H. Warren,* originally built in Maine, were rebuilt after nineteen and twenty-two years of service, respectively.

After the shift to fishing on the Campeche Banks, two Mobile, Alabama, firms were responsible for the city's increased red snapper fleet and landings. In 1880 only two vessels fished for red snapper from Mobile: the *Challenge* owned by the Mobile Marketmen Association and the *Kate Smith* owned by Thomas Frank.[50] The *Challenge* was a thirty-ton sloop smack built in Noank, Connecticut, in 1865, and the *Kate Smith* was a twenty-nine ton sloop built in New Orleans.

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[48] *Pensacola Daily News,* 2 August, 1899 and 26 October 1899.

[49] *Pensacola Daily News,* 2 August 1899.

[50] Stearns, "Census of 1880, Statistics of Fishery Marine."

By 1902 the number of snapper fishing vessels operating out of Mobile increased to seven.[51] The existing Mobile Fish and Oyster Company, a wholesale and retail fish dealer established in 1864, increased its red snapper fishing operation in 1900 "by adding several first-class fishing schooners to its fleet."[52] This company operated a retail division located on the northeast corner of Church and Royal Streets and a wholesale plant between Elsava and Madison Streets on the Mobile River. In April of 1900, the company was incorporated with A. S. Lyons as President, M. Canizas as Secretary, C. J. Lucy as Treasurer, and A. Balladares as General Manager.[53]

In 1902 Mobile's two-year-old Star Fish and Oyster Company purchased its first snapper vessel and added two more the following year. Sebastian Gonzales, J. E. Perez, Victor A. Perez, and Author G. Perez founded the Star Fish and Oyster Company and located it at the foot of Canal Street on the Mobile River. The Star Fish and Oyster Company continued to add fishing vessels and by 1905 the company operated five vessels, thus establishing itself as a the largest wholesale red snapper producer in Mobile.[54]

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[51] Norman D. Jarvis, *Fishery for Red Snappers and Groupers in the Gulf of Mexico.* U. S. Department of Commerce, Bureau of Fisheries, Investigational Report No. 26 (Washington: Government Printing Office, 1935), 11.

[52] It is believed that the Mobile Fish and Oyster Company had a fleet of six schooners fishing for snapper. This number is based on Norman D. Jarvis' report that Alabama had seven snapper fishing vessels and James E. Munson's report that Star Fish and Oyster Co. Bought their first vessel in 1902.

[53] *The Mobile Daily Register*, Monday 2 September 1901.

[54] James E. Munson, "Fine Fleet and Modern Plant Characteristic of the Star Fish and Oyster Company," *Atlantic Fisherman* Vol. XVI, No. 8, (September 1935), 8.

Presently little is known about the history of these two companies or the character of vessels they owned or chartered. Mobile Fish and Oyster Company and the Star Fish and Oyster Company likely purchased northern New England tight bottomed vessels because well smacks became outdated in the early 1880s. In support of this theory a postcard of the Mobile waterfront dated 5 December 1905 shows three fishing schooners of the northern New England type moored at a wharf.[55]

Manufactured ice became available to Mobile fish distributors in 1880 with the construction of an ice factory in Mobile and the introduction of imported ice from New Orleans. The Mobile Ice Factory began operations on 10 June 1880 with a capacity of ten tons per day. By September of 1880 the business was successfully operating and planned to increase the production to twenty-five to thirty tons per day.[56] The Louisiana Ice Manufacturing Company supplied ice to Mobile buyers through their agent H. W. French.[57] Mobile's seafood industry took advantage of available ice and railroads to ship its fish and oysters to markets in the interior. By 1880 arrangements had been made with the railroads so that fish and

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55 "Mobile Wharf Scene," 79117-17, a photographic reproduction of a postcard dated 5 December 1905 in the Collection of the Museum of the City of Mobile.

56 "Mobile Ice Factory," *Mobile Daily Register*, 1 September 1880.

57 *Directory of the City of Mobile for the Year 1880*, Mobile: Henry Farrow & Co., 1880.

oysters packed in ice could be shipped express to "any points between Mobile and St. Louis, Cincinnati, Louisville, and Atlanta."[58]

The red snapper industry in Galveston, Texas, also grew quickly after the Campeche Banks was established as a viable fishing ground. In 1891 the Galveston snapper fishery was struggling without a permanent commercial fleet. By 1895 Captain J. M. Munn and Captain Babcock developed the red snapper fishery by fishing the schooner yacht *Helen* and the schooner *Estella*, respectively.[59] Captain Munn had established the Gulf Fisheries Company by 1902 and was responsible for much of the expansion in Texas red snapper landings (Figure 4). This company imported many Essex, Massachusetts, built fishing schooners to Galveston. In 1917 The Gulf Fisheries Company owned 14 schooners and all were launched from Essex yards, except one built in Gloucester.[60]

Voyages to Campeche would have been impossible without a large inexpensive supply of ice and transportation facilities to ship considerable amounts of fish to inland wholesale buyers. By 1890 manufactured ice in Galveston cost between four and eight dollars a ton, while freight to Chicago cost $120 for a car load consisting of approximately 18,000 pounds fish packed in ice.[61]

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58 "Fish and Oysters," *Mobile Daily Register*, 1 September 1880.

59 *The Galveston Daily News*, 18 July 1895; 26 October 1895.

60 Captain J. H. Stapleton, *Gloucester Master Mariners' Association List of Vessels* (Gloucester, Massachusetts: Published by the Gloucester Master Mariners' Association, and printed by F. S. & A. H. Mc Kenzie, 1917), 123-124.

61 Stevenson, "Coast Fisheries of Texas," 384.

After the turn of the century, the fleets of major snapper fishing companies in Pensacola, Mobile, and Galveston shifted the majority of their fishing effort to the Campeche Banks. As a result, overfished red snapper resources recovered in areas that had been previously depleted from the west coast of Florida to Texas. In response a number of smaller companies entered the fishery in Tampa, Carrabell, Apalachicola, Panama City, and Niceville, Florida; Pascagoula, Mississippi; and Freeport and Brownsville, Texas. These companies employed smaller vessels that fished the grounds abandoned by fishermen from the larger companies.[62]

The smaller vessels became known as "chings." Fishermen applied the term to any vessel or boat that fished for red snapper and was less than twenty tons. Chings could be any type of sail or motor vessel, and often fishermen utilized sponge boats or oyster boats to fish for snapper during their off season. Chings generally had crews of three to seven men, and fishermen used them to fish banks off the Texas and Louisiana coast and along the Florida coast between Tortugas and Mobile. Fishermen in chings generally fished near their home port (from 30 to 150 miles) and limited trips to less than a week in duration. Depending on its size, a "ching" landed anywhere between 500 and 3,000 pounds of red snapper and grouper per trip.[63]

It is notable that fishermen installed gasoline engines into "chings" before converting the larger vessels in the snapper industry.

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[62] Camber, *A Survey of the Red Snapper Fishery*, 13.

[63] *Ibid.*, 9.

In 1911 Pensacola had a fleet of forty-three vessels fishing for snapper—five could be considered chings. The chings consisted of one sloop and four gas screw vessels, all built on the northern Gulf Coast. In comparison, the balance of the fleet owned by the E. E. Saunders and Company, the Warren Fish Company, and Bay Fisheries Company consisted of thirty-eight schooners, none of which had auxiliary power.[64]

Presently the size of the role that chings played in the red snapper fishery is unclear because of the difficulty identifying them as participating in the snapper fishery; but small vessels that entered the fishery from small companies along the west coast of Florida are thought to considerable. Based on sources at the U. S. Fish and Wildlife Service, I. C. Camber reported that in 1923 a total of ninety-eight vessels fished for red snapper from Florida. Camber divided the fleet into two groups including forty six sailing vessels, averaging thirty-five tons; and fifty two motor vessels averaging tonnage of 19.7 (Table 3). These tonnage figures indicate that a significant number of small motor vessels (under twenty tons) began to enter the fishery after the turn of the century.[65]

Table 3. The Number and Average Size of Motor Powered and Sailing Vessels in the Red Snapper Fishery Operating From Florida

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[64] Fishing Masters' Association, *Fishermen of the Atlantic, 1911* (Boston: Fishing Masters' Association, 1911), 139.

[65] Camber, *A Survey of the Red Snapper Fishery*, 38.

Ports in Various Years between 1923 and 1940, Compared to the Number and Average Size of Pensacola's Fleet.

	Florida Vessels					Pensacola Vessels	
	Motor Vessels		Sailing Vessels				
Year	No.	Average. Tonnage	No.	Average. Tonnage	Florida Total	No.	Average. Tonnage
1923	52	19.7	46	35.0	98	-	-
1927	76	33.2	13	60.4	89	-	-
1928	66	37.4	6	87.8	72	-	-
1930	66	36.1	6	87.8	72	38	59.7
1931	67	37.7	4	62.2	71	40	53.6
1932	53	34.4	1	64.0	54	-	-
1934	56	34.1	-	-	56	27	57.8
1936	68	32.0	-	-	68	30	56.4
1937	68	29.8	-	-	68	26	58.7
1938	63	32.2	1	9.0	64	27	58.7
1939	69	29.3	1	9.0	70	27	-
1940	60	29.5	1	9.0	61	26	-

Source: Table 13, p. 38, and Table 14, p.40, in Isaac C. Camber, *A Survey of the Red Snapper Fishery of the Gulf of Mexico With Special Reference to the Campeche Banks*, State of Florida Board of Conservation Technical Series No. 12 (Coral Gabels, FL: University of Florida, 1955).

Fishermen also began to use boats (small craft less than five tons) in the snapper fishery. Norman Jarvis reported that the use of boats in "local fishing on the United States coast of the Gulf of Mexico is apparently a rather recent development. Only 104,130 pounds of red snappers were taken by boats in 1902, entirely in Florida." By 1923, boats landed a total catch of 1,784,978 pounds of snapper and grouper from Florida, Alabama, and Texas, with approximately eighty-three percent caught by Florida boats.[66]

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[66] Jarvis, *Fishery for Red Snappers*, 9.

A lack of information hinders a detailed summary of the red snapper fishery's industrial history from the turn of the century until the Great Depression in 1929, but available information indicates that the industry stabilized despite a number of hardships.[67] The fleet grew and diversified with small fish dealers buying snapper and grouper from owner-operated boats and chings in addition to sending vessels to the snapper banks of the Northern Gulf Coast and Campeche banks. Norman D. Jarvis reported that "the Florida vessel catch did not vary greatly between 1902 and 1927, yet fifty vessels were engaged in the former year and eighty-nine in the later,"—an increase of seventy-eight percent. The increase in vessels is indicative of the industry's expansion after major producers focused their fishing effort on Campeche Banks and smaller producers began fishing the northern Gulf Coast banks with a diversity of vessels.

The number of small snapper fishing operations that established themselves before the 1920s and the type of vessels they used are unknown but examples of small fishing operations are documented in Galveston and in Pensacola in addition to the locations mentioned above. Galveston, Texas, firms that only operated one snapper vessel in 1917 included the Star Fisheries Company operating the schooner *Marion R.*; the Velasco Fish and Oyster Company, operating the *Vayu* (a gas screw vessel); the G. B. Marsan and Company, operating the *M. Madeleine* (a gas screw vessel); and the Pierce Company, operating the

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[67] From 1897 to 1927, production values for red snapper are only available for 1902, 1908, 1918 and 1923. Further, Escambia Co. landings are not available for 1908, and 1923.

schooner *Thomas J. Carroll.*[68] The Falk Fish Company operated three snapper fishing vessels from Pensacola, Florida, in 1917 and 1921.[69] These vessels included the *Mary A. Gleason* (a schooner built in Essex, Massachusetts), the gas screw *Tecumseh* (an Essex, Massachusetts built auxiliary schooner), and the *Two Boys* (a vessel built in East Bay, Florida).

Along the west coast of Florida, a number of fish dealers operating red snapper fleets offered competition for the larger firms in Pensacola, Mobile, and Galveston. The Bay Fish Company of St. Andrews, Florida, operated the twenty-two ton *Martha Lillian* in 1911 and by 1923 owned a fleet of snapper fishing vessels. Similarly, the Kilbourne Brothers Fish Company and the Moore Fish Company operated a fleet of snapper fishing vessel form St. Andrews, Florida, in 1923.[70]

The Hibbs Fish Company, established in 1891 in St. Petersburg, Florida, also participated in the red snapper fishery. At the close of 1931 the Hibbs Fish Company underwent an industrial expansion which improved its catches, production, and marketing organization. The expansion involved $250,000 of capital that the Hibbs Fish Company directed towards the construction of a new cannery

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[68] Stapleton, *List of Vessels, 1917*, 123-124.

[69] Fishing Masters' Association, *Fishermen of the Atlantic 1917.* (Boston, Massachusetts: Fishing Masters' Association, Inc, 1917). 128-130; Fishermen's Union of the Atlantic, *Official Reference Book of the Fishermen's Union of the Atlantic,* (Boston: Fishermen's Union of the Atlantic, 1921).

[70] Frederick William Wallace, "The Red Snapper Fishery of the Gulf of Mexico," *Fishing Gazette Annual Review, 1923,* 35-45.

designed to produce a number of seafood products, the operation of a fish meal plant, and the reconditioning of a fleet of eight snapper fishing vessels.

The distinctive fleet of sixty to seventy-foot auxiliary schooners could be recognized by their green hulls with white trim. The vessels had crews of eight men and fished off the Tortugas Islands and Campeche Banks, where they caught grouper and snapper at a depth of approximately sixty fathoms. In 1931 the officers of the Hibbs Fish Company included W. H. Hibbs, Chairman of the Board of Directors; John A. Thompson, President; William Hibbs, Vice-President; M. K. Thompson, Secretary and Treasurer; Herbert T. Davis, General Manager in charge of operations.[71]

In Tampa, Florida, the Mirabella Fish Company was active in the red snapper fishery in 1938. The father and son partnership of Michael and Sebastian Mirabella owned the Mirabella Fish Company. Located at the edge of Tampa's business district on the Hillsborough River, the company owned a fish processing plant, and two neighborhood retail outlets in Tampa. The company also supplied six wholesale dealers, approximately forty retailers, and a number of hotels and restaurants in the Tampa area. Much of the fish was delivered direct by a fleet of four company-owned motor trucks.

The Mirabella Fish Company operated two snapper fishing vessels, the *Ludwig M.* and the *Phainoula.* The *Ludwig M.*, employing a

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71 "New Fisheries Plant at St. Petersburg," *Atlantic Fisherman*, Vol. XII, No. 11, December 1931, 10.

crew of nine, was a twenty-seven-ton, sixty-foot auxiliary schooner with a thirty horsepower Palmer gasoline engine and a McCormic—Deering hoisting engine.[72] Similarly the *Phainoula*, employing a crew of eight, was an eighteen-ton, fifty-foot auxiliary schooner with a twenty horsepower Palmer gasoline engine and a McCormic—Deering hoisting engine. The two vessels fished the entire coast of Florida, from Apalachicola to the Dry Tortugas, for red snapper and grouper and made voyages eighteen to twenty-four days in length.[73]

In Niceville, Florida, the Niceville Fish Company owned by Claud Megis operated a fleet of five snapper schooners during the 1940-41 season and added a sixth before March of 1941. The new addition to the fleet was the *R. W.* The company owned the *J. E. Plew* which was its top producer in 1940 and was under the command of Captain Richard Williams. The Niceville Fish Company reported to *Atlantic Fisherman* that it landed approximately three-quarters of a million pounds of fish [red snapper and grouper] in 1940.[74]

Mississippi fishermen also entered the red snapper fishery at times between 1914 and the 1930s. The Campeche Fish Company purchased the auxiliary schooners *Lillian*, *Neo*, and *Cherokee* in Gloucester, Massachusetts, and had them prepared to fish in the red

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[72] The *Ludwig M.* was previously the 27-ton, gas-screw *Audrey & Theo.*, built in Swans Island, Maine, in 1916.

[73] "Mirabella Makes Fish Attractive," *Atlantic Fisherman*, Vol. XIX, No. 9, October, 1938, 7.

[74] "Cooperative Marketing Ass'n Reports Successful Operation," *Atlantic Fisherman*, Vol. XXI, No. 2, March, 1940, 10; "Niceville Fish Company," *Atlantic Fisherman*, Vol. XXII, No. 2, March, 1941, 9.

snapper industry from Gulfport. The vessels were expected to deliver 70,000 pounds of fish every ten days during the winter season.

The C.C. Company of Biloxi owned by William Cruso, entered the fishery in 1934 with five snapper vessels. The fleet consisted of the *Over the Waves, Mary Kathlyn, Snapper King, Undendago,* and the *Albatross.* The company expected landings of 25,000 pounds of fish and reported in *Atlantic Fishermen* catches between 20,000 to 10,000 pounds. The C.C. Company landed their fish at the Ross Fish Company of Pascagoula and immediately shipped them to Biloxi by motor truck.[75]

Figure 5 shows Escambia County landings of red snapper plotted with the size of Pensacola's fleet to assist in a summary of the industry's economic history. The landings of Florida, Alabama, Mississippi, Louisiana, and Texas, plotted from 1880 to around 1950 illustrate the importance of each state in the red snapper industry. In 1880 Florida had the greatest landings at 1,483,292 pounds, followed by Louisiana, 900,000 pounds, and Alabama, 360,000 pounds. Pensacola's close proximity to the fishing grounds, access to a salt water harbor, and concessions allowed by the railroads in 1878, made the city a far better shipping point than New Orleans or Mobile. In the 1880s, schooners from these two ports landed their catch in

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75 "Biloxi Snapper Fishing," *Atlantic Fisherman,* Vol. XV, No. 2, March 1934 12; "Large Snappers Brought to Biloxi," *Atlantic Fisherman,* Vol. XV, No. 3, April 1934, 13; "Schooner *Marie Kathlyn* Lands First Snapper Cargo,"*Atlantic Fisherman,* Vol. XV, No. 4, May 1934, 13.

Pensacola and shipped the fish to their home markets by rail or steamer.[76]

Apparent in Figure 4 is the expansion of the industry after 1897 when the Campeche Banks became the most utilized fishing ground. The increase of the Alabama and Texas landings is substantial. Between 1897 and 1902, Alabama increased its landings over 3.1 million pounds from 335,000 to 3,466,500 pounds, and Texas increased its landings over 1.6 million pounds from 464,791 to 2,067,987 pounds. Florida had a significant increase as well, at 2.76 million pounds over the same period.

After 1902 the landings of the Alabama and Texas snapper fishing companies began to decline (Figure 4). Alabama's catch in 1902 approached 3.5 million pounds and by 1908 had dropped to approximately 2.6 million pounds. Texas shows a similar trend with its production dropping approximately a million pounds from 1908 to 1918. These declines are not explained by the fisheries scientist that presented the data or by historical information available on the fishery. From 1908 to 1918 the fishery was not canvassed.

From 1902 to 1927 the growth of the fishery was restricted and somewhat stabilized as the industry successfully weathered various factors influencing the economics of the fishery: World War I; a dispute with the Mexican Government overfishing rights; devastating hurricanes which hit Pensacola in 1906, 1916 and 1926; the 1914 Depression, and the crash of the First National Bank of Pensacola that

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[76] Collins, "Report on the Fishing Grounds," 269-296.

same year; a fishermen's strike in 1919; and a growing competition in the market from ground fish caught using otter trawls.[77]

The Great Depression brought an end to the period of relative stability. The industry lost many of its markets and the price of production increased. From 1927 to 1934, the size of the fleet and catches fell sharply. The red snapper fishery suffered because it could not compete with fishery products from other regions and with other low food prices. The snapper fishery was unable to sufficiently lower the price of its product because the fishing methods were difficult to improve. Also the adverse economic conditions reduced the purchasing power of many former customers who were now unable to buy.[78]

From 1934 to 1937 there was a short recovery period which was ended by the effects of World War II on the snapper fishery. Acquiring labor was an immediate problem for the industry. The increased wages of merchant seamen during the war and even afterward attracted large numbers of fishermen away from the the snapper industry. Also declining red snapper stocks became a problem, and further increases in the cost of production. The Pensacola's landings fell until after World War II, at this time, improvements were made to the fleet and fishing resumed on a larger scale with increases in both the landings and the vessels fishing.

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[77] McNeil, "The Red Snapper Industry," 19-29.

[78] Jarvis, *Fishery for Red Snappers*, 20-22.

In Figure 5 it is apparent that economic conditions of the wholesale fish markets and the cost of operation affected snapper resource utilization and the number of fishing vessels employed in the industry. The landings were affected by the availability of the resource and the demand in market. The demand has been traditionally dependant on the economic conditions in the areas purchasing the fish retail and the cost to consumers. It is evident in Figure 5 that during economic downturns decreased red snapper landings and the number of snapper vessels fishing from Pensacola both fell together.

In summary, New England influence and economic factors related to the growth and health of the red snapper fishery have affected changes in the selection of industry's working watercraft. New Englanders pioneered the red snapper fishery and played prominent roles in the establishment and dynamic nature of the fishing vessels utilized by the industry. Transient Connecticut fishermen introduced well smacks to the red snapper fishery at Key West and along the northern Gulf Coast.

As the fishery grew along the northern Gulf Coast, New England entrepreneurs transformed the fishery into a wholesale business and purchased their own fishing vessels (well smacks). The rapidly growing fishery stressed red snapper resources in the shallow waters close to the market centers and rendered live wells an inadequate preservation method. The use of live wells limited smacks to fishing in less than twenty fathoms of water. Consequently fishermen made a rapid transition to ice preservation and to the acquisition of tight

bottomed Northern New England fishing schooners for the red snapper fishery.

Overfishing continued to be a problem and fishermen resorted to increasingly more distant fishing banks which created a need for larger and faster fishing schooners. Such vessels were purchased from the northern New England offshore fisheries of Maine and Massachusetts. In the 1890s the fishing effort was directed to Campeche Banks due to overfishing along the northern Gulf Coast. These new fishing grounds revitalized the fishery which further expanded the snapper fleets and created additional need for larger and faster fishing schooners. With the majority of the red snapper fleet fishing the Campeche Banks during the winter fishing season, the northern Gulf Coast fishing grounds recovered, and a number of smaller vessels began to fish the near shore banks. At the turn of the century small snapper fishing operations began to utilize smaller auxiliary fishing schooners to fish along the northern Gulf Coast.

In addition to being affected by resource utilization, snapper fishing vessels were also affected by economic conditions of the wholesale fish markets and the cost of operation. The relationship becomes evident after examining the relationship between red snapper landings and the number of fishing vessels employed in the fishery. The fleet was reduced during economic recessions and expanded when demand was high.

FISHING METHODS

This chapter examines commercial fishing methods in the red snapper industry and demonstrates how they effected changes in the industry's fishing vessels. The time period covered is from the late 1860s, with the establishment of commercial fishing from Northern Gulf ports, until the 1950s, well after the Campeche Banks of Mexico became the favored fishing grounds for the large producers.[1] The red snapper fishery always used hook-and-line fishing methods from boats and vessels using hand-lines. Snapper and grouper inhabit reef environments which required the fishery to use hook-and-line methods because the fish schooled in small, well-defined areas in their habitat. This method continued throughout the industry's history, despite efforts to improve it.

Although this chapter begins with a description of a typical commercial snapper fishing voyage in 1877, its examines alteration in the fishing method over time and its effect on changes in the industry's fishing vessels. After the 1877 account is summarized the fishing method is then discussed in terms of securing bait, locating the fishing banks, finding and catching snapper, and preserving catches. Finally, this chapter examines changes in the design and character of red snapper fishing vessels in terms of the location of the fishing grounds, the use of fishing gear, and how the fish were preserved until delivered to markets.

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[1] Camber, *Survey of the Red Snapper Fishing*, 44.

THE FISHING METHOD

In 1877 *Forest and Stream* published the first detailed account of commercial red snapper fishing.[2] The author of the article, identified as B.H.P., and a friend joined the schooner smack *Frances E.* of New Orleans on 10 July 1877 for a trip that lasted five days. The fishermen spent the first two days seining for bait, on a beach near Fort Pickens, Florida, and with only a partial barrel, the captain decided it was time to sail for the snapper banks.[3]

On the third morning, the *Frances E.* sailed southeast from Pensacola Bar with the intention of fishing in an area approximately fifty miles east of Pensacola Bar, and twenty miles offshore. While on course for this fishing ground, the *Frances E.* met two vessels that had left Pensacola the day before, fished a closer spot, and quickly caught a full load. The captain, encouraged by the news from these vessels, decided to try the same banks and changed course. The *Frances E.* sailed parallel to the shore, some twenty miles East of Pensacola, and then headed due south. The captain ordered soundings to be made after the trees had slipped below the horizon.[4]

A crew member measured the water depth with a sounding lead that consisted of a line with a nine-pound lead weight on its end. Two or three feet above the weight, a short line with a baited hook was

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[2] B.H.P., "Red Snapper Fishing," 63.

[3] *Ibid.*

[4] *Ibid.*

attached. The captain anticipated uneven bottom at a depth of approximately sixteen fathoms, and located gullies and ridges with the soundings. In these submarine topographic features, red snapper lived in the reef environment established on the hard bottom of the area. When the soundings indicated flat bottom, the captain brought the schooner around and sailed over the gullies in a position adjacent to his last pass. The captain ordered that soap be attached to the sounding lead to test the bottom for live red coral. The coral indicated the captain had located the reef environment of the red snapper.[5]

B.H.P. narrated the events of the third pass over the hard bottom:

> "They ought be here," said the captain. While the man with the lead was gently raising and letting it fall in eighteen fathoms of water. He gave a sudden jerk, looked up and cried out sharply, "Bite!" But did not hook the fish. Another jerk at his hook he cried out, "Porgie." How he knew the nibble of a certain kind of fish, 108 feet below the surface, I was unable to tell; and am still skeptical on that point to this hour.[6]

Two crewmen lowered lines down and quickly called out "Bite." The two men rapidly caught three red snappers, weighing about twenty pounds each.[7] A third fisherman marked the spot with a buoy as these fish were landed. The captain satisfied with this location ordered the crew to bring down the jib, sailed upwind of the spot, and anchored the schooner on the buoy. The crew furled the sails, cleared the deck,

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[5] *Ibid.*

[6] *Ibid.*

[7] *Ibid.*

and fished with hand-lines. Fishing and landing red snapper, as fast as the crew of four, plus the cook, and two passengers could haul them in, continued until dark.[8]

B.H.P. described a busy scene with men landing fish: a "continual whistling" as the wind escaped from bloated fish and "a splash every moment or so," as fishermen threw snappers into the schooner's well. Red snapper became distended and much distressed after being pulled from the depths. Consequently fishermen relieved the fish with a "pricker" or crimping-awl which consisted of a sharpened brass tube fixed to a handle.[9] The discomforts of the snappers were due to expansion of air in their swim bladder upon ascent.[10] The "pricker," inserted into the swim bladder, released the air, thus explaining the whistling sound as described by B.H.P. Often during a rapid pressure change, a red snapper's stomach was extruded from its mouth. If such an injury occurred, the fish usually died soon after. If fish died in the well from injury or disease—the fishermen of the *Frances E.* threw them away, a typical practice on all snapper vessels until carrying ice on board became accepted.[11]

The limited amount of bait collected on the beach near Fort Pickens was enough to get the fishing started. Afterward, the fishermen relied on porgies that they inadvertently caught and which

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[8] *Ibid.*

[9] Stearns, "The Red Snapper Fishery," 588.

[10] Collins, "Report on the Fishing Grounds," 288.

[11] B.H.P., "Red Snapper Fishing," 62.

would have been a nuisance otherwise. Porgies are a family of tropical and subtropical fishes of moderate size, of which the most common include pinfish and sheepshead.[12]

Fishing resumed the following morning at six o'clock and was continuous and productive until the appearance of sharks. These predators began to attack red snapper and to damage fishing gear, and thoroughly hampered all fishing efforts. The captain then decided to fish for sharks. A large shark hook with a chain leader and a heavy line was baited with a ten pound snapper and thrown overboard. Within a few minutes the crew caught a shark estimated to weigh 800 pounds. The captain and crew removed the shark's liver to sell for oil, saved the jaws that were presented to B.H.P, and then threw the shark's carcass overboard for his companions to eat. The activity with the sharks made snapper fishing in this area impossible.[13]

With 300 or 400 red snapper in *Frances E.'s* well, the captain chose to return to Pensacola. It was dark when the smack reached Pensacola Bar, and the captain anchored offshore, not wanting to risk the shoals at night. At Pensacola, the catch was tied in "bunches" of three (with palmetto leaves) that weighed from 20-25 pounds each.[14] These bunches were packed in boxes with ice and sent to New Orleans by steamer.[15]

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[12] *Ibid.*

[13] *Ibid.*

[14] Collins, "Report on the Fishing Grounds" 294.

[15] B.H.P., "Red Snapper," 62.

B.H.P's description of this voyage was typical of commercial red snapper fishing in 1877. What follows is a more complete description of the fishing method as practiced between the 1870s and the late 1950s. Securing bait, locating the banks, finding and catching snapper, and preserving the catch are described in more detail.

Fishermen considered menhaden, lady fish, and blue fish, either fresh or salted, to be the best bait for red snapper.[16] They also used skipjack and Spanish mackerel.[17] In spring, summer, and fall bait could be obtained by seining the beaches, but during winter, fishermen relied on bait collected and salted in the fall. A vessel usually took on between 300 and 400 pounds of salted bait. This bait was preferred only when the vessel first reached the banks. After fishing commenced, fresh bait was caught and used. The fresh bait consisted of what ever came up on the lines while fishing for snapper: porgies, groupers, jewfish, leather-jackets, and sharks. Fresh bait was preferred over salted, it being much tougher and not so easily stripped from the hook.[18]

Red snapper congregated in schools on sea bottoms generally composed of rocks, or coarse gravel which were encrusted with live coral.[19] These bottom compositions were usually associated with

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[16] Stearns, "The Red Snapper Fishery," 587.

[17] Collins, "Report on the Fishing Grounds," 289.

[18] *Ibid.*

[19] *Ibid.*, 282.

topographical relief. For example, the grounds between Mobile Bar and Cape San Blas have gullies in level flat areas that run in a southeasterly direction. The grounds eastward and southward of Cape San Blas are ridges that rise out of a flat sand bottom. These limited areas, the reef habitat where fish are most likely to be found, are called banks. Fishing grounds are the larger areas where the reefs are located.[20]

Banks were located by dead reckoning. The captain took a bearing on a land mark and sailed a compass course for a certain number of miles or to a certain depth of water. The names of many banks reflect this practice: "Roger's Hill Banks," the "First Yellow Bluff," and "Fifteen off the Bald Hill."[21]

To locate the topographic relief, the mate took soundings for depth measurements; he stood on the windward rail, held on to the main rigging with one hand, and threw the baited sounding lead with the other. If the vessel was moving fast, she had to be rounded up to loose some momentum. The bottom material was also monitored by attaching clean soap or wax to the sounding lead to pick up sediment.[22]

The soundings went on continuously from one side of the bank to the other. When a red snapper was taken, the main sail was guyed out, the jib hauled down, and the schooner hove to. If more fish were

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[20] Stearns, "The Red Snapper Fishery," 585-586.

[21] *Ibid.*

[22] Collins, "Report on the Fishing Grounds," 290.

caught, the spot was marked with a buoy or else a dory was put out and anchored with a man fishing. The crew caught fish as rapidly as possible until the vessel drifted away from the fish. After additional soundings and more fishing in areas adjacent to the mark, the skipper then decided if it was worth the trouble to anchor and usually did so where he thought the fish were most abundant. Otherwise he would heave to and drift across the spot and then sail back upwind or to another spot.[23]

Fishing took place from the windward rail and each man had a station with a small bait table. Red snappers could usually be caught as fast as a man could haul in the line, remove the fish, bait the hook, and return it to the school. In the mid 1800s as many as 1,700 to 1,800 red snapper could be taken by one vessel in a single day.[24] When the fishing of a school began, the fish were usually taken six or eight feet above the bottom. If the fish were large and hungry, they would follow the lines up in the water and could soon be caught in just a few fathoms.[25]

When fishing started on the Campeche Banks, skippers usually brought a patent log and a sextant. To reach Campeche they sailed due south, estimated the distance sailed, and took soundings as the vessel reached the edge of the banks.[26] The skipper usually took a sun

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[23] *Ibid.*

[24] *Ibid.*

[25] *Ibid.*, 291.

[26] Wallace, *Roving Fisherman*, 454 -455.

sight at noon, but relied more on dead reckoning and knowledge of the bottom for his navigation.[27]

Frederick William Wallace described a 1923 trip to Campeche, that he made on the *William Hays* where the skipper practiced a form of "bird navigation." Wallace observed the skipper paying particular attention to flocks of "bobbie-birds" every evening just before sunset. He took a compass bearing of their flight direction and then figured his position. The skipper told Wallace: "Them birds always roost on land at night. The nearest land hereabout is Alacran Reef and that's were them bobbies is heading. Them bobbies steer a straight course for their roost. Never know'd it to fail."[28] On the strength of these bird observations, soundings, and the character of the bottom, the skipper fixed the position of his vessel with a high degree of accuracy and then located particular bottom features he wished to fish.

In the 1880s, hand-lines were steam tarred cotton, were fifty-fathoms in length, and "weighed sixteen to eighteen pounds to the dozen lines of twenty five fathoms each."[29] A lead sinker weighing from two and a half to three pounds was fastened to the end of the line. "Two moderately long-shanked, round-bowed, eye hooks" were bent to the end of a lighter line (twelve pounds to the dozen, ten or

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27 Wyatt Blassingame, "They Sail From Hangover Harbor," *True Fishing Yearbook* (1958), 53.

28 *Ibid.*

29 Collins, "Report on the Fishing Grounds," 278; Stearns, "The Red Snapper Fishery," 586.

twelve feet in length).[30] This was fastened to the main line above the sinker by doubling it and passing the ends with the hooks through the blight and hauling taught (commonly known as a cow hitch). There were no swivels used.[31]

By the 1920s there had been only slight change in the hand line (Figure 6). Fishermen used a "patent" kidney-shaped lead weight (three and three-fourths pounds) that had a box swivel at both ends, with the lower swivel projecting at an angle on a short brass rod.[32] The gangings or snoods (the short lines with the hooks) were attached to a ring on the weight's bottom swivel. With this arrangement the hooks hung under the weight rather than above it. The fishing gear for each fisherman on the *William Hays* in 1923 was, according to Wallace, "a 100 fathom reel of twelve pound Burnham tarred cotton line to which was attached a kidney-shaped Lathrop's Patent lead weight (three and three fourths pounds) and two eight pound snoods or gangings each furnished with a Swedish steel hook, Mustad No. 2, snapper hooks, or an English Johnson hook of similar size."[33] When not in use hand-lines were coiled in shallow barrels and stored below deck.

Previous to 1882 fishing was carried out in depths of less than twenty-two fathoms of water, not more than 50 to 70 miles from

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30 Collins, "Report on the Fishing Grounds," 288.

31 *Ibid.*

32 Jarvis, *Fishery for Red Snappers*, 4; Wallace, *Roving Fisherman*, 458.

33 Wallace, *Roving Fisherman*, 458.

Pensacola Bar.[34] In the winter of 1883 the fleet of E. E. Saunders Company fished in thirty to forty fathoms of water in an area parallel to the edge of the continental shelf between Pensacola and Cedar Keys, which took the fishermen from fifty to 200 miles from Pensacola. During the 1885-1886 season fishermen from Pensacola fished an area about 215 miles to the south of Pensacola Bar While on Campeche Banks, the fishing was done at depths of fifty to sixty fathoms.[35] After the United States Fish Commission discovered abundant snapper in grounds between Cape San Blas and the Dry Tortugas in 1885 the fishery shifted to fish this area. From 1886 to 1910 fishermen utilized this area and fished anywhere from 85 to 400 nautical miles from Pensacola Bar. At this time the length of fishing trips became extended from three to four weeks in duration. Finally, fishermen shifted to the Campeche Banks of Mexico and fished at distances from 480 to 700 nautical miles from Pensacola Bar.[36]

The change in length of the hand line from the 1880s to the early 1920s reflects the change to deeper fishing grounds. Additionally, the depths fished from 1882 onwards excluded the use of the live well as a means of preservation, and fishermen packed their catch in ice to keep them fresh and in good condition. When transporting fish alive, a great deal of care was taken with the fish to

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[34] Collins, "Report on the Fishing Grounds," 277-278.

[35] Camber, *Survey of the Red Snapper Fishery*, 12-13.

[36] *Ibid.*

Table 4. Summary Table of Fishing Ground Expansion

Date: Previous to 1882
Area: Between Mobile and Cape San Blas
Distance from Pensacola Bar: between 50 and 70 nautical miles
Depth Fishing: 10 to 22 fathoms
Trips: 1 week

Date: 1882 to 1885
Area: Between Mobile and Cape San Blas
Distance from Pensacola Bar: between 50 and 70 nautical miles but occasionally up to 200 nautical miles
Depth Fishing: 30 to 40 fathoms
Trips: 1 week

Date: 1885 to 1886
Area: South West of Cedar Keys
Distance from Pensacola, Bar: approximately 215 nautical miles
Depth Fishing: 20 to 47 fathoms
Trips: 1 to 2 weeks

Date 1886 to 1910
Area: From Cape San Blas to Dry Tortugas
Distance from Pensacola Bar: between 85 and 400 nautical miles
Depth Fishing: 20 to 47 fathoms
Trips: 3 to 4 weeks

Date 1898 to 1955
Area: Campeche Banks
Distance from Pensacola Bar: between 480 and 700 nautical miles
Depth Fishing: 20 to 100 fathoms
Trips: 4 weeks

insure they did not die. Snappers caught at depths greater than twenty fathoms died due to internal injuries caused by the pressure change. Fishermen carefully unhooked snappers and quickly pricked them with a crimping awl that was inserted "under the forth scale, behind the sharp angular projection of the gill cover." After the snapper was pricked, this large scale went back in place, covered the incision, and kept water out of the swim bladder. With its pressure equalized, the fish was thrown into the well. Red snapper were never

thrown on deck if kept in the well, but pricked and thrown into the well in one motion.[37]

As mentioned earlier, if the stomach of the red snapper was pushed from its mouth it could not live in the well and the fish was thrown away. Such a practice was a great waste, but by 1880 ice became economical enough to keep these fish packed in ice on board the fishing vessels.[38] By 1884 the price was such that icing all the fish was more satisfactory than keeping the fish alive.[39] At this time, for example, five of the seven vessels fishing for Messrs. Warren and Company had their wells removed and ice boxes installed. The other companies did not convert so quickly but used both wells and ice boxes. In 1885, thirty-eight percent of the vessels that marketed their fish in Pensacola were "tight bottomed," and most of these belonged to Messrs. Warren and Company[40] The term tight bottomed vessel was used to distinguish market fishing vessel that carried their catch to port packed in ice from well smacks that delivered their catch alive in free-flooding fish holds. By 1895, however, not a single welled vessel was working out of Pensacola.[41]

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[37] Collins, "Report on the Fishing Grounds," 291.

[38] Jarvis, *Fishery for Red Snapper*, 2.

[39] Collins, "Report on the Fishing Grounds," 284.

[40] *Ibid.*

[41] John C. Brice, "The Fish and Fisheries of the Coastal Waters of Florida," *Annual Report of the United States Fish Commission for 1896*, (Washington: Government Printing Office, 1898), 329-330.

By 1880 New England fishermen had developed efficient methods for the preservation of fish in ice on what was referred to as "tight bottomed" market fishing vessels. For example fishermen in New England's cod and halibut market fishery abandoned the use of live wells around 1858 when they changed from hand line fishing to "trawl fishing."[42] Fishermen used a system of stalls built in the vessel's holds where they stacked layers of fish and ice into partitions in the vessel's holds.[43]

Red snapper fishermen refined the method further by using cork to insulate the fish hold. In the *William Hays*, built by the Warren fish Company in 1912, the fish hold was insulated on all sides with blocks of cork set in asphalt and sheathed in wood. The hold was divided into eight "boxes" (four stalls on each side of the vessel) with an "alley" dividing them. The walls of each box were also insulated with cork, asphalt, and tarred paper. The front of the boxes were covered with removable boards as each layer of ice and fish was added. Fishermen insulated the fish holds in Gulf of Mexico fishing schooners heavily because of the intense sun and heat of the tropical and subtropical climate where they operated. Additionally the vessels had to keep ice frozen while sailing in water temperatures as high as

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[42] Trawl fishing involved the use of long lines placed on the bottom with hundred of baited hooks. The lines were worked by men in small boats that were based from a fishing schooner offshore. The fish could not be kept alive and, additionally four times the fish could be preserved using ice on the fishing schooner.

[43] Joseph William Collins, "The Fresh Halibut Fishery," in *The Fisheries and Fishery Industries of the United States*, ed by George Brown Goode (47th Cong., 1st sess., Senate Doc. 124. Washington: Government Printing Office, 1887), Section V, Vol. II, History and Methods of the Fisheries, 11-31.

seventy to eighty degrees Fahrenheit. 5,000 to 6,000 pounds of ice could be stowed in each chamber of the hold from .[44]

Red snapper could be kept fresh and in good condition in ice for long periods of time. Red snapper required less care if iced: fishermen just threw the fish on deck and about every hour the mate would collect them and pack them in the vessel's boxes with crushed ice. After a thick layer of ice, the fish were packed in even layers with the heads toward the side of the boxes. Another layer of ice with another layer of fish were packed until the box was full.[45]

Commercial snapper fishermen did not eviscerate their fish, but "packed them round." The fishermen rinsed the fish to remove as much slime and blood as possible and then packed them in layers of ice. There was a prejudice against gutting the fish. Fishermen claimed that gutting the fish caused them to decompose faster.[46] In 1885, Captain J. W. Collins, of the United States Fish Commission, determined that gutted red snapper remained fresh much longer and recommended that the evisceration be performed on board the fishing vessel.[47] Nevertheless fishermen were reluctant to change because fifteen percent of the red snapper's weight was lost in evisceration—not to mention the time and effort.[48] In 1935 fisheries scientists

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[44] Wallace, *Roving Fisherman*, 453-454.

[45] Jarvis, *Fishery for Red Snapper*, 16 -17.

[46] *Ibid.*

[47] Collins. "Notes on Gulf Fisheries," 298.

[48] Jarvis, *Fishing for Red Snapper*, 17.

were still trying to convince fishermen to gut red snapper when caught.[49]

The Fishing Method and Fishing Vessel Changes

The method of fishing for red snapper embodied two major factors relating to the evolution of the industry's fishing vessels. The first was the industry's dependency on hook-and-line fishing methods and the second was the preservation method of red snapper on board the fishing vessel. The red snapper fishery was dependent on the hook-and-line fishing method, despite efforts to change and improve it. Although some improvements in the hook-and-line fishing method were achieved, the changes were not radical. As a result, major design changes in snapper fishing vessels did not occur in response to technological innovation as in many other fisheries. Changes did occur in response to where the snapper fleets were fishing and to how the preservation method was used on board the fishing vessel.

After the otter trawl became recognized as a viable fishing method in the New England offshore fisheries vessel design was changed to accommodate it. An otter trawl is a net which is pulled along the sea bottom from two heavy doors on bridles which spread the net apart and hold it open. This method was only used in areas with relatively smooth bottom conditions. It could not be used in the red snapper industry because the net would snag and be destroyed by the coralline rock in the snapper's reef environment.

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[49] *Ibid.*, 28.

Radical changes in New England fishing vessel design began with the introduction of full powered steamers of the North Sea type in 1905. Ultimately two classes of diesel-powered trawlers, designed to pull otter trawls, developed. These vessels, called draggers to distinguish them from the larger North Sea types, ranged from forty to ninety five feet in length and had wooden hulls. The first type, called an eastern-rig, had the pilot house aft and set and recovered the trawl over the side of the vessel. The other type, called a western-rig, had the pilot house forward and both set and recovered the trawl over the stern.[50]

Wide spread adoption of the engine power and the otter trawl by the 1930s effected changes in the watercraft of Atlantic and Gulf Coast fisheries. The otter trawl, pulled by large fleets of relatively small vessels, allowed lower-priced seafood products. The New England and other trawl fisheries which collected fish by pulling nets with powered vessels put the red snapper industry under a competitive pressure. The hook-and-line fishing method was not cost effective when compared to the trawl method. For example, the growth of chain store retailing in the 1930s hurt the snapper industry because the production cost of red snapper was about double that of haddock fillets and both retailed at the same price. The chain stores pushed the haddock with the large profit margin, and red snapper dealers

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[50] Andrew W. German, "History of the Early Fisheries: 1720-1930," In *Georges Banks*, ed. by Richard H. Backus (Cambridge: MIT Press, 1987), 414.

complained that it was difficult to secure contracts with chain store buyers because they favored the New England markets.[51]

It is important to remember that before the 1950s, no better method than the hand line had been developed for the commercial capture of red snapper, despite incentives to look for better methods. As the fishermen resorted to more distant banks, they also fished deeper water. A great deal of time was required to let the bait reach the fish and haul it up. Additionally red snapper had to compete, price-wise, with other fisheries that improved fishing methods and lowered production cost.[52]

In the earliest experiments to find a better fishing method, Pensacola firms tried trawl-lines and cod gill nets with little or no success.[53] J. W. Collins in 1885 suggested four reasons why these experiments were a failure. First, red snapper schools were so limited in area that a trawl line would only lay a few hooks into a school with the rest being wasted. Second, red snapper fought so actively and persistently that they tore themselves clear of trawl hooks. Third, sharks and large jewfish would tear red snapper from the lines and also would damage the gear. Finally, the red snapper bit so freely at hand-lines which could be concentrated in their school, that the

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[51] Jarvis, *Fishery for Red Snapper*, 21.

[52] *Ibid.*, 17.

[53] Stearns, "The Red Snapper Fishery," 588.

result was more fish could be taken in a given time by the hand line than any other means.[54]

The hand line fishing method changed little between the 1880s and the 1930s. Norman D. Jarvis, in his assessment of the red snapper industry in 1935, concluded that the hand line method limited the fishing area and production. He argued "the cost of fishing is high because much of the time spent in hand lining is wasted, and this method cannot be followed profitably at depths much over eighty fathoms. This tends to limit quite definitely the fishing area, and therefore, production." Jarvis in conjunction with commercial fishermen experimented with trawl lines and fish traps without satisfactory results, and recommended additional work in order to develop alternative fishing methods.[55]

Additional experimentation with fish traps, hoop nets, and otter-trawl gear was conducted to discover a more efficient means of commercially catching red snapper more efficiently than the existing hook-and-line technology.[56] The only real success made in the efficiency of catching red snapper were innovations to the hook-and-line method. After 1949 the industry began use of mechanical reels which used stainless steel wire instead of cotton line. The mechanical reels allowed deeper water to be fished, opening up new fishing areas that were discovered by using fathometers to locate snapper and

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[54] Collins, "Notes on Gulf Fisheries," 288.

[55] Jarvis, *Fishery for Red Snapper*, 22.

[56] Camber, "A Survey of the Red Snapper Fishing," 18-19.

grouper habitats. Such innovations reduced the risk involved in finding red snapper and extended the depths of practical fishing by reducing the time required to land fish.[57]

The industry was never able to replace hook-and-line fishing, but only to improve its efficiency. Because the fishing method never radically changed, there was no pressure from the type of gear used to alter the type of vessels used in the red snapper industry. The speed, carrying capacity, location of fishing grounds, preservation method, and economic considerations always played a larger role in vessel shape and design than did the fishing method utilized in the red snapper industry.

The use of engines dramatically advanced snapper fishing vessels and affected the fishing method. The transition from sail to powered snapper fishing vessels is discussed later in the paper, but it is important to note that the use of engines was incorporated into snapper fishing. In 1910 hoisting engines became standard equipment and were used for hoisting sails, anchors, and other lifting jobs. Until 1920, none of the large vessels in Pensacola had auxiliary locomotive power, but shortly thereafter they began conversions to gas screw power.[58] The *A.F. Warren* was the first "full powered" auxiliary fishing schooner designed for the red snapper industry. She was built

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[57] Fred Hunt, "The Ghost of Palafox St.," *Maine Coast Fisherman* (July 1958): 11 and 16; Siebenaler, J. B. , and W. Brady, "A High Speed Manual Commercial Fishing Reel," (Florida Board of Conservation Technical Series, No. 4, 1952), 11.

[58] Hunt, "Campeche Days," *American Neptune*, Vol. II, (1942): 229.

at the Warren Fish Company in 1924.[59] Notably the hook-and-line fishing method did not change after the introduction of powered fishing vessels for the red snapper industry. Engines primarily served to shorten time to and from the fishing grounds and for positioning the vessel over schools of fish. Because of the introduction engines, the quality of the fish landed in northern Gulf of Mexico markets from Campeche Banks was significantly increased.

Adopted in the 1950s, "loran" (an acronym for "long range navigation"), fathometers, and radio assisted in the process of finding red snapper. Loran allowed a skipper to precisely locate and easily return to a productive spot. Fathometers, on the other hand, eliminated soundings, and were used for finding the banks, locating schools of fish, and identifying bottom material. Finally, radio communication between skippers allowed them to keep up with the movements and feeding of fish.[60] In short these innovations decreased the amount of the risk involved in finding red snapper.

Until the 1880s, fish preservation was a major factor in the selection of vessels for the red snapper fishery. Fishermen in the red snapper industry used vessels with free flooding fish holds, called well smacks, to keep fish alive until reaching port. The influence of the southern New England fishermen in the commercial exploitation of the red snapper and grouper, the availability of welled fishing vessels,

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[59] Wallace, *Roving Fisherman*, 483.

[60] Martin A. Moe, *A Survey of Offshore Fishing in Florida.* State of Florida Board of Conservation, Professional Series, No. 4, January 1963, 58.

their suitability to offshore fishing , and the expense of ice in the South made the well smack the choice watercraft of the red snapper industry.

A transition from well smacks to tight bottomed vessels occurred in the late 1870s and early 1880s. Although discussed more fully later, it should be mentioned here that a variety of circumstances led to a change from preserving red snapper alive to storing them in ice on board fishing vessels. Owners shifted from the use of southern New England well smacks, which first dominated the fleet, to the use of northern New England tight bottomed schooners utilizing ice to preserve their catch. The reasons for the transition are clear. First the industry had overfished its resources near market centers in shallow waters. As result the fishermen resorted to fishing deeper waters at greater distances from the markets. Red snapper caught from waters greater than ten to twenty fathoms could not be kept alive and ice preservation proved to be the logical alternative.

Ice prices became lower in the early 1880s as manufactured ice became available in most Gulf ports. Competition from manufactured ice, then in direct competition with imported ice, lowered prices. By 1884 the cost of manufacturing ice was reduced to about five dollars per ton in most cities, which undercut the price of ice imported from Maine.[61] Due to advances in ice-making technology in the 1870s and 1880s, reductions in ice prices became a regional trend. The lower

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[61] Henry Hall, *The Ice Industry of the United States, with a Brief Sketch of its History and Estimates of Production in the Different States*, Tenth Census, Vol. XXII, Washington: Government Printing Office, 1884.

cost of ice became beneficial to the snapper fishery in a time of need and was a large factor in the extinction of the well smack from the northern Gulf of Mexico fisheries.

In summary, the commercial red snapper fishery of the Gulf of Mexico began as a hand-line fishery in the early 1820s. The method of fishing for red snapper changed very little until the 1950s. The environment in which red snapper live prohibited fishing with otter trawl nets or other fishing methods. The fishing effort focused on the reef environment and relied on the hook-and-line method which operated from the deck of a vessel. As a result, design changes in snapper fishing vessels had little relation to fishing gear and were more dependent upon other factors such as fishing range, speed, carrying capacity, preservation of the catch, and safety.

The major changes in fishing method were fishing in deeper waters at greater distance from the markets, shifting from live wells to ice, and using engines to shorten transit time and to position the fishing vessel. The greatest changes in gear were the introduction of mechanical reels with wire line and the implementation of radios and electronic navigation equipment. Mechanical reels and wire leaders reduced the time require to haul fish up from great depths making it possible to expand the fishery into new resources, whereas radios and electronic navigation equipment allowed fish to be found easier than with the use of dead reckoning navigation and soundings.

WELL SMACKS

When southern New England fishermen first voyaged to the Florida reefs to wreck and supply the Havana market with live grouper and snapper, they brought with them the well smack. This type of fishing vessel suited their needs as a fast and able watercraft, capable of voyaging along the Atlantic seaboard, fishing and wrecking on the Florida reefs, and accommodating their crews for long periods of time. Additionally, well smacks enabled fishermen to exploit offshore fishing grounds, focus fishing effort in small locations in the reef environment, and transport a live catch to market. The result of their voyages was a high quality fresh seafood that found ready buyers and good prices in Havana.

The use of the term *smack* has caused some confusion with respect to whether or not a smack had a live well. Many vessels employed in fisheries that marketed fresh fish (market fisheries) were called smacks. *The International Maritime Dictionary* defines a smack as "a small, decked vessel sailing under various rigs and formerly used for fishing and trading;" whereas *The Mariner's Dictionary* defines a smack as "a small fishing schooner or sloop engaged in the fresh fish fishery, formerly having a well to preserve the fish alive."[1] A welled vessel was usually not considered a smack unless its gross tonnage was greater than five; otherwise, it was generally referred to by its type name (friendship sloop, for example).

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[1] René de Kerchove, *International Maritime Dictionary* (New York: Van Norstrand Reinhold Company, 1961), 749; Gersham Blackford *The Mariner's Dictionary*, (New York: Weathervane Books, MCMCII), 246 .

New England fisherman used the term *smack* to describe a vessel over five tons that delivered its catch or cargo to market alive. Smacks employed a free flooding fish hold, or live well, to keep lobsters or fish alive until they could be delivered to market. After New England fishermen abandoned live wells for ice preservation, they no longer called the vessels in the market fisheries smacks, but simply identified them as sloops or schooners. An exception to this trend was in the lobster fishery, where fishermen continued to use the term *smack* for vessels that delivered live lobsters. Fishermen then identified vessels that delivered lobsters as well smacks or dry smacks, the latter using ice or nothing at all to preserve its cargo. In the late 1800s, Joseph William Collins used the term "tight bottomed" to describe market fishing vessels that employed ice rather than a live well to preserve their catch.[2]

The use of fishing vessels equipped with free-flooding wells to deliver a live catch was by no means a new idea in the 1820s. The English and Dutch both used them in the 1700s for transporting fish and lobsters alive to markets in the urban centers. During the late eighteenth century, markets for fresh seafood began to grow in Boston and New York. Lobsters, which quickly spoiled after death, found an early commercial demand and fishermen marketed the crustaceans alive in order to demonstrate the product was fresh and wholesome.

In the early 1800s, lobster populations near New York became severely stressed. Fishermen from Connecticut and the Long Island

[2] Collins, "Report on the Fishing Grounds," 284.

Sound area sailed to the less utilized lobster habitats of Cape Cod and returned to the city with live lobsters for the growing market.[3] By 1812, Massachusetts had passed a law restricting nonresidents from lobstering in the state. With a growing demand for lobsters in Boston and New York and with decreasing southern New England lobster supply, the Connecticut smackmen sailed further east and, by 1820, were working the coast of Maine.[4] In 1825 the state of Maine passed restrictive laws that required licensing by permit for the right to take and to ship lobsters from a particular area. The laws, in effect, created a division of labor between locals and smackmen. Local fishermen collected lobsters, and smackmen purchased and shipped them to the markets of Portland, Boston, and New York.[5] For example, in 1835, Captain John Smith of Waterford, Connecticut, bought the exclusive right to ship Harpswell, Maine, lobsters. He paid one hundred dollars for the permit which was renewable yearly. His business kept six smacks employed in peak season.[6]

As the lobster fisheries and Connecticut smackmen moved further from the major markets, the need for larger welled fishing vessels grew. Connecticut shipbuilders and fishermen became

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[3] Richard Rathburn, "Notes on the Decrease of Lobsters," *Bulletin of the United States Fish Commission for 1884* (Washington: Government Printing Office, 1884), 442.

[4] Kenneth R. Martin and Nathan R. Lipfert, *Lobstering and the Maine Coast* (Bath, Maine: Maine Maritime Museum, 1985), 13.

[5] Rathburn, "Decrease of Lobsters", 442.

[6] George August Wheeler and Henry Warden Wheeler, *History of Brunswick, Topsham, and Harpswell, Maine* (Summersworth, New Hampshire: New Hampshire Publishing Company, 1974), 175.

specialized in the technology and use of live wells in the market fishery. Connecticut fishermen developed the lobster smack trade and other markets for fresh and live seafood; whereas the shipbuilders of Mystic, Noank, and other Connecticut coastal areas became widely acclaimed for the well smacks they produced. Connecticut fishermen not only supplied New York's Fulton Market with live lobsters, but also established a successful business in live halibut from 1835 to 1858.[7] The opportunities of lucrative profits in wrecking and fishing for the Havana market lured Connecticut smackmen to the Florida reefs. Additionally, Connecticut fishermen introduced the well smacks to Charleston, South Carolina, where fish dealers kept snapper and blackfish in cars or large floating boxes in the harbor until sold.

The specific character of well smacks used in the snapper and grouper fishery from Key West before 1880 is still unclear. Prior to the 1820s English wreckers from the Bahama Islands are reported to have used vessels between sixteen and eighteen tons for fishing and wrecking on the Florida reefs. In March of 1822, the Acting Governor of East Florida, W. G. D. Worthington, reported that eight or nine American fishing smacks, from thirty-eight to forty tons each, fished off Cape Sable and made regular trips from Havana lasting seven to eight days.[8]

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[7] Goode , and Collins, "Fresh Halibut Fishery," 34.

[8] W. G. S. Worthington to John Q. Adams, Secretary of State, 18 March 1822, *The Territorial Papers of the United States, XXII*, The Territory of Florida, 382. Hereafter cited as *Territorial Papers*.

Andrew F. Warren reported that during the late 1840s and early 1850s Connecticut fishermen used the same type of welled sloop smacks in the Gulf of Mexico, which supplied Fulton Market with live cod from the Nantucket shoals. Warren claimed the smacks were less than twenty tons and held 5,000 to 6,000 pounds of live fish in their wells.[9] Warren's figure of less than twenty tons for sloop smacks operating in the Gulf of Mexico is inconsistent with the size of specific vessels reported active in the smack fishery from Key West before 1830. Sloop smacks that can be linked by their enrollment information ranged in size from 18 to 44 tons and averaged approximately 31 tons.[10] For example two smacks built in Mystic, Connecticut, the *Alert* and *Enterprise*, fished and wrecked on the Florida Reefs in 1824. The *Alert* was 30 tons gross and measured 39.7 feet in length, 14.9 feet in breadth and 6.4 feet in depth; whereas the *Enterprise* was 44 tons gross, and measured 49.3 feet in length, 16.0 feet in breadth, and 6.6 feet in depth.[11]

It is believed the owners of the *Alert* and *Enterprise* contracted the smacks to be built for wrecking and fishing on the Florida Reefs, and with the capability of participating in the New York market fishery on a seasonal basis. Fishermen took advantage of the demand for live

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[9] Warren, "The Red Snapper Fisheries," 133.

[10] Vessels listed in A. C. T., "Key West Items," *Mystic Press*, 12 April 1875; and Hyram Clift's, "Journal of the voyage from New York to the West Indies in the *Gallant*," were linked to their enrollment information and the tonnage averaged.

[11] William N. Peterson, *"Mystic Built" Ships and Shipyards of the Mystic River, Connecticut 1784-1919* (Mystic: Mystic Seaport Museum Inc., 1989), 160-186.

grouper and red snapper in Havana and found fish abundant along the Florida reefs. Connecticut smack owners fishing in the South required watercraft capable of voyaging between southern New England ports and the Florida Reefs and of providing profits to vessel and crew from fishing and wrecking activities. Wrecking required the vessels to be fast, stable, and equipped to save and transport often bulky cargo for moderate distances. The hand-line fishery required fast stable vessels equipped with live wells, that could stay at sea with live grouper and snapper for periods of approximately two weeks or longer. Both wrecking and fishing required a responsive and easily sailed vessels that could be worked along the reefs for weeks at a time.

The vessels used in the Key West—Havana Market fishery exhibit two major changes from the 1820s to the 1880s. The first was a transition from sloops to schooners and a second was a transition from smaller to larger vessels in the later years of the fishery. Related to the adoption of larger smacks for the Key West—Havana Market fishery was the introduction of Florida built well smacks into the fleet.

Vessels known to have fished for the the Key West—Havana Market before 1830 utilized a sloop rig, and by 1880 only two of a fleet of twenty-one still utilized sloop rigs. At present, data are not available to document the chronology of the transition, but a change from seagoing sloops to schooners affected other industries along the East Coast during the same period. Chapelle indicated that schooners began replacing the Noank seagoing sloops in the New York fisheries

in the 1850s[12]. In support of Chapelle's statement, data collected by William N. Peterson on vessels built in Noank, Connecticut, from 1789 to 1891 exhibit a trend of building schooners instead of seagoing sloops, after 1860. In the size range between fifteen and sixty tons, Noank builders constructed schooners instead of sloops for all industries that demanded vessels for fishing, coasting, and packet trading.

An obvious reason for the adoption of the schooner rig is the ease of sail handling, its effect on crew size, and speed with stability. On a given hull the use of a schooner rig increased working sails from two to three, but reduced the size of sails and spars to be hauled up the mast and controlled while sailing the vessel. The schooner rig eased sail handling and resulted in a smaller minimal crew size. Additionally, for a new vessel of a given length, the schooner rig allowed a lower center of effort in the sail plan, narrower beam, and a greater potential for speed while providing adequate stability[13]

The increase in size of the smacks used in the Key West—Havana market fishery is also clouded by a lack of data. The sloop smacks used in the fishery before 1830 averaged approximately thirty one gross tons and ranged in size from forty-four to fifty feet in length on deck. The smacks in the 1879-1880 fleet averaged thirty eight gross

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[12] Howard I. Chapelle, *National Watercraft Collection*, Museum Bulletin No. 219. (Washington: Smithsonian Institution, 1960), 267

[13] William A. Baker, *Sloops and Shallops* (New York: Barre Publishing Co., 1966; reprint, Columbia: University of South Carolina Press, 1987), 154 (page references are to reprint edition).

tons and ranged from fifty to sixty-eight feet in length on deck. This was a significant increase in size. Apparently fishermen wanted vessels with larger fish wells that could be handled by a relatively small crew. The larger schooners provided greater speed and ease of sail handling while also providing space for larger live wells.

Silas Stearns canvassed the Key West—Havana Market Fleet in 1879 for the 1880 Census and gathered information that allows a look at the economics of the Key West—Havana Market Fishery for the 1878-1879 season. Table 5 summarizes the average values of the numeric information collected by Stearns (see Appendix B). The fleet consisted of twenty-one well smacks—all schooners except two sloops. The average age for vessels in the fleet was thirteen years and the smacks varied in age from one to twenty-eight years old. The fishermen imported seventy one percent of the fleet from Connecticut and New York while the remaining twenty nine percent of the fleet was built in Florida.

It is of interest that during the 1878-1879 season the larger schooners earned greater profits than the rest of the fleet. Strong linear relationships exist between the fleet's profits and their tonnage, breadth, year built, and gross stocks. An analysis of the information in Appendix ? indicates that the the newer vessels (including those built in Connecticut) had increasingly greater breadth. Apparently the newer and larger vessels had greater capacity in their live wells and

Table 5. Mean Values for the 1879-1880 Key West—Havana Market Fleet Census Data.

Variable	Mean Value	Variable	Mean Value
Gross Tonnage	37.77 tons	Gross Stocks 1879)	$6,713
Net Tonnage	37.57 tons	Profits (1879)	$5,056
Length	56.87 ft.	Crew Wages (1879)	$44/mo.
Breadth	18.49 ft.	Pounds of Fish (1879)	80,568
Depth	7.45 ft.	Original Cost of Vessel	$6,775
Year Built	1867	Present Value Vessel	$4,690
Crew Members	6	Expenses	$1,657

Source: Silas Stearns, *U.S. Fish Commission and Census of 1880 Statistics of the Fishery Marine.* Field note book recorded 23 December 1879, Key West Florida, Special Collections , John C. Pace Library, University of West Florida.

could deliver more fish to the Havana market with less loss due to fish mortality. The result was an economy of scale where the larger vessels landed more fish, had greater gross stocks, profits, and paid their crews better.

Of the six well smacks built in Florida, the five newest and largest vessels earned the greatest profits; built between 1875 and 1878, these smacks included the *City of Havana, Cuba, Ellen E. Files, Emma L. Lowe,* and *Riverside.* These well smacks, all in the forty four to forty-six gross ton range earned profits between $5,764 and $6,675 in 1879. Jeremiah Fogarty owned the oldest Florida smack, the *Relief,* built in Manatee in 1869. She measured thirty-two tons and was approximately five tons smaller than the fleet's mean.

It should be kept in mind that vessel size was not the only factor in the profitability reported for the year 1897; crew size, pay, and

other human factors had an effect as well. Crew sizes in the fleet ranged from five and eight men, with five and six men crews being the most common. Only three vessels had crews greater than six men—the *Riverside* (eight), *Emma L. Lowe* (seven), and *George Storrs* (seven). The *Riverside* and the *Emma L. Lowe*, large Florida built vessels above forty-six tons, paid their crews forty and fifty dollars per month respectively; whereas the smaller *George Storrs*, an older Mystic built vessel, paid her crew thirty-five dollars per month.

Another factor that may have affected the profitability in 1879 is fishing time lost due to activity in the wreck and salvage of stranded vessels. Silas Stearns reported that "smacks now [in 1885] make twelve or fourteen trips a year, or more than a trip per month, unless they fall in with a wrecked vessel, when they perhaps miss a trip while attending to it."[14]

Captain J. W. Collins reported that Key West fishermen found New England wood prone to rot in their tropical climate and consequently constructed their own vessels of native Florida wood. With few exceptions, the Key West fishermen built schooners that were modeled and rigged precisely like the smacks from New London. Such schooners also resembled the New London smacks in the arrangement of the well, ice pens, and cabin accommodations.[15]

From its inception, the Key West smack fishery was dependent on the Havana live fish market for the disposition of its catch. The

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[14] Collins, "Report on the Fishing Grounds," 260.

[15] Baker, *Sloops and Shallops*, 260-261.

international nature of this trade made it seriously vulnerable to any duties the Spanish Government might have imposed on imported fish. Until the early 1880s the duties imposed on red snapper and grouper remained relatively light and the smack fishermen in Key West enjoyed a rather lucrative fishery. As of 1885 a new duty enforced on live fish destroyed the Key West—Havana market fishery. Collins reported that by 1885 all most of the smackmen had sold their vessels to Spanish parties in Havana, and the ten vessels which remained in the fishery operated at a loss. Collins assured his readers that these vessels could be "bought at a very low figure." He further added that some of these vessels were "remarkably fine vessels . . . well modeled and rigged, and constructed of the most durable material. But they are poorly adapted for anything besides what they were built for; therefore when fishing is unprofitable, it is as difficult to sell them as to find paying employment."[16]

From its beginnings as a smack fishery on the Florida reefs, the red snapper industry diverged into two distinct home port/marketing areas: the Key West—Havana market and the urban centers of the northern Gulf Coast. The Key West fishery served a small retail market in its home port and a large wholesale market in Havana, while the northern Gulf Coast fishery supported retail markets in New Orleans, Mobile and Pensacola, and wholesale buyers in cities linked to railroads that served the Gulf Coast markets. Both fisheries used well smacks until the early 1880s.

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[16] Collins, "Report on the Fishing Grounds," 258.

The majority of the welled fishing vessels used in both fisheries were built in Connecticut at such ports as Mystic and Noank. Southern fishermen prized Noank smacks and regarded them as well-built, staunch, and able. Noank historian Edward E. Knapp has noted that Noank sold many smacks south and that the ports of Charleston, Savannah, Havana, Key West, Mobile, Pensacola, and Galveston "bought all they could get hold of . . ." Knapp claimed that this "emptied Noank of familiar vessels" which "gave much more work to the shipyards, and kept the people busy and happy."[17]

The northern Gulf Coast fishery took advantage of shipping opportunities provided by affordable ice, steamer, and railroad freight rates. Snapper wholesalers developed inland consumers and rapidly grew, while Pensacola emerged as the marketing center. The success of the industry stressed red snapper populations and resulted in a shift to more distant fishing grounds in deeper waters. Snappers caught at depths greater than twenty fathoms died in live wells, rendering this preservation method unsuitable for the fishery after 1880. Live wells fell from use, and fishermen used ice to preserve their catch on the fishing vessel.

The red snapper industry's rapid change from live wells to ice preservation in the early 1880s resulted in a transition of fishing vessel type. Once southern New England well smacks fell from favor, the industry began to use northern New England tight bottomed

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17 Edward E. Knapp, "The Smacks of Noank" Original unpublished manuscript, Edward E. Knapp Collection, G. W. Blunt White Library, Mystic Seaport Museum Inc, n.d.

fishing schooners. Wholesale snapper dealers imported New England tight bottomed schooners of varied style and ages for the vessel fishery, with the result being a diverse fleet of deep draft American fishing schooners. Vessels both in and out of style in New England found their way into the snapper fishery.

J. W. Collins canvassed the snapper fishery in 1885 and collected information which shows the Pensacola fleet in a transition from well smacks to larger tight bottomed vessels. Of the fifteen smacks known to have been fishing for snapper on the northern Gulf Coast in the 1884-1885 season, ten were built in Connecticut, two in Maine, one in Massachusetts, one in Mississippi, and one in a place unknown.[18] Eight of the Connecticut smacks were built in Noank, one of the most active smack building areas in the country. Among the northern Gulf of Mexico fleet were smacks constructed by well known Noank builders such as the James A. Latham and Company and the R & J Palmer Yard. By 1884 most of the Connecticut built smacks that were imported into the northern Gulf of Mexico red snapper fishery were schooners between twenty and forty-five tons gross (see Appendix ?).[19]

The exact character of well smacks brought to Florida by Connecticut smackmen in the 1820s is elusive; but they are thought to

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[18] Collins, "Report on the Fishing Grounds," 284-285.

[19] Regrettably, the majority of the vessels listed in Appendix A are those smacks cited in the *Mystic Press* (See Table 1) as operating out of Key West and those in service in the 1880s; the list lacks many of the vessels that kept New England home ports and wintered in the Gulf fishing for red snapper.

have been similar to the Noank sloop type as illustrated by Howard I. Chapelle's drawing of the Noank smack sloop *Manhattan* (see Figure 7). Examples of Noank sloops are also elusive; but apparently two different varieties of Noank sloops were common in southern New England fishing industries before the turn of the century. The first type was a small inshore craft which served primarily as a lobster boat.[20] The second was a larger, deep draft offshore type, employed in the southern New England hand-line fisheries and lobster trade. The latter type was often taken south by Connecticut smackmen to engage in the southern market fisheries and is best illustrated by the sloop smacks *Manhattan* and *Mars* (Figures 7 and 8).[21] James A. Latham & Company, of Noank, Connecticut, built the *Manhattan* in 1850.[22] According to Howard I. Chapelle she was built when the "large sloops were beginning to be replaced with schooners in the New York fisheries, and [she] represents the final development of the Noank seagoing sloop model."[23]

An example of a Noank schooner is depicted by the schooner *Mary E. Hoxie* (Figure 9). She was built in 1868 in Noank, Connecticut, and remained registered there until 1891, when her home port was changed to Pensacola, Florida, at twenty three years of

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[20] Paul Stubing, Maynard Bray, and Meg Maiden, "The Evolution of the Noank Lobsterboat," *Woodenboat*, March/April 1986, 42-47.

[21] The identification of the smack *Mars* in Figure 8 was supplied by Paul Stubing.

[22] Peterson, *"Mystic Built,"* 140.

[23] Chapelle, *Watercraft Collection*, 267.

age. She was a clipper bowed fishing schooner which measured 43.9 feet in length, 17.8 feet in breadth, and 7.1 feet in depth of hold. The *Mary E. Hoxie* had a marked sheer, and the clipper bow lacking head rails. The trail boards and trail knees reinforced the clipper bow, over which was a pole bowsprit. It is interesting to note that the *Hoxie* had no catheads. She was characteristic of the Noank smacks possessing two sets of post like vertical cleats. Each bitt consisted of two post: one outside the hull, and the other inside the bulwarks, with both fastened with through bolts. Smaller Noank smacks displayed only one set of these bitts.[24] The *Mary E. Hoxie* had three lower working sails, main, fore, and a jib. In Figure 9 she has a main gaff topsail set.

The *Mary E. Hoxie* (Figure 9) compared with the "Pensacola Fishing Schooner" (Figure 10) (illustrated in J. W. Collins' 1885 report on the red snapper fishery) are very similar in appearance. The rigging is nearly the same, with the major difference being that the Pensacola schooner lacks a fore topmast. With respect to the hull, both vessels have the same style clipper bow and lack both head rails and catheads. The trail boards are similar as well. It would not be unreasonable to speculate that the illustration of the "Pensacola Fishing Schooner" was made using one of the many Noank built red snapper fishermen as a subject.

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[24] The bulwark bitts of the Noank vessels can also be seen on Maine built fishing schooners such as the *Sarah L. Harding* shown in Figure 23.

The lines plans of the schooner *Annie B.* illustrate the hull shape of a Noank schooner (Figure 11). R. & J. Palmer built her at Mystic, Connecticut, in 1859. The dimensions of the model are 47'-9" between perpendiculars, 15'-8" molded beam, and 6'-9" molded depth. The lines of her half model shown in Figure 11 show a sharp schooner with a moderate sheer, flush deck, straight keel, and almost no drag. The sternpost rakes eight degrees, and the transom rakes forty seven degrees from lines plumb to the keel, and there is no overhang aft between the stern post and transom. Her midship section shows a relatively straight steeply rising floor with some hollow, round bilges and tumblehome topsides. The entrance is long and sharp with some hollow abaft the forefoot.

It is not known if the *Annie B.* ever participated in the red snapper fishery, but schooner smack *Emma L. Lowe* was built specifically for the Key West—Havana Market Fishery. Mr. William A. Albury built the *Emma L. Lowe* in Key West, Florida, in 1875 for John Lowe Jr., a Key West native who employed the smack in the snapper and grouper fishery She was described by J. W. Collins as:

> . . . a caravel built, keel craft, with a good sheer, broad beam, and a reasonable amount of depth. She has a sharp bow, flaring somewhat above water; a recurved slightly raking stem; long projecting cutwater; high rising floor (the floor timbers of the midship section being nearly straight from the garboard to the turn of the bilge); rather quick turn to the bilge; a long lean concaved run; slightly overhanging counters; a deep, square stern, the later being somewhat thinner at the sides than in the center. The stern-post only has moderate rake, and the vessel has less drag than the average fishing schooner of New England. The center of buoyancy is about midship, and the lines are well calculated to produce a fair sailing vessel, as well as one that would be eminently seaworthy in heavy weather; qualities that are in the highest degree desirable in a fishing schooner, and which this smack is reputed to possess in a high degree. She has a flush deck, a roughly-finished underdeck forecastle, where cooking is done and part of the crew sleep; a trunk cabin aft, the later

being large in proportion to the size of the vessel, while the finish is precisely the same as the prevailing style of the New London smacks."

The Lowe is rigged as a two-masted schooner, with a long fixed bowsprit and a single topmast. She carries no flying-jibboon. Her mast are supported by two shrouds on a side. She sets five sails, namely jib, foresail, mainsail, main-staysail, and gaff topsail. The arrangement of the sails, as well as their cut, is the same as that on the new England fishing schooners of the same class, and is so generally understood that a detailed description seems unnecessary. The ballast is chiefly iron. The following material was used in the construction: Timbers of maderia; beams, outside planking, ceiling, and spars of yellow or hard pine; deck of white pine; fastenings chiefly copper. She is 46.46 tons register, and cost to build and fit for sea $10,000. The following are the principal dimensions: Length, over all, 66 feet; on keel, 58 feet; extreme beam, 20 feet; width of stern, 15 feet; depth of hold, 8 feet; depth of keel 15 inches; draught, aft, 8 feet, forward 6 feet; height of bulwarks, 20 inches; length of trunk-cabin, 12 feet; width of same forward end, 10 feet, aft end, 9 feet. Spars: Bowsprit, outside, 19 feet; foremast,60 feet; mainmast, 61 feet; main topmast 25 feet; main boom 42 feet.[25]

Mr. William A. Albury built a slightly smaller sister of the *Emma L. Lowe* for John Lowe Jr. in 1875. This schooner smack, the *City of Havana,* also fished in the Key West—Havana Market Fishery (Figure 12). Howard I. Chapelle drew her lines plan and sheer profile from her half model and described her hull:

The half model shows a flush -decked clipper fishing schooner having a strong sheer, straight keel, raking post with deep V-transom set at a very sharp rake and flat athwartships, the stem rabbet raking and flaring outward and adorned with a long, pointed head. The midsection is about mid length, with steeply rising floor, a high easy bilge, and a slight tumble-home in the topside. The entrance is long and sharp and the run fine and long.[26]

The scale of the half model is one half an inch to the foot, and Chapelle projected that the vessel was approximately "61 feet over the rails, 55 feet 4 inches between perpendiculars, 18 feet 3 inches

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[25] Chapelle, *Watercraft Collection*, 213.

[26] *Ibid.*.

moulded beam, about 6 feet 9 inches depth of hold, and drawing about 7 feet 6 inches of water at the post and 6 feet 10 inches forward."[27]

Smacks in the market fisheries used two types of live wells, the "decked well" and the "box well." Decked wells were distinguished by having two watertight bulkheads, at either end, with a heavy deck laid over them, like the Noank schooner's well. Box wells had no deck and were basically pyramidal in shape.

Examples of the decked wells are seen in the drawings and plans of J. W. Collins' drawing of a well-smack employed in the fresh halibut trade (Figure 13), the drawing of a "New York Fishing Smack," in Henry Hall's *Shipbuilding Industry of the United States* (Figure 14), and Howard Chapelle's plans for the smack *Glide* (see Figure 15).

Captain J. W. Collins offered the following description of the decked well in the schooner smack *Emma L. Lowe*:

> The well . . . occupies the midship section of the vessel; it has heavy strong bulkheads at either end, and another in the middle, the former rising to about a foot of the load-water line. On the top of these bulkheads is laid the well deck, made of thick plank, the outside of which usually goes through flush with the outer planking, this style of construction technically known as with the "primings out." The entrance to the well is through the "curb" or "funnel," an aperture 3 or 4 feet long by 2 or 3 feet wide at the deck, but much longer below, and which is enclosed in strong planks extended from the well deck to main deck, and securely fastened. There is no ceiling in the well, and as a rule, only half the number of frames, . . . the bulkheads supplying . . . the necessary strength and rigidity. The outside planking are perforated with the requisite number of holes to secure proper circulation of water . . .[28]

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[27] *Ibid.*.

[28] Collins, "Report on the Fishing Grounds," 260-261.

According to Collins the above description not only applied to the *Emma L. Lowe*, but to all the vessels of her class. Collins further stated that the first well smacks used in the Key West fisheries were "mostly, if not wholly, from ports on Long Island Sound, of which the New London vessels (sloops and schooners) may be taken as a type." This type of vessel was so well suited for the area's fisheries that a considerable number of the smacks owned in Key West were built in Connecticut. The tropical climate of Key West was particularly hard on the the New England vessels, and it was later found that native Florida woods were less inclined to rot. As a result, the New London vessels were copied by Key West builders, using local lumber.[29]

Figures 16-17 illustrate an additional example of a Noank schooner. The plans are measured drawings from a Noank well smack model in the collection of the fisheries Museum in Bergen, Norway.[30] The plans show a schooner 62 feet in length overall, 18'-7" a maximum beam, and a 6'-10" draft. This model is of particular interest because it provides evidence of the design and construction of a decked well.

Another vessel that had a decked well was the *Elisha A. Baker*, built at Noank in 1848. She was 64 feet in length, 17 feet 10 inches in breadth, with an 8 foot depth of hold. Her well was 18 feet long, 5

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[29] *Ibid.*.

[30] R. C. Allen prepared the drawings of the Noank Well Smack in Figures 16 -17 in November of 1987 (Plans 203-A-C Mystic Seaport Museum). The Model was constructed by H. C. Chester at Noank Connecticut and sent to International Fisheries Exposition at Berlin, Germany in 1880 as part of the United States Fish Commission exhibit. The model is now in the collection of the Stiftelsen Fiskermuseet at Bergen, Norway. The scale of both the plans and the model are one-half inch to the foot.

feet high, and was accessed by a curb that was four feet square on deck, and lengthened to 8 feet by 4 feet at the well deck.[31]

Box wells apparently were not used in large smacks before the 1850s; they seem to have been more common in boats, small smacks, and later appeared in larger sloop and schooner smacks. This type also became common in the steam smacks used in the Maine lobster industry. The lack of a well deck presented definite advantages. In box wells, the capacity was usually larger, and the fish or lobsters were easier to dip out with a net. With decked wells many times smacks had to be grounded at a dock with the ebbing tide in order for the catch to be removed. Also in box wells, the fish or lobsters were not subjected to being thrown against the well deck by the upward force of the water when the vessel settled into a sea.[32]

From the existing information, it is evident that two styles of box wells were used—the "plumb foundation box well," and the "canted box well." The "plumb foundation box well" had forward and after bulkheads, plumb to the keel, that were built up to the level of the "well-log." Well-logs or "bed-logs" were the lower timbers of the well's sides, and notched to fit the frames, which ran through the well. The bulkheads and the well-logs, usually made of oak, formed a foundation upon which the pyramidal structure of the well was built (Figure 18). In the drawing the lower three timbers of the bulkhead

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[31] Hall, "Report on Shipbuilding," 18.

[32] John N. Cobb, "The Lobster Fishery of Maine," *Bulletin of the United States Fish Commission for 1899* (Washington: Government Printing Office, 1900), 251.

would be through bolted to the keel, and drifted edgewise; the bedlogs are through bolted to the frames. The upper well planking (of which only two strakes on top of the forward bulkhead are shown) would be drifted into the corner post and drifted edgewise. Examples of the "plumb foundation box well" are found in the Chapelle's drawings of the welled schooner smack *City of Havana* and the Noank sloop smack *Manhattan* (Figure 7).

In the second style, the forward and after bulkheads extended in the same plane from the inside of the vessel's planking to the vessel's main deck. The bottom-most pieces were canted to lie in the proper plane and molded to fit the inside of the bottom planking. As a result, the "canted box well," excluding its bottom, had four side faces as opposed to six in the "foundation box well." Regardless of the style, the forward and after bulkhead's lower portions were built up to fit the well logs and were fastened to the keel with through bolts headed over clinch rings. "Canted box wells" are illustrated in the construction plans and drawings of the schooner *Grampus* (Figures 19-20) and the "Captain Collin's Model" (Figure 21).[33]

From the foundation, the pyramidal portion was built up along oak corner posts to the under side of the deck. Usually fastened to the bulkhead or the adjacent frame, the corner posts angled up to the main deck, and were fitted and fastened to the outer sides of the carlings or deck beams at the well's entrance. Pine was commonly

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[33] J. W. Collins, 'Report on the Construction and Equipment of the Schooner *Grampus*," *Annual Report of the United States Fish Commission for 1887-1888* (Washington: Government Printing Office, 1891).

used to plank the sides and bulkheads above the foundation. The planks were fastened to the corner posts with drifts or screw bolts. The planking was always caulked and often splined as well.[34]

In summary, southern New England fishermen introduced into Gulf of Mexico fisheries the well smack—a type of vessel equipped with a free-flooding box or well that was able to deliver a live catch to market. Analyses of historical research data indicate that vessel changes in usage and morphology of the Gulf of Mexico red snapper industry were in response to a variety of causes and effects. Connecticut smackmen developed large seagoing smacks in response to the need to travel farther and farther north to acquire lobsters in areas that had not been overfished. When Connecticut smackmen came south to fish the Gulf Coast fishing grounds they used sloop smacks, but it became evident that schooners offered better features than sloops: greater speed and stability; more ease in handling sails, with less crew needed to work; larger live wells for bigger catches; greater potential profit, and higher pay for crews. The ability of a schooner to fish efficiently and effectively offshore allowed wrecking to become a suitable means of supplementing income.

The Connecticut smackmen also introduced the red snapper fishery and well smacks to northern Gulf of Mexico ports, where the fishery grew into a wholesale industry. Over-utilization of the fishing grounds forced fishermen to seek red snapper farther from the northern Gulf Coast markets and resort to fishing deeper waters. Red

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[34] *Ibid.*

snapper caught from depths of greater than twenty fathoms could not be kept alive in well smacks creating the need for a different type of fish preservation. Consequently, ice preservation the fishermen introduction ice preservation which led to the usage of a diverse type of watercraft—tight bottomed vessels.

TIGHT BOTTOMED VESSELS

Northern New England Fishing Schooners

The northern New England offshore fisheries of Boston, Gloucester, and Portland supplied the majority of tight bottomed schooners used in the northern Gulf of Mexico red snapper fishery until the early 1900s. The schooners generally possessed the characteristic construction and design details of the areas and time period in which they were built; but sharp, deep draft, full keel vessels were the rule.[1] J. W. Collins described the 1885 red snapper fleet:

> They are mostly of small size compared with the larger class of sea going fishing schooners now employed from Maine and Massachusetts, and, as a rule, are quite old. Some of them were formerly employed in the Gloucester fisheries, and others from ports on Long Island Sound, or the coast of Maine. A few -- generally of the smallest class -- have been built in the Gulf Ports. Coming from so many sources, there is a marked diversity in these vessels, and no one of them could be described as characteristic of this special fishery.[2]

The diversity Collins noted in the 1885 red snapper fleet can be explained by a transition from welled to tight bottomed vessels and the constant need for larger vessels as the fishermen resorted to more distant fishing grounds. The southern New England vessels in the fleet are a result of the industry's origin as a smack fishery dominated by Connecticut transient fishermen. After the commercialization of the fishery and the overfishing of the stocks in shallow water, fishermen changed to ice preservation to enable them to use the deep water and more distant resources. After the transition to ice as a

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[1] Collins, "Report on the Fishing Grounds," 283.

[2] *Ibid.*

means of catch preservation, the owners of the large snapper firms shifted to northern New England vessels from Massachusetts and Maine.

Owners purchasing vessels for the red snapper industry were influenced to some degree by the style of fishing schooner popular in the northern New England offshore fisheries. In many cases southern fish companies bought what was available, in the size range they needed, and for the most part such schooners suited the company's wants and needs. Size, carrying capacity, fishing range, speed, initial investment, crew size, and cost of operation were controlling factors in the purchase of a fishing schooner. As the industry resorted to more distant fishing grounds, faster schooners with greater fishing ranges and carrying capacity became more desirable. Larger schooners were purchased once they became necessary to fish more distant banks. Simply, the greater that the distance was to the fishing banks, the more important was speed and carrying capacity of a vessel. When passages to and from the banks became better than two hundred miles in the mid-1880s, it was necessary for the schooners to deliver larger fares to market. The larger catch offset the extra time spent fishing and in transit.

The speed of snapper fishing schooners could not be compromised in return for carrying capacity. It was important for the vessels to make good time to and from the snapper banks. The duration of a vessel's voyage was restricted to the length of time she could preserve her fish. Because of the necessity of speed, southern

vessel owners, when purchasing a New England fishing schooner, bought vessels that had a good reputation for speed.

Captain Collins in his 1885 description of the Pensacola red snapper fleet noted that vessels in the fishery were generally quite old, with such a condition appearing to have been standard in the fishery throughout its history. In the 1884-1885 fleet the average age for the vessels was 17.92 years. Such an average vessel age remained consistent in the fleet through the mid-1920s and beyond. As seen in Table 6, the average age of fishing vessels in the Pensacola fleet ranged from 16.9 to 22.15 for the selected years. The mean age for each fleet's yearly average age is 18.75 years. These figures all have a large standard deviation that range from approximately ten to twelve years, indicating a great variation in the age for vessels in the Pensacola fleet. Further the mean age at which New England fishing schooners were sold south was approximately 14 years old.[3] The standard deviation for this value is 9.6, which also indicates that vessels sold south varied significantly in age.

The gross tonnage of New England fishing schooners in a scatterplot plotted with the year that the vessels were imported into the red snapper fishery illustrates the trend of introducing increasingly larger watercraft into the industry (Figure 22). The plot's regression statistics show an upwards slope of 1.1 gross tons per year,

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[3] This figure excludes vessels that were built for the red snapper fishery in New England.

a correlation coefficient of 0.77002 calculated with the forty-one cases plotted from the data base.

When the plot is controlled by the state in which each vessel was built, an additional pattern becomes apparent. The earlier Connecticut built vessels imported into the industry no longer showed up after 1891; whereas larger Massachusetts and Maine built schooners became the dominate craft imported into the northern Gulf of Mexico red snapper industry. The curtailment of the Connecticut built vessels as previously mentioned was because of the transition to ice preservation; furthermore the increase in size was driven by the fishermen's need for larger fishing vessels with longer fishing ranges and greater carrying capacity as the fishermen resorted to more distant fishing grounds.

When snapper fishermen began to replace well smacks in the 1880s, the New England schooners purchased by the northern Gulf of Mexico red snapper fishery were almost exclusively clipper fishing schooners that varied in style and that were built in the 1860s and 1870s. These schooners evolved as a result of the expansion of the Georges and Grand Banks mackerel and market fisheries, which required the fastest available vessels. The result was a class of relatively shoal draft, beamy fishing schooners that carried large amounts of sail. These vessels carried large jibs that extended from

Table 6. Summary of the enrollment information for Pensacola fleets for selected years from 1884 to 1925.

1884 (16 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	33.09	31.92	54.88	17.24	6.17	1866.08	17.92
Standard Deviation	17.64	17.22	12.57	2.60	1.35	11.72	11.72
Valid cases	16	15	15	15	15	13	13

3.2: 1 length to beam ratio

1899 (33 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	36.36	33.75	59.04	17.47	6.51	1876.85	22.15
Standard Deviation	17.94	17.28	13.73	3.08	1.70	12.62	12.62
Valid cases	33	33	33	33	33	33	33

3.4: 1 length to beam ratio

1911 (43 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	45.62	36.73	65.49	19.10	7.49	1893.26	17.74
Standard Deviation	18.17	17.91	13.74	2.65	1.72	11.37	11.37
Valid cases	43	43	43	43	43	43	43

3.4: 1 length to beam ratio

1917 (47 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	58.16	46.83	72.55	20.57	6.87	1900.00	17.00
Standard Deviation	23.62	18.62	17.06	2.41	3.39	10.31	10.31
Valid cases	47	47	47	47	47	47	47

3.5: 1 length to beam ratio

1921 (50 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	60.00	44.49	73.10	20.26	8.37	1899.26	21.7
Standard Deviation	24.16	18.99	14.81	2.70	1.72	10.84	10.84
Valid cases	50	50	50	50	50	50	50

3.6: 1 length to beam ratio

1925 (39 vessels)

Variables	Gross	Net	Length	Breadth	Depth	Year built	Age
Mean	64.75	43.91	71.48	20.48	8.85	1908.18	16.8
Standard Deviation	24.03	18.51	18.22	2.87	1.47	12.38	12.38
Valid cases	39	39	39	39	39	39	39

3.5: 1 length to beam ratio

the end of the bowsprit to the foremast. Unfortunately schooners of this class, although endowed with a high initial stability, stood very poor chances of surviving a knockdown.[4]

Consequently, clipper fishing schooners were the subject of reform efforts during the 1880s, and many changes were made in the models, rigs, and fittings of New England fishing schooners. Howard Chapelle described the resultant trend as the adoption of "deeper, more seaworthy and weatherly vessels which were yacht-like and fast on all points of sail."[5] The major difference in rig was the adoption of a jib stay sail (jumbo) which led to the stem or the after end of the bowsprit. Figure 23 illustrates contrasting examples of schooners built in the 1860s and 1880s at the dock of the Warren Fish Company in Pensacola, Florida. To the left is the *Sarah L. Harding* and to the right is the *Halcyon*. The *Sarah L. Harding*, built at Phippsburg, Maine, in 1866, had far greater beam aft and a broader transom than the *Halcyon* and represents one of the older shallow draft, beamy, mackerel seiners of the 1860s and 1870s. The *Halcyon*, built in Essex, Massachusetts, in 1888 was one of the plumb stem models that found fashion in the late 1880s as a result of the fishing schooner reform efforts of Captain J. W. Collins and Massachusetts naval architect J. Dennison Lawlor.[6]

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[4] Albert Cook Church, "Evolution of the American Fishing Schooner, Part II," *Atlantic Fisherman*, November 1925, 8.

[5] Howard I. Chapelle, *The American Fishing Schooners 1825-1935*, (New York: W. W. Norton & Company, 1973), 176.

[6] *Ibid.*, 570.

Nationally, clipper fishing schooners reached a peak in popularity with a style called "*Fredonia* models." These fishing schooners had the same general profile as the fishing schooner *Fredonia*, which was designed by Edward Burgess and built in 1889. Identifying characteristics of these schooners are a rockered keel, a cutaway forefoot, and a gammon knee head, all seen in the *Fredonia*.[7] Notable schooners of this type in the Northern Gulf coast fleet were the *Ida S. Brooks*, *Lottie S. Haskins*, *Caviare*, and *Clara R. Harwood*, all owned by E. E. Saunders and Co., of Pensacola, Florida.

The *Lottie S. Haskins* was built in 1890 by the Tar and James Yard of Essex, Massachusetts, and designed by the well-known designer of fishing schooners, George M. McClain (Figure 24). The *Lottie S. Haskins* is an excellent example of a "Fredonia model" schooner used in the red snapper fishery. The register dimensions of the *Lottie S. Haskins* were 70.5 feet in length, by 20.4 feet in breadth, and by 8.5 feet in depth. In comparison with the *Fredonia*, which had a register dimension of 101.9 feet in length, by 23.6 feet in breadth, and 9.1 feet in depth, the *Lottie S. Haskins* was relatively small. Howard Chapelle described her hull shape:

> She had a moderate and graceful sheer, straight keel, with marked drag to about midships, then rockered to the forefoot, which was formed with a marked gripe. The sternpost was rather short and much raked. The counter was short and the strongly raking transom was quite deep, but the extreme rake of the transom prevented it from having a heavy appearance. The stem rabbet flared and raked strongly, the gammon knee was quite short and the billet small. As was then becoming the fashion, she had bowsprit shroud spreaders and the iron head rails supposed to have been introduced by *Fredonia*. The entrance was long,

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[7] *Ibid.*, 175-176.

> with a marked hollow in the forefoot; and the run was straight in the buttocks but not very long; the midsection being at the great beam. This section was formed with a moderately hollow floor having sharp rise, giving a high and somewhat hard turn of the bilge. There was a good deal of tumble home in the topside abaft midlength.[8]

The lines and sail plan of the *Lottie S. Haskins* are illustrated in Figures 24 and 25.

The schooners *Caviare, Clara M. Littlefield, Clara R. Harwood, Ida M. Silva* (Figure 26), and *Lottie S. Haskins* belonged to a class of relatively small vessels known as "shore vessels" in New England. These vessels fished in the New England market fisheries on near shore grounds, and usually made two or three day trips. Vessels in the shore fishery had a reputation of making quick trips with short stays in port, with idea being to make a larger number of relatively smaller catches per year.[9]

These vessels, being in the fifty-five to sixty ton range, were only small by New England standards. In 1899, E. E. Saunders and Company purchased the *Lottie S. Haskins* (58-tons), and in 1903 acquired the *Caviare* (63-tons) and the *Clara M. Littlefield* (63-tons).[10] During this period of the red snapper fishery's history, it was typical for vessels of this size range to enter the industry. At this time fishermen focused their maximum fishing effort on the Campeche

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[8] *Ibid., 177.*

[9] Gordon W. Thomas, *Fast & Able: Life Stories of Great Gloucester Fishing Vessels* (Gloucester: Gloucester 350th Anniversary Celebration, Inc., 1973), 13-15; Andrew W. German, *Down on T Wharf, The Boston Fisheries as Seen Through the Photographs of Henry D. Fisher* (Mystic Connecticut: Mystic Seaport Museum Inc., 1982), 64-65.

[10] Fishing Masters' Association, *Fishermen of the Atlantic, 1911*, 139.

Banks. Fish populations in this area had not become stressed from overfishing, and red snapper wholesale dealers expanded their sales and fishing fleets in order to exploit this situation. Red snapper fishermen considered these small schooners to be first-rate offshore fishing vessels and made trips in them to Campeche lasting up to a month in duration.

Captain George Melvin McClain of Rockport, Massachusetts, designed a number of schooners that were used in the red snapper fishery. In order to fish the Campeche Banks, E. E. Saunders Company of Pensacola Florida purchased the *Lottie S. Haskins, Clara R. Harwood, Caviare, Clara M. Littlefield, Virginia,* and *Mary E. Cooney*—all McClain designed schooners built between 1890 and 1903.[11]

Another *Fredonia* model schooner in the red snapper fishery was the *Ida S. Brooks* (Figure 27). Thomas A. Irving, a reputable designer and builder of fishing vessels in Essex and Gloucester, likely designed the *Ida S. Brooks*, and Hugh Bishop built the schooner at Gloucester, Massachusetts, in 1901.[12] The *Ida S. Brooks* was purchased by the E. E. Saunders Company between 1911 and 1915. The register dimensions of the *Ida S. Brooks* were 80.0 feet in length, by 21.6 feet in breadth, and by 8.6 feet in depth. She was a seventy-two ton vessel which was typical of the schooners introduced into the snapper fishery during the period between 1900 and 1915.

Howard Chapelle described *Ida S. Brooks'* hull shape as follows:

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[11] Chapelle, *American Fishing Schooners*, 157-158.

[12] *Ibid.*, 217.

> She had a handsome sheer, a straight keel rabbet with some drag from the sternpost to under the mainmast, then carried forward in a long, gentle sweep to the stem rabbet which was curved and raking. A slight swan-breasted cutwater with billet, scroll, iron head rail with iron strap brace athwartship, was employed; the sternpost raked sharply, and the counter was rather long with the tuck well submerged ending in a sharply raking elliptical transom. The entrance was long and sharp with a slight hollow in the forefoot. The run began under the mainmast with a marked straight in the buttocks. The midsection had hollow in the garboard with the floor sharply rising and carried well outboard. The bilge was firm with no tumble home in the topside until about abaft the mainmast.[13]

A rigger's sketch is also reproduced from Chapelle's book, *American Fishing Schooners*, which illustrates the dimensions of the rig for the *Ida S. Brooks* (Figure 28).

Another vessel sold south into the red snapper fishery during the same time period as the *Ida S. Brooks* was the schooner *Emily Cooney* (Figure 29). Both schooners entered the snapper fishery shortly after 1911 and are of distinctly different styles. The *Emily Cooney*, was an Essex built schooner launched from the yard of Oxyner and Story in 1902.[14] Howard Chapelle describes the schooner as:

> . . . a very handsome schooner having a graceful, strong sheer, well-rockered keel and keel rabbet, carried in a long sweep to a curved, raking stem having a very short bow overhang for the *Cooney's* period. The sternpost raked sharply and the counter was long, partly submerged, with a small elliptical sharply raking transom. The entrance was sharp, long, and slightly convex. The run was rather short with straight buttocks. The mid section showed a slight hollow in the sharply rising floor, a slack bilge, and some tumble home in the topside.

The major differences between the two vessels is that the *Ida S. Brooks* had the gammon knee forefoot of the *Fredonia* model

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[13] *Ibid.*

[14] Lewis H. Story, "A Catalog of the Vessels, Boats and Other Craft Built in the Town Of Essex, 1870 through 1890," [Essex, Mass.], 1984.

schooners, less rocker in the keel, and a very sharp entrance and hollow in the forefoot. Further, comparison of the midship section shows that the *Ida S. Brooks* had a marked hollow in the garboard with a sharply rising floor, whereas the *Emily Cooney* had only slight hollow and a sharply rising floor. Consequently the *Emily Cooney* had a greater depth of hold than the *Ida S. Brooks* and was likely a better carrier. Conversely, the *Brooks* appears to be a faster schooner, a judgment based on comparison of Chapelle's lines plans. The *Emily Cooney* served in the red snapper industry until 16 August 1916 when she foundered on Alacran Reef on the Campeche Banks.[15]

Another New England type fishing schooner in the northern Gulf fleet were Indian Headers. The term originally described a series of vessels designed by Thomas F. McManus, between 1898 and 1904, all had round or spoon bows, short overhangs, and spiked bowsprits. The first of these vessels had Indian names, and the term described their bow profiles, even though many were launched without Indian names.[16] Indian Headers of mention in the northern Gulf of Mexico fleet were the *Seaconnet* (later renamed the *Carrie B. Welles), James Esther, Yakima,* and *Fish Hawk.* The *Yakima* and *Seaconnet* were both designed by McManus and were owned by E. E. Saunders and Co.

The knockabout fishing schooner was another New England type present in the northern Gulf of Mexico red snapper fleet. Knockabout

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[15] U.S. Department of Commerce and Labor, *List of Merchant Vessels of the United States, 1917* (Washington: Government Printing Office, 1917).

[16] Chapelle, *American Fishing Schooners,* 234.

schooners had no bowsprit; instead the vessel's fore body was extended to allow the head sails to be handled from deck and to balance the rig. The *Washakie* (Figure 30) and *Virginia* (Figure 31) were two New England knockabouts that were sold south into the red snapper fishery.

In 1917, seventy-six percent of Pensacola's fleet were built in New England, with seventy-two percent of these vessels built in Essex and Gloucester.[17] Noted maritime writer, Fredrick William Wallace, nicknamed Pensacola as the "Gloucester of the South" due to both cities' similar offshore fishing industry.[18] Both ports had the most important market and the largest fleet in the offshore fisheries for their respective coast. Pensacola's fleet looked like its counterpart's due to the large number of Gloucester schooners sold south.

In addition to importing New England schooners into the red snapper fishery, southern wholesale fish dealers commissioned New England naval architects and builders to design and construct new vessels for this southern industry. In Galveston, Texas, the Gulf Fisheries Company hired the well known New England naval architect Benjamin B. Crowninshield to design nine additions to the company's fleet and commissioned Essex, Massachusetts, builders to construct them (Table 7). Crowninshield designed two groups of schooners for Captain J. M. Munn of the Gulf Fisheries Company Edwin H. Oxner

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[17] Fishing Masters', *Fishermen of the Atlantic, 1917*, 128-130.

[18] Frederick William Wallace, "The Red Snapper Fishery of the Gulf of Mexico," *Fishing Gazette Annual Review*, 1923, 36.

and Lyndon J. Story yard (O&S) built the first group of five vessels in 1902. The vessels bore the names *Fortuna, Aloha, Cuba, Dixie, Elmo,* and *Bonita.* Munn ordered four larger schooners to be built from Crowninshield designs in 1903. The Author D. Story Yard (ADS) built the *Hatteras;* the Oxner and Story Yard built the Cape *Horn,* and *Good Hope* in 1903; and the James and McKenzie yard (J&McK) built *Mendocino* in 1903.[19]

An article in *The Rudder* listed the scantling for the smaller vessels built in 1902:

> The keel and stem are sided 8 inches; the frames molded 6-1/2 inches at heels, 5 inches at heads, sided 12 inches, and spaced 24 inches on centers; the planking 2 inches thick on the under body and 2-1/2 inches on the topside, to stand the ware of the boats bumping alongsides. The ballast is all inside and is made up of about 20 tons of stones and cement. The vessels are all coppered to well above the waterline, and cost about $7,500 complete with equipment.[20]

The Gulf Fisheries Company also used the New York design firm of Cox and Sevens to prepare plans for the knockabout auxiliary fishing schooners *Arcas* and *Yucatan,* which were built by the Leonard McKenzie Yard of Essex, Massachusetts, in 1912 (Figures 32-34). The two schooners were 107 feet and nine inches over all, seventy-six feet and nine inches on the waterline, twenty-two feet and three inches in

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[19] Story, "Catalog of Vessels." The plans for all the above vessels and another vessel built for Captain Munn, the *Mendocino,* are in the collection of the Peabody Museum Salem. Additionally, catalogue cards for the B. B. Crowinshield Collection at the Peabody Museum indicate that Lenoard McKenzie built the *Mendocino.*

[20] "Sixty-Foot Fisherman,"*The Rudder,* [1903,]. The cited article with no attached source information was photo-copyed from the Albert M. Barnes Papers, The Mariners' Museum Library, Newport News Virginia.

Table 7. Crowninshield Schooners Designed for Gulf Fisheries Co.

Rig	Name	Gross	Net	Length	Bdth	Depth	Yr. Blt.	Builder
sch.	*Bonita*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Aloha*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Cuba*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Dixie*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Elmo*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Fortuna*	44.0	44.0	72.5	19.6	8.6	1902	O&S
sch.	*Hatteras*	78.8	50.0	85.5	21.4	9.8	1903	ADS
sch.	*Good Hope*	77.0	51.0	86.2	21.3	10.0	1903	0&S
sch.	*Cape Horn*	77.0	51.0	85.5	21.3	10.0	1903	0&S
sch.	*Mendocino*	79.0	50.0	87.0	21.3	10.0	1903	J&McK

Source: Dana A Story, "A Catalogue of the Vessels Boats and Other Craft Built in the Town of Essex 1870 Through 1980," [Essex Massachusetts, 1984].

the beam, and had a thirteen-foot draft. Although yacht-like in appearance, the schooners were designed to be fast, able, good carriers with long fishing ranges. They made 500-mile passages from Galveston to the Campeche Banks and voyages of up to a month in duration. Cox and Sevens designed the vessels with pole masts. The architects reasoned that light air sails were not necessary because the vessels would make eight knots or better under power in calm conditions. Regardless of the plans, the vessels were fitted out with both fore and main topmast, light air sails, and ninety horsepower internal combustion engines that ran on either gasoline or diesel fuel.[21]

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21 "Fast New Schooners for 'Green Fishing,'" *Yachting*, August 1912, 108-109.

There was a general pattern of vessels entering the red snapper fishery that paralleled the evolution of New England fishing schooners. However, the red snapper fishery lagged behind the styles in New England and the character of the fleet was diversified by importing vessels of varying age during the same time period. Schooners entering the red snapper fishery averaged fifteen years in age, and the standard deviation of this mean value was approximately nine years. It is evident that the industry utilized a mixture of New England fishing schooners of varying styles and ages.

Southern Built Fishing Vessels

Since the early days of the red snapper industry, a few southern built vessels fished the offshore banks along with those imported from New England. Some of these vessels were adapted from other fisheries or trades, but fishermen copied New England offshore fishing vessels when building for the red snapper fishery. Copying New England designs was common in the southern market fisheries and had been done in Key West as described in the preceding chapter. As the red snapper fishery grew, it needed the services provided by the area shipyards including both repair and the construction of new fishing vessels, the latter which became common around the turn of the century.

The history of Florida shipbuilders serving the red snapper industry has received little attention. The west Florida shipyards near Pensacola, in both Santa Rosa County and Escambia County, have serviced and built vessels for the Pensacola red snapper fleets. The

1850 census reports three shipyards in Santa Rosa County—the firms of Joseph M. Bowers, James and Michael Fitzsimmons, and Peterson and Tell. By 1860 none of the three remained in business: Frederick G. Howard from Halifax, Nova Scotia, purchased the Bowers yard; Ollinger and Bruce established a yard in Bagdad, Florida, in 1858; and Frederick Axelson operated a small yard on East Bay.[22]

During the Civil War, shipyards in Santa Rosa County were either destroyed or looted. After the Civil War, Ollinger and Bruce and Axelson re-established their shipyards in Bagdad. Both the Hoodless Ship Yard and the Ollinger and Bruce Ship Yard served the red snapper fishery throughout the nineteenth century and into the twentieth. John O. Hoodless owned the Hoodless Ship Yard located in Milton. Ollinger and Bruce operated a shipyard and sectional dry dock in Bagdad where the company constructed, overhauled, caulked, and repaired a variety of vessels. Additionally, the Blackwater Foundry, owned and operated by W.F. and J.E. Creary in the 1880s, supplied engineering services, a foundry, and machine shop to meet the demand of local mills, shipyards, and steamboat operators.[23]

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[22] Personal correspondence with Nathan Woolsey, with a request to cite: Brian Rucker, "Blackwater and Yellow Pine," Ph. D. diss. Florida State University, 1990, 412-13, 423, 448, 470, 642-43, 667-68; Nathan Woolsey, "An Ollinger Generation: An Immigrant Experience in Civil War Reconstruction, and Bourbon Era Santa Rosa," Thesis (in progress) University of West Florida; Deborah Joy, *Initial Archaeological Summary of the City of Gulf Breeze, Florida* (Pensacola Office of Cultural and Archaeological Research, University of West Florida, 1988) 6, 14, 16-17, 20-21.

[23] Wanton S. Webb, *Webb's Pensacola Directory 1885-1886* (New York: Wanton S. Webb, 1885).

According to J. W. Collins, only the smallest members of the Pensacola fleet were locally built in the 1880s.[24] Silas Stearns reported that three locally built boats and vessels fished for snapper near Pensacola during the 1879-1880 season: the sloop *Wanderer*, sloop *Hope*, and schooner *Caroline Kage*. Two of these watercraft were small—the *Wanderer* measured approximately three tons and the *Hope* measured approximately five and a half tons. The *Caroline Kage*, at approximately twenty tons, was larger than the *Wanderer* and *Hope*. The *Hope*, the oldest of these vessels built in Pensacola in 1866; whereas the *Caroline Kage* was built in Pensacola in 1875. The value of the the *Caroline Kage in 1879* was estimated by Stearns to be $150 and she was owned by Richard Mundy who was also her master.[25]

Before the 1890s only a few small fishing schooners were built for the red snapper fishery in the Pensacola area. The *Caroline Kege* and the schooner *John D. Lustro* were the largest vessels known to be built in the Pensacola area for the snapper fishery before the 1897. The twenty-one ton *John D. Lustro* was built by an unknown shipbuilder in Bay Point, Florida, in 1884 and was chartered by the Santa Rosa Fish Company to fish for red snapper.

Andrew F. Warren hoped the local construction of fishing schooners for the northern Gulf of Mexico red snapper industry would become common. He wrote in his 1897 history of the red snapper

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[24] Collins, "Report on the Fishing Grounds," 283.

[25] Silas Stearns, "U.S. Fish Commission and Census of 1880, Statistics of Fishery Marine," field notes. Silas Stearns Collection, Special Collections, John C. Pace Library, University of West Florida, Pensacola Florida.

industry that "very recently [a fishing schooner of New England] design has been launched from a Pensacola shipyard and built of Florida woods, which it is believed will prove the pioneer of a large fleet, and . . . a new industry will grow up on Florida soil."[26] The vessel Warren mentioned was likely to be the *Silas Stearns* built in Milton, Florida, by John O. Hoodless.

At the turn of the century there was an increase in the building of snapper fishing schooners in West Florida. The Hoodless shipyard in Milton appears to have been the most active Santa Rosa County shipyard servicing the red snapper fishery. John Hoodless moved to Pensacola, Florida, to in the late 1850s to work at the Pensacola Navy Yard during the construction of the U.S.S. *Seminole* and U.S.S. *Pensacola.* Hoodless left Pensacola during the Civil War but returned with his family to Milton where he worked as a shipbuilder. In 1870 Hoodless and Richard Thackery purchased a shipyard in Milton, and after three years Hoodless purchased Thackery's portion of the business.[27] By 1909 John Hoodless had built six fishing schooners for the Warren Fish Company at his Milton yard. The *Chicopee*, a fifty-five ton schooner designed to fish the Campeche Banks, was launched in 1909.[28]

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[26] Warren, "The Red Snapper Fisheries," 332.

[27] Nathan Woolsey, "Notes on Milton's Shipbuilding Legacy: John O. Hoodless," *Santa Rosa Historical Society Newsletter*, Vol. 14, No. 4: November 1990.

[28] "Launching of the Chicopee," *Pensacola Journal*, 10 October 1909.

The *Chicopee* was considered to be one of the prettiest and staunchest vessels in the Warren Fish Company fleet (Figure 35). She was built of Florida oak, cypress, and pine, and before her first trip she was valued at $10,000.[29] The Warren Fish Company honored Captain Joe Caminiti with the job as her master, and he took the *Chickopee* to Campeche for her first trip on 12 December 1909. Captain Caminiti's maiden voyage on the *Chickopee* lasted eighteen days and he returned to Pensacola with 15,000 pounds of red snapper and grouper. Caminiti, praising the *Chicopee* as the "best boat I ever put foot on," claimed that she sailed thirteen knots in the heavy weather he experienced on the vessel's first voyage.[30]

Only after the turn of the century did southern built vessels enter the fleet to any significant extent in the Northern Gulf snapper fishery. This transition to building more vessels locally was a response to the expansion of the red snapper fishery after the fleet shifted its fishing efforts to Campeche Banks. These new schooners were copied from the many New England designed and built vessels then in the northern Gulf fleet. Fred Hunt remarked that the "Florida-built schooners were clipper-bowed, averaged slightly smaller than their Northern sisters; [and] had more sheer and flaring lines forward."

The Warren Fish Company also built schooners in their own yard at the foot of Baylen Street in Pensacola. In March of 1911, the keel of

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[29] *Ibid.*

[30] "'*Chicopee* is fine boat,' says Captain," *Pensacola Journal*, 31 December 1909.

a schooner was laid for Warren Fish Company at this location. According to an article in the *Pensacola Journal:* "John Alexander, foreman of the firm, was in charge of the construction, . . . and the plans and model [of the schooner] were supplied by him."[31] The *Culebra* was launched from this location in 1911 and is a possible candidate for this schooner's identity.

The *William Hays* was built at the Warren Fish Company the following year. Fredrick William Wallace described her as being "similar to the Gloucester fisherman type known as 'toothpicks' so called for their clipper stems and long bowsprits." She was built without auxiliary power, was rigged with a main topmast, and carried "mainsail, [fisherman] staysail, foresail, jumbo, and jib."[32] The *William Hays* measured sixty-nine tons gross, sixty-one tons net, 76.4 feet in length, 21.2 feet in the breadth, and 9.6 feet depth of hold. She was flush decked which was typical of the southern built schooners.[33]

According to a short note in the January 1924 issue of *Atlantic Fisherman*, two schooners built from the model of the *Mary E. Cooney* were near completion in Millville, Florida, and "were much admired by the fishermen" of the area.[34] These vessels are presently unidentified, but the *Lucky Strike* was likely to be one of them. She

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31 "New Fishing Smack Built Here," *Pensacola Journal*, 26 March 1911.

32 Wallace, *Roaving Fisherman*, 453.

33 *Ibid.*, 453-454.

34 *Atlantic Fisherman*, January 1924, 20.

was built in Millville in 1924 and had register dimensions for length, breadth and depth that were almost identical to the *Mary E. Cooney's.*

Also large auxiliary knockabout fishing schooners were built in Pensacola in the late 1920s and early 1930s. The seventy-eight ton *Peerless* was built in 1926, and the seventy-eight ton *Evelyn* was built in 1930. The Warren Fish Company owned both vessels and had them powered with auxiliary engines.

It was a common practice for snapper vessel owners to have old New England built vessels completely rebuilt in locally Gulf Coast shipyards. Mr. Aron Langley is known to have operated a marine railway across the river from Bay Point, Florida, in 1896.[35] Langley rebuilt the schooner *Wm. H. Warren* for Warren Fish Company in 1899.[36] In some cases the schooners were extensively rebuilt, reregistered, and issued new documents of enrollment and license under a different name with a new official number.

The *Seaconnet* was one such vessel to be completely rebuilt and to assume a different identity. She was sold south in 1911 to E. E. Saunders and Company and served them until 1928. At this time her enrollment was surrendered and her papers clearly stated "'ABANDONED' unfit for service, dismantled and hull destroyed." Actually the *Seaconnet* was rebuilt and enrolled as a new schooner under the name *Carrie B. Welles*, in 1929. She continued to fish for the E. E. Saunders and Company until the mid 1960s when she was

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35 *The Milton Journal*, Friday 25 December 1896.

36 *Pensacola Daily News*, 2 August 1899.

sold to Cars Gidley of Pensacola.[37] Later the *Carrie B. Welles* finally fell from the snapper fleet and ended up as part of a tourist attraction at Tarpon Springs, Florida, known as "Sponge-orama." Some other vessels that received new names in the southern fleet were: *Flora J. Sears*, renamed *Thomas E. Welles; Virginia*, renamed *Buccaneer; Washackie*, renamed *John Francis Taylor*; and *Elbridge T. Gerry*, renamed *Kwasind.*

The E. E. Saunders and Company operated a repair basin where vessels were overhauled. Also E. E. Saunders and Company owned a paint shop, sail loft, carpentry shop, barrel department, ice plant, quick freezing unit, and storage rooms. In addition to this, the company occasionally sent a vessel to Big Bayou, Florida, to be stripped down and rebuilt.[38]

Some of the finest southern built red snapper fishing schooners were the products of Mississippi and Alabama yards. The more notable builders were Sidoine E. Krebs of Pascagoula, Mississippi, Jack Covacevich of Biloxi, Mississippi, and Herman Zirlott of West Fowl River, Alabama. The building was most active during the 1920s. The S. E. Krebs yard, over a fifty-year period, built over thirty snapper fishing vessels for the Mobile based Star Fish and Oyster Company.[39]

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[37] Albert M. Barnes, hand written notes on the activities of the schooner *Carrie B. Welles*, Albert M. Barnes Papers, Mariners' Museum, Newport News, Virginia.

[38] "Quick Freezing and Packing Enter Red Snapper Industry of the South" *Fishing Gazette* (July 1939): 9 and 26.

[39] "80-Ft. Lois G. is Third New Snapper Schooner for Star Fish & Oyster in Past Three Years," reprinted from *Fishing Gazette* (November 1957): no page

The *Peggy G., Baby Ann,* and *Nelo G.* are three auxiliary fishing schooners built by Krebs for the Star Fish and Oyster Company that fished Campeche Banks (Figures 36-38).

Auxiliary Fishing Schooners And Powered Vessels

Ultimately the Campeche Banks of Mexico became the most utilized fishing grounds for the red snapper industry. At a distance of approximately 480 miles from Pensacola, Campeche banks proved to be the limit that fishing vessels propelled by sail alone could return a descent product. It was not uncommon to lose an entire catch due to calm weather, or to lose a portion of the fish caught on the first days of fishing. In the early 1900s auxiliary engines began to be adopted by the smaller snapper fishing vessels, and by 1923 over half of Florida's fleet had been powered.[40]

Auxiliary power came into use on American fishing schooners in 1900 after John Bishop built the *Hellen Miller Gould* for Captain Solomon Jacobs of Gloucester, Massachusetts. Designed for use in the New England mackerel fishery by Captain G. Melvin McClain, the *Gould* used her auxiliary engine in calm weather to reach schools of fish and to run for market.[41] Mackerel fishermen acquired other auxiliary fishing schooners: three joining the fleet in 1901 with an

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numbers. Photo-copyed by the author from the "Star Fish and Oyster Company Scrap-book" at their now defunct Mobile, Alabama, fish packing plant.

[40] James, S. Carpenter, *A Review of the Gulf of Mexico Red Snapper Fishery,* United States Department of the Interior, Fish and Wildlife Service Circular 208, (Washington: Government Printing Office, 1965), 3.

[41] Thomas, *Fast & Able,* 57.

additional three in 1902.[42] Once engines were installed in fishing schooners, the benefits of engine power became quickly apparent despite the dangers of explosion and fire. As of 1914, eighteen percent of the fishing schooners (larger than fifty tons) in Boston, Massachusetts, had auxiliary power installed.[43]

Captain J. M. Munn of the Gulf Fisheries Company introduced auxiliary powered vessels to the Galveston fleet in 1912 with the purchase of the schooners *Arcas* and *Yucatan* designed by Cox and Stevens of New York and built to their specification in Essex, Massachusetts (Figures 32-34). The builders equipped the vessels with ninety horsepower internal combustion engines that ran on either gasoline or diesel fuel. These vessels could power at eight knots in light winds. Cruising under power allowed the vessels to run to Campeche on a tighter schedule, which was important to the Gulf Fisheries Company because it could schedule more predictably the delivery of fish that the schooners were expected to bring in.

Other wholesale fish dealers imported New England fishing schooners with auxiliary power before 1920. In 1914 the Campeche Fish Company, of Gulfport, Mississippi, purchased three auxiliary schooners in Gloucester, Massachusetts, for the red snapper fishery. The three vessels included the *Lillian*, *Neo*, and *Cherokee*.[44] The

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[42] *Ibid.*, 107-108.

[43] German, *Down on T Wharf*, 30.

[44] "Fish Company Purchased Three Fishing Smacks," *Biloxi-Gulfport Daily Herald*, 9 January 1914, 1(D).

Lillian, a twenty-eight ton vessel built in Gloucester in 1902, was the largest of the three vessels. Her owners installed an auxiliary engine in 1909. All three vessels were considered to be shore boats by New England standards, but in the red snapper fishery such boats often fished the Campeche Banks from their homeport of Gulfport, Mississippi. Auxiliary power was important for small vessels that fished Campeche. Small vessels could not afford to become becalmed on the way back to market because of the risk of losing their catch from decomposition.

The general trend for auxiliary propulsion in the northern Gulf of Mexico red snapper fleet was to install gasoline engines of less than fifty horsepower into the already existing schooners in the fleet. This trend seems to have begun around 1920, as demonstrated in the scatterplot of engine sizes with the register years from which the data were taken (Figure 39). It should be noted that the register year for horse power is not necessarily the first year the engine was installed, but is more likely to be the first or earliest year the vessel was known to have fished for red snapper. Regardless, the graph shows the trend, but may well skew some of the lower horse power gasoline engines to later dates. Fred Hunt wrote of the Pensacola red snapper fishing fleet: that "in the late 'teens it was the only big American deep-sea fishing fleet using all-sail vessels exclusively. In the early twenties the chugging bulgine began to befoul the clean Campeche horizon with its scrawling black trails; and by the end of the decade there were but few Pensacolamen left whose in'ards were not retching

with greasy power plants."[45] The plot in Figure 39 supports Hunt's statement. In 1923 gasoline engines began to appear in the data with only three oil screw (diesel) auxiliary powered vessels before 1935. After 1935 the auxiliary diesel engines become more common and also increased in horsepower through time.

At present it is difficult to outline a tentative chronology for the introduction of engines in small snapper fishing vessels. Hunt noted red snapper vessels of less than 20 tons (chings) already had engine power in 1920.[46] The large fish companies did not own many chings, which led to their exclusion from fisheries literature; and chings are difficult to discriminate from the vessels used in the shrimp and oyster fisheries.

The advantages of small gasoline engines became quickly apparent to red snapper fishermen after auxiliary power was introduced to the larger schooners. Foremost, engine power allowed the schooners to make good time in light air. Secondly, motor-sailing improved up-wind performance by allowing schooners to make higher points of sail. Thirdly engines could be utilized to maintain the position of schooners over small reef environments allowing the fishermen to focus their fishing effort more precisely.

In 1924, diesel engines and full powered vessels were introduced into the Pensacola fleet. Built at the Warren Fish Company shipyard, the *A. F. Warren* was the first full powered vessel in the

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[45] Hunt, "Campeche Days," 229.

[46] *Ibid.*

Pensacola fleet. Fredrick William Wallace assisted with the preparation of a set of plans for the vessel which was a radical departure from the schooners and auxiliary schooners then in the fleet. The plans, calling for a ketch rigged vessel, were so disliked by the captains of the Warren Fish Company that the *A. F. Warren* was built as a schooner. According to Wallace, the master carpenter at the Warren Fish Co.: "departed somewhat from the our lines by giving the hull more body and he eliminated much of the graceful sheer we had given her." Wallace also added that in the conversion to a schooner rig, "the position of the mast was not altered to allow for the change in sail plan. This left [the] foresail larger than it should [have been] and gave the craft a rather homely appearance."[47]

The *A. F. Warren* was built of hard pine on live oak frames and received a 150 horse power Wolverine diesel. Towing bits were also installed on the vessel for the purpose of assisting other Warren vessels when becalmed. She was a bit lively due to the alterations in her lines but proved to be a fine seaworthy vessel. Wallace quoted the skipper in reference to her quick motion in a short chop: "Jump the eyes out of your head, she will, but a dandy sea boat just the same. Never ship no water in this one, but she is hard on a feller in rough water—she's so quick." The *A. F. Warren* served the Warren Fish Company until 1935 when she was sold to Panamanian interest.[48]

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[47] Wallace, *Roaving Fisherman*, 477-478."

[48] *Ibid.*, 503.

Diesel engines ultimately replaced gasoline engines as the preferred power source. By the end of the 1930s many vessels received diesel engines of less than eighty horsepower. From 1938 to 1941, Atlas Imperial Diesel Engine Company featured in their advertisements, eight vessels of the Star Fish and Oyster Company's fleet which had installed their engines. According to the advertisements Star Fish and Oyster Company "bought their first three Atlas Diesels from Authur Duvic's Sons in 1929 and the balance of their fleet remained gasoline powered until 1936." By 1938, eight of their fleet had Atlas diesel engines between thirty and sixty horsepower.

Around 1935 rig reductions began to occur in the Mobile fleet. Before 1938, five Star Fish and Oyster Company schooners were operating under reduced schooner rigs. The *Leo G., Peggy G., Baby Ann,* and the *Tom and Jean* were rigged with jib-headed main sail, gaff foresail, jumbo, and jib. Another Star Fish and Oyster Company schooner the *Mary Carman* had her rig reduced around the same time: she carried a jib headed main, gaff foresail, and only the jumbo; and her bowsprit was cut off to a stub on that a fore stay was made fast. The only vessel in the Star fleet without reduced rig was the *Nelo G.*

Ultimately sails became auxiliary to power, and the rigs and deck arrangements of snapper fishing vessels began to change. Vessel owners often replaced engines when undertaking major repairs and generally preferred to the increase size and power. When vessels began to receive large diesel engines, fishermen built pilot houses

around the wheel boxes of schooners. In the 1950s, new auxiliary schooners were built with the wheel house further forward. In some vessels the wheel house was just aft of the mainmast, and in others was just forward of the house. Ultimately, the schooner rig was abandoned altogether. On some older vessels, the fore mast was removed, and only the main mast, on which a small riding sail was retained.

Hull design also changed as larger engines were used. The employed designs were more adapted for power with fuller sections aft and shorter overhangs in the counter. In the 1960s combination vessels were built for the snapper industry and their design incorporated the hull shape of New England schooner and southern deep water shrimp trawlers.[49]

Boats And Chings

The smaller craft that were used in the northern Gulf of Mexico red snapper industry fit into two general categories: small open boats, and a class of small fishing boats and vessels called "chings." Unfortunately little information about these smaller craft is available, and the documentation of their use appears to be vastly overshadowed by the larger and more picturesque fishing schooners.

The earliest type of small craft to be documented as working in the northern Gulf of Mexico red snapper industry was the Pensacola

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[49] Carpenter, *A Review*, 4-5.

"pilot rig," a small open boat used at Warrington, Florida described by J. W. Collins in his 1885 report on the red snapper fishery of the northern Gulf of Mexico (Figure 40). He attributes the pilot rig's design to a variation of the "Whitehall" type that was refined to meet the need of the Pensacola pilots. The "pilot rigs," Collins reputed, were the only three masted, spritsail-rigged, open boat used in American fisheries. During the summer, fishermen from Warrington worked the snapper banks nearest Pensacola in these small boats.[50]

"Pilot rigs" were open, carvel built, center-board craft with a plumb stem, long sharp bow, round bilge, fine run, and a vertical heart-shaped transom. The rudder hung outside and was managed by a yoke with lines that ran forward of the mizzenmast. Proportionally, the boats length equaled three and one half times the measurement of their beam, and the boats ranged in size from sixteen to twenty-one feet. The boats had oak keels that were tapered to the scantlings of the stem and stern post, but broad enough for the center-board to be let through it. Iron center-boards were standard and placed a little forward of midships. Depending on the boats size, there were three to four thwarts and a short after deck under which a small locker was built for food and other provisions. The stem, sternpost, and transom were of oak; the timbers were of mulberry; the planking of white cedar; and garboards and thwarts were of yellow pine.[51]

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[50] Collins, "Report on the Fishing Grounds," 285-287.

[51] *Ibid.*

The Pensacola pilots utilized pilot rigs to sail offshore and board vessels until the late 1870s. The pilots would sail offshore at two or three o'clock in the morning and sail in various directions until sunrise, sometimes sailing twenty miles from land. Once it was light, the pilots would sail home, keeping a lookout for ships throughout the day. When a ship was sighted, the pilots would race out to the vessel, and the pilot reaching the ship first won the job. The stevedores of Pensacola also used these boats in the mid to late 1870s. They would race to an incoming ship, board, and solicit the job to unload her.[52]

By the early 1880s, the Pensacola pilots were using pilot schooners to meet in bound ships, and the stevedores had abandoned the practice of boarding vessels at sea. As a result the boats were adopted by the inshore red snapper fishermen. Most of these boats were still owned by the pilots and stevedores, who let the craft out to "reliable negroes" in return for one share of their catch.[53] In 1885 there were twelve to fifteen boats of this type fishing from Warrington for about eight months of the year. The fishermen would sail to small patches of hard bottom that were between five and fifteen miles from Pensacola Bar and fish with hand lines just as on the larger offshore vessels. They made one-day trips, delivering their catch in Pensacola each afternoon before the fish houses closed. During the colder months these boats would sometimes stay on the fishing ground over night and send their catch to Pensacola the following morning via a

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[52] *Ibid.*

[53] *Ibid.*

run boat. The boats had crews of four to seven men who usually averaged about 400 pounds per trip. Ice was never used for preservation, but the trips were short and the catch landed every day.[54]

Most of the boats were built by Robert Langford over a ten year span during which he and his assistants worked full time to meet local demands. Langford's boats were well built, light, strong, very durable, and therefore expensive, costing from $250 to $450 depending on size.

The second class of small craft used in the northern Gulf of Mexico were known as "chings," which was a shortened version of the word "chingamarings."[55] This word does not seem to have come into use until the 1900s but small decked and half-decked boats and vessels were used throughout the industry's history to fish the snapper banks that were within a few days sail from the markets. J.W. Collins reported that, in the early 1880s, there were a number of small sail boats "more or less regularly employed in the summer red snapper fishery." These boats, he added, were "mostly of the class usually engaged in the oyster industry during the winter."[56]

In Pensacola, during the late 1880s and early 1890s, there grew to be a size distinction between the large offshore New England vessels that went to the distant fishing banks, and the smaller vessels

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54 *Ibid*

55 Hunt, "Campeche Days," 229.

56 Collins, "Report on the Fishing Grounds," 285.

that worked the near shore banks close to the markets. This distinction was even more apparent when even larger vessels began to be used to fish Campeche Banks. Around the turn of the century the word ching described the smaller inshore vessels fishing for red snapper. In 1935 Norman Jarvis defined chings as follows:

> The term "ching" is applied to any small boat fishing for red snappers, and covers any craft from a registered vessel of less than 20 tons to a numbered motor boat. The "chings" are usually similar in type to the schooners but smaller in size. Some are of nondescript design and rig, ranging from double-ended sponge boats with sharp bow and stern to designs with bluff bows and flat or slightly rounded sterns. The crew of a "ching" may number from three to seven men, and the duration of a trip from 3 to 6 days. The catch of one of these boats will average from 500 to 3,000 pounds of red snapper, . . . [and the boats ranged] from 30 to about 150 miles from port.

Generally fishermen rigged "chings" with a reduced sailing rig in addition to a gasoline engine (Figure 41). Fishing from the chings was always carried on in the same manner as the larger offshore vessels using hand lines and later mechanical reels.

The S. Felicione and Sons owned and operated two chings rigged as auxiliary schooners 1935 that may be taken as examples of this type of vessel. The *Ida* was built in Tampa, Florida, in 1934 and measured fifteen tons gross and forty feet in length on deck. She carried a crew of five and was equipped with a ten horsepower gasoline engine. The *Jewell* built in Millville, Florida, measured sixteen tons gross and was forty-six feet in length on deck. She carried a crew of six men and was equipped with a twenty-four horsepower Palmer gasoline engine. Both chings carried gaff schooner rigs large enough to operate under sail alone.[57]

In summary, the red snapper fishery shifted to the use of tight bottomed vessels after 1880. Tight bottomed vessels used refrigeration instead of live wells to preserve their catch and were equipped with partitions in the fish hold to support successive layers of fish and crushed ice. Between 1880 the 1920s, northern Gulf Coast wholesale fish dealers imported the majority of tight bottomed vessels into the snapper industry from the offshore fisheries of Massachusetts and Maine. As a general rule vessel owners imported sharp, deep draft vessels designed for New England offshore fisheries.

The red snapper fleets of northern Gulf of Mexico ports were a diverse set of watercraft. The fishery required fast, stable, vessels with large insulated fish holds and long fishing ranges—characteristics which were common to many different types of New England offshore fishing schooners. Consequently, Gulf Coast snapper fishing companies purchased fishing schooners that varyed in style and in age.

Additionally the overfishing of snapper resources near the market centers in time made larger vessels with greater fishing ranges and larger carrying capacity more desirable. As larger vessels entered the fishery and fishermen abandoned the near-shore grounds, small snapper fishing vessels entered the fishery and fished the grounds previously abandoned by the larger vessels. These small snapper vessels under twenty tons became known as chings in the twentieth century.

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57 *Atlantic Fisherman*, Vol. XVI, No. 6, July 1935, 7; *Atlantic Fisherman*, Vol. XVII, No. 6, July 1936, 15.

Despite the apparent diversity of the red snapper fleet, the same style vessels that were common in the New England offshore fisheries were purchased by southern snapper fishing interest. The age of vessels entering the red snapper industry from New England fisheries varied widely but averaged approximately fourteen years. The type of schooners entering the red snapper fishery generally paralleled those in New England fisheries but often lagged behind the current trends in design. In the 1880s the snapper fishery imported shallow draft and beamy mackerel seiners built in the 1860s and 1870s as they became unpopular in New England. The next popular style were deeper more yacht like vessels with easier sections aft that resulted from the fishing schooner reforms in the 1880s and 1890s. Indian Headers and knockabout schooners also found popularity in the red snapper fishery after they were proven in the New England fisheries.

Southern red snapper vessel owners also had new vessels built for the fishery both in New England and in Gulf Coast ports. The Gulf Fisheries Company commissioned well-known naval architects in New England to design new vessels, whereas Pensacola vessel owners hired local builders to copy the vessels then in use. The New England naval architects designed modern yacht-like vessels and the Florida builders produced their own variations of the New England vessels used in Pensacola. The Florida builders generally produced flush decked schooners with more sheer and flaring lines forward than the New England vessels from which they were copied.

Engine propulsion was introduced into the red snapper fishery after the turn of the century but the large vessels fishing Campeche Banks did begin the transition to power until after 1912. The Gulf Fisheries Co., of Galveston, Texas, introduced the first engine-powered vessels to the fleets fishing Campeche in 1912, followed by the Campeche Fish Company of Gulfport, Mississippi, who purchased three auxiliary vessels to fish Campeche in 1914. With engine power snapper vessels could travel at upwards of eight knots in calm conditions, move easily from one fishing area to the next, and hold constant position on the fishing grounds.

Despite the examples made by these two companies the general trend for the Pensacola fleet was to install gasoline engines of less than fifty horse power into the majority of snapper fishing vessels during the 1920s. Conversion to diesel engines followed in the 1930s and was accompanied by rig reductions on powered vessels. Fishermen replaced the gaff mainsails of many schooners with a jib-headed main sail and often cut off the schooner's bowsprit to balance the rig. As larger more powerful engines were added the deck layouts of the schooners were effected by the erection of wheel houses.

Summary and Conclusions

Summary

Beginning with transient wrecking and fishing voyages to the Florida Reefs, Connecticut fishermen introduced well smacks into southern market fisheries. Although technically the use of well smacks ended in the 1880s, commercial red snapper fishermen continued to apply the term "fishing smack" to a majority of the larger vessels used by the industry until the 1940s—indicating the strength and the persistence of the southern New England influence on the Gulf of Mexico snapper and grouper fishery.

The importance of New England fishermen remained prominent throughout the industry's history, and the watercraft used in the fishery are exemplary of their influence. Known activity of southern New England fishermen, who used well smacks in the red snapper and grouper fishery, began in 1819 as the United States took control of Spanish East Florida. Connecticut fishermen operated on a transient basis making winter trips to the Florida Reefs, took advantage of wrecking opportunities, and found a market for live grouper and snapper in Havana. Concurrent with Key West's emergence as a port of entry and a military base, its fishing and wrecking industry developed. Connecticut fishermen dominated the grouper and snapper fishery and developed a lucrative Key West Havana—Market Fishery, where they sold live fish in Havana, earning considerable profits. This fishery thrived until the late 1890s when

the Spanish government forced the American fishermen out of the business with excessive duties on imported fish.

In addition to the Key West Havana—Market Fishery, Connecticut smackmen developed the red snapper fisheries along the northern Gulf of Mexico. The southern New England fishermen, who operated on a transient basis, used the same type of well smacks along the northern Gulf Coast as they did in the Key West—Havana Market Fishery. Beginning around 1845, Connecticut fishermen caught red snapper offshore of Mobile and Pensacola and sold it fresh to seafood dealers in Mobile and New Orleans. Red snapper could not be marketed alive as in Havana because of the fresh water nature of the harbors in both Mobile and New Orleans. The fish dealers, who purchased red snapper from the Connecticut fishermen, used imported lake ice to preserve the fish after it was landed.

In 1869, a West Florida ice importing firm, the Pensacola Ice Company entered the red snapper fishery as a measure to diversify the company in the wake of competition from ice manufacturers in the interior of Alabama. From this starting point the red snapper industry grew in Pensacola and in 1871 expanded into a wholesale industry. Pensacola offered good railroad connections with the interior, close proximity to the fishing grounds, and deep water harbor facilities with sufficient salinity to keep snappers alive. The fishery grew rapidly. At first the market was supplied by transient Connecticut fishermen who brought their smacks south in the winter, fished for red snapper, and sold their catch in Pensacola to wholesale fish dealers. Many of the

wholesale fish dealers in Pensacola had migrated from New England and in conjunction with the transient Connecticut fishermen provided a substantial New England influence on southern fisheries.

Wholesale fish dealers, who marketed red snapper along the Gulf Coast in New Orleans, Mobile, and Pensacola, needed greater control over their supply and began to purchase fishing vessels. Previous to 1880 whole sale fish dealers bought the same type of well smacks that the Connecticut fishermen used in the fishery. The fish dealers quickly expanded their markets, increased sales, and overfished the shallow-water red snapper resources close to the market centers.

Only after snapper resources became stressed to the point of poor catches did fishermen address the obvious inadequacies of well smacks—they limited the fishermen from a large portion of the fishery resource. Red snapper caught from reefs over twenty fathoms deep died of internal injuries caused by the pressure change. Before the 1880s fishermen discarded fish that died and limited themselves to fishing grounds in shallow water. Both limitations effected the industry's profits, and ice preservation proved to be the obvious solution to the problem. In 1880 vessel owners began using ice preservation on welled fishing vessels and quickly abandoned the use of live wells.

Preservation of red snapper with ice on board the fishing vessels proved to be highly successful. Red snapper fishermen refined the method further by using cork to insulate the fish hold. Ice preservation allowed fishermen to exploit deeper snapper habitats,

extend their fishing ranges, and eliminate damage to fish caused by abrasion in the well during rough weather. Additionally, tight bottomed vessels could deliver four times the fish packed in ice that well smacks could deliver alive. After 1880 it became important that a greater volume of fish could be kept fresh on board the fishing vessels. Ice preservation helped to relieve the pressures of overfishing for a few years, but soon fishermen had to voyage farther and farther from their home ports to catch snapper in large numbers. As the distance to fishing grounds increased, fishermen needed a larger catch to offset the greater time spent fishing and in transit.

In the winter of 1885, the United States Fish Commission discovered new fishing grounds with abundant snapper stocks in the area between Tampa and the Dry Tortugas. The new resources coupled with increased demand, better transportation systems, and the availability of manufactured ice, returned the fishery to its once lucrative status.

As a result of the industry's economic success, fishermen introduced northern New England tight bottomed vessels into the snapper fishery in increasing numbers from 1881 until the early 1900s. Concurrent with the transition to tight bottomed New England fishing schooners, fishermen also began to use larger vessels in the forty-five to fifty ton range. The larger vessels became more attractive because of the increased distance to the fishing grounds from Northern Gulf ports. Schooners in the forty-five to fifty ton range could make longer voyages and and were generally faster than the

smaller schooners. Larger carrying capacity increased the amount of storage space for ice and fish, thereby increasing the time a vessel could stay at sea and still deliver fresh fish.

The abundance of red snapper on the fishing grounds between Tortugas and Cape San Blas diminished, and between 1891 and 1897 the fishing effort shifted to the Campeche Bank north and northeast of the Yucatan Peninsula. Again after the introduction of new fishing grounds, the fishery expanded. Existing snapper wholesalers in Pensacola and Mobile expanded their businesses and fleets, while new wholesale snapper dealers emerged along the northern Gulf Coast.

Except during the hurricane season, the fleets of the larger wholesalers abandoned fishing grounds along the northern Gulf Coast and west coast of Florida and fished the Campeche Banks. Trips to Campeche required up to a month in duration and gave further need for larger and faster vessels with greater ice and fish carrying capacity. Many wholesale fish companies purchased such vessels from the New England fisheries where large schooners were readily available.

As the larger producers abandoned the fishing grounds of the northern Gulf of Mexico a number of small companies emerged to fish this area. Between 1902 and 1923 many of these companies invested in smaller auxiliary powered vessels that averaged approximately twenty tons. The result was a basic division of the fleet into two categories—those able to fish Campeche and those that could not. The smaller vessels (under twenty tons) that limited themselves to the grounds along the northern Gulf Coast became known as chings.

The scarcity of fish on the northern Gulf of Mexico banks and the shift to fishing Campeche created a need to motorize the red snapper fleets. With a distance to Campeche Banks of approximately 500 miles, auxiliary power was welcome when making passages in calm weather. Both auxiliary schooners and chings used engine power to shorten the length of their trips, move from one fishing spot to the next, and to maintain the vessel's position over small reef environments. Chings began to received auxiliary power between 1910 and 1915 whereas the majority of Pensacola's vessel fleet did not receive engine power until the after the first World War.

The first auxiliary vessels fishing on the Campeche Banks came from outside the large Pensacola fleets. The Gulf Fisheries Company, of Galveston, Texas, introduced the first engine powered vessels to the fleets fishing Campeche in 1912, and the Campeche Fish Company of Gulfport, Mississippi, purchased auxiliary vessels to fish Campeche in 1914. Despite the examples made by these two companies the general trend for the Pensacola fleet was to install gasoline engines of less than fifty horse power into the majority of snapper fishing vessels during the 1920s.

Snapper fishermen began to rely on engine power to propel their vessels in calm weather and began to reduce the amount of sail carried on their auxiliary schooners. Conversion to diesel engines followed in the 1930s and was accompanied by further rig reductions in powered vessels. Fishermen replaced the gaff mainsails of many schooners with jibheaded main sails and often cut off the bowsprits of

the schooners to balance the rig. As larger more powerful engines were added the deck layouts of schooners were effected by the erection of wheel houses.

CONCLUSIONS

The major objective of this thesis is to show that the evolution of working watercraft in a fishery is best viewed in relation to an historical analysis that includes: the people connected with the watercraft; the local and regional economic trends that affect the fishery; the demands that the environment of use place on fishing vessels; the work of the vessel and the technological trends or innovations that affect the fishery's watercraft, fishing method, and gear.

PEOPLE CONNECTED WITH THE WORKING WATERCRAFT.—The historical background of an industry and of the people connected with it can directly effect the evolution of the working watercraft used by a fishery. Additionally the actions of the people involved in the fishery are often affected by their historical background. In the red snapper industry, New England fishermen and fish wholesalers along the Gulf Coast influenced the type vessels used in the fishery. Additionally, the problems of overfishing influenced type and the size of vessels selected for the red snapper fishery. Studied over time from an historical point of view, it is possible to see and understand changes in the working watercraft used by a fishery and their resulting subsequent evolution.

New England influence in both the origin and commercial development of the red snapper industry effected the selection of vessels purchased and built for the fishery. Southern New England smackmen introduced well smacks into the red snapper and grouper fishery. Operating on a transient basis in the 1820s, they made winter trips to the Florida reefs, took advantage of wrecking opportunities, and sold live fish at Havana. For these men, voyages to the Florida reefs provided a lucrative opportunity to apply the well smack technology they had perfected in the lobster carrying trade and in the live fish business at New York's Fulton market.

The dominance of Connecticut built vessels in the 1879 Key West—Havana Market fleet illustrates the strength of a southern New England influence even after sixty years of fishing and the entrance of many native Floridians into the trade. Additionally in the 1870s, Florida builders who copied New London and Noank smack types for this fishery changed the vessels only by increasing their size and using southern tropical woods in their construction. It is an important historical and cultural connection that the design and style of Florida built smacks remained the same as the Connecticut built smacks in the Key West—Havana Market Fishery.

As Connecticut fishermen spread the snapper fishery to ports along the northern Gulf of Mexico, they used the same type of well smacks and set the precedent for many others who followed. However the use of well smacks did not persist in the northern Gulf Coast snapper fishery but was replaced by vessels with equally strong ties to

New England. As Pensacola expanded its wholesale red snapper industry in the early 1880s the well smack became obsolete and was replaced by the northern New England market fishing vessels. Pensacola wholesale fish dealers, most of which had New England roots, imported northern New England schooners. S. C. Cobb, Thomas E. Welles, Silas Stearns, Andrew F. Warren and other administrative officers in Pensacola red snapper fishing firms all had previously migrated to Florida from New England. These men imported considerable New England influence to the fishery. As the need for tight-bottomed fishing schooners grew after the 1880s, these fish wholesalers imported both vessels and crews from the market fisheries of Portland in Maine, and Gloucester and Boston in Massachusetts.

The actions of fishermen led to the demise of the well smack in the red snapper fishery. Well smacks became obsolete because fishermen over-utilizied the snapper fishery's resources in the shallow water fishing grounds. It should be remembered that red snapper caught in depths exceeding twenty fathoms were killed by the pressure change of ascent, and this factor seriously limited the fishing area for a product that was shipped to its wholesalers alive. Snapper fishermen realized that the solution to their problem was ice preservation, and a transition occurred immediately after the introduction of ice on board fishing vessels in 1880. The change in preservation method significantly increased the fishing area available to red snapper fishermen and temporarily relieved the overfishing

problem. Fishermen found preservation with ice to be superior because it allowed fish to be caught in deeper water (expanding the fishing area) and increased the volume of fish that could be transported fresh to market by a factor of four.

The over-utilization of snapper resources was a constant problem for the industry throughout its history. The problem was solved by fishing farther from the markets and by resorting to deeper fishing grounds. For the northern Gulf Coast markets previous to 1880, fishermen worked an area between Perdido Bay and Cape San Blas, in ten to twenty fathoms of water, making weekly trips. Overfishing this area made it necessary to introduce ice preservation on board the fishing vessels in 1880 which allowed the fishery to move into deeper waters (twenty to forty-seven fathoms) within this area. By 1885 the vessels voyaged to areas south and offshore of Tampa, from Cape San Blas south to the Dry Tortugas. The vessel fishermen worked areas that ranged from eighty-five to 400 miles from Pensacola. Finally in 1892, fishermen began to utilize the Campeche Banks and fished areas from 480 to 700 miles from Pensacola. With each successive step voyages took longer, and the need for larger faster schooners became more of a necessity (see Table ?).

During the period from 1880 until around 1910, the red snapper fishery continued to expand its fleets and fishing efforts in the Gulf of Mexico. As the fishing grounds continually moved farther away from the northern Gulf Coast marketing centers, the fishery shifted its vessel acquisition to larger northern New England fishing

schooners. Larger faster vessels helped to offset the increased duration in fishing time caused by greater distances to fishing grounds and to allow the exploration of new fishing areas. Southern vessel owners wanted large fast craft with good carrying capacity for ice and fish. In 1885 the Warren Fish Company experimented with using vessels in the sixty to eighty ton range, but found schooners in the forty to fifty ton range more profitable. They discovered that the extra money made by the bigger schooners did not offset the cost of larger crews and expenses. When fishing effort shifted to the Campeche Banks, voyages grew to a month in duration and gave further need for larger faster vessels with good carrying capacity for ice and fish. The fishery again began to acquire even larger New England fishing schooners in the range from forty to ninety tons.

In summary, the actions of red snapper fishermen and wholesalers forced the fishery to change its fishing vessels. As the fishery resources became stressed red snapper fishermen responded by searching for new untapped supplies of fish. The preservation method used in well smacks was a barrier to the utilization of deep water red snappers. Consequently, fishermen abandoned the live well and discontinued the acquisition of Connecticut well smacks. The fishery shifted to the utilization of ice preservation and to the acquisition northern New England fishing schooners. Further overfishing of the fishery resource increased the distance that fishermen had to travel to catch fish and snapper wholesalers began to introduce increasingly larger fishing schooners into the fishery. This

pattern of resource abuse and adaptation of the fishing vessel to use new resources is indicative of how the actions of the people connected can effect changes in working watercraft.

LOCAL AND REGIONAL ECONOMIC TRENDS .—An analysis of local and regional economic trends that may have effected a fishery often reveal important aspects in understanding the evolution of working watercraft. Improvements in over land transportation and ice manufacturing effected the watercraft of the red snapper by allowing the industry to operate on a wholesale basis and permitting refrigeration to become a viable means for the preservation of seafood in the South. These improvements, both national trends during the 1870s and 1880s, set the stage for the a complete transition from well smacks to tight bottomed vessels. Improvements in railroad transportation led to the reduction of freight rates and the expansion of the wholesale snapper business followed; whereas developments in the manufacture of ice reduced its price and allowed ice to be an affordable expense for a fishing voyage. All the fishery needed to spur the transition to ice preservation was the realization that snapper resources in the areas with less than twenty fathoms of water appeared to be fished out. The fishery moved concurrently to deeper fishing grounds and ice preservation—afterwards fishermen only acquired tight-bottom vessels for the northern Gulf of Mexico's red snapper fleets.

DEMANDS THAT THE ENVIRONMENT OF USE PLACES ON FISHING VESSELS.—The environment of use which places demands on working watercraft must be examined historically to understand the evolution of vessel types or groups of vessels which are utilized in the same manner. Vessels in the red snapper fishery had to be fast and able watercraft. The red snapper fishery was an offshore market fishery that used a hand line fishing method. Fishing gear played a very small role in the shape and design of red snapper fishing schooners. The shape of the vessels was based on highly evolved offshore New England fishing craft that was known to be fast and stable enough for offshore work in most foul weather conditions. The red snapper fishery need watercraft that could sail to increasingly distant fishing areas, accommodate their crews and fishing gear, operate safely, return with their catch in marketable condition, make good time to and from the fishing grounds, and pay for themselves.

Well smacks suited the needs of the Connecticut fishermen that pioneered the snapper and grouper fishery from Key West. The vessel type was fully evolved and proven as a fast able watercraft, capable of voyaging along the Atlantic seaboard, fishing and wrecking on the Florida reefs, and accommodating their crews for long periods of time. Additionally, well smacks enabled fishermen to exploit offshore fishing grounds, focus fishing effort in small locations in the reef environment, and transport a live catch to market. As a result the Connecticut fishermen based in Key West produced a high quality fresh seafood that found ready buyers and good prices in Havana.

The tight bottomed New England fishing schooners introduced into the red snapper fishery in the 1880s possessed essentially the same seagoing characteristics of the well smacks they replaced. The main difference between the tight bottomed vessels and well smacks was that type of preservation method used. Well smacks had a free flooding fish hold where fishermen stored the catch alive, whereas tight bottomed vessels used ice to refrigerate fish in order to keep it fresh.

As the well smacks became out dated, they were replaced with small vessels from the New England offshore fisheries of Maine and Massachusetts. Red snapper fishermen imported the New England schooners into the fishery and created a diverse fleet of mostly New England fishing vessels. This fleet expanded, and the larger wholesale fish dealers purchased increasingly larger vessels from the 1880s until the 1920s. Greater distances to the fishing grounds and increased length of fishing trips caused the transition to the larger vessels.

When winter fishing shifted to Campeche Banks in the 1890s the red snapper resources along the northern Gulf Coast began to recover from overfishing and a number of smaller vessels began to utilize the banks abandoned by the larger vessels in the snapper fleet. A class of vessel known as chings emerged to fish along the northern Gulf Coast. Technically chings were snapper fishing vessels of less than twenty tons, and fishermen utilized a variety of vessels to fish the inshore banks. They imported small shore vessels from the New England market fisheries, built small versions of the larger New

England fishing schooners that fished Campeche, and converted vessels from other trades to fish for snapper. It was important that chings be able to get to a near shore fishing bank, catch a fare of fish, and return to port with the fish still iced and in marketable condition.

TECHNOLOGICAL TRENDS AND INNOVATION.—The effects of technological trends and innovations both within and outside the fishing activities can have an impact on the evolution of fishing vessels. Advancements outside of fishing activities that affected the vessels used in the red snapper industry included the evolution of fishing vessels in New England and improvements in ice manufacturing and railroad transportation. Important technological trends and innovations within the fishing activities of snapper fishery included the inability to significantly improve the hook and line fishing method and the introduction of auxiliary power to snapper fishing vessels.

An important trend that affected changes in the type of schooners used in red snapper fishery was the overall evolution of the New England fishing vessels. The changes in the New England vessels were simply adopted by the vessel owners in the red snapper fishery. Vessels owners purchased both used and new vessels directly from the New England fleets and shipyards. The schooners used from Pensacola to fish Campeche Banks reflected the styles prominent in northern New England fishing schooners. Pensacola firms of E. E. Saunders and Company and the Warren Fish Company introduced into their fleets the style of schooners that found fashion in the New England fisheries. Shoal draft broad beam clipper fishing schooners

found early popularity in the snapper fishery and were followed by deeper narrower clipper fishing schooners. Additionally the round stem Indian headers and and knockabout schooners were purchased or built by Gulf Coast snapper fishing operations.

As mentioned earlier, technological advancements in ice production and railroad transportation, both outside the fishing operations, played roles in the transition from live wells to ice preservation. In this example technological advancements in the ice manufacturing and railroad transportation made it possible to expand the wholesale market for red snapper. As the size of the wholesale trade grew, the snapper resource suffered until it became less profitable to fish in shallow water and to deliver a catch to market alive. At this point in the 1880s, ice manufacturing had just become commonplace along the Gulf Coast, and ice prices dropped to a point where fishermen could now use ice on the fishing vessel. Fishermen used ice preservation to solve the problem created by the immediate death of red snapper caught at depths greater than twenty fathoms.

As a general rule technological changes in fishing method often cause changes in design and shape for watercraft types used in a fishery. In the red snapper fishery, there was a distinct inability to make significant improvements to the hook and line fishing method. Snapper fishermen employed the same fishing method from the 1820s until the 1950s. The inability to improve the fishing gear removed any pressure to change the basic shape of fishing vessels based on the technological advancement of the fishing method. The

design of New England fishing schooners and their southern built counterparts never conflicted with the hand line fishing method even after the improvements made in the 1950s with mechanical reels.

The addition of engines effected both rig and the hull shape of the vessels used in the red snapper fishery. The first engines introduced into the red snapper industry were imported from New England in vessels built for or sold south into the red snapper fishery. Snapper fishermen used auxiliary engines primarily for propelling the vessels in calm wind conditions, for keeping the vessels over a fishing spot, and providing power for lifting jobs.

The first changes in red snapper fishing vessels that auxiliary power brought about was a reduction of the rig and sail area the schooners carried. Previous to the introduction of engines, fishing schooners carried top mast in the summer, but fishermen abandoned these spars and the sails that flew from as engines began to be common in the 1920s. The first sail reductions were the main topsail and the fisherman staysail, both which flew from the main topmast. As engines became more common in the 1920s, the general trend was to install gasoline engines of less than fifty horse power into existing snapper fishing vessels. Conversion to diesel engines followed in the 1930s and was accompanied by further rig reductions on powered vessels. Fishermen replaced the gaff mainsails of many schooners with a jib-headed main sail and often cut off the schooner's bowsprit to balance the rig. As larger more powerful engines were added the deck layouts of the schooners were effected by the erection of wheel houses.

SUMMARY.—In summary this thesis argues that changes in working watercraft are best viewed by the historian in relation to: the social history and background of the people connected with the watercraft, the local and regional economic trends that affect the industry using the watercraft, the demands that the environment of use placed on the watercraft, and the work performed by the watercraft and the technological trends and innovations that effect the watercraft.

ILLUSTRATIONS

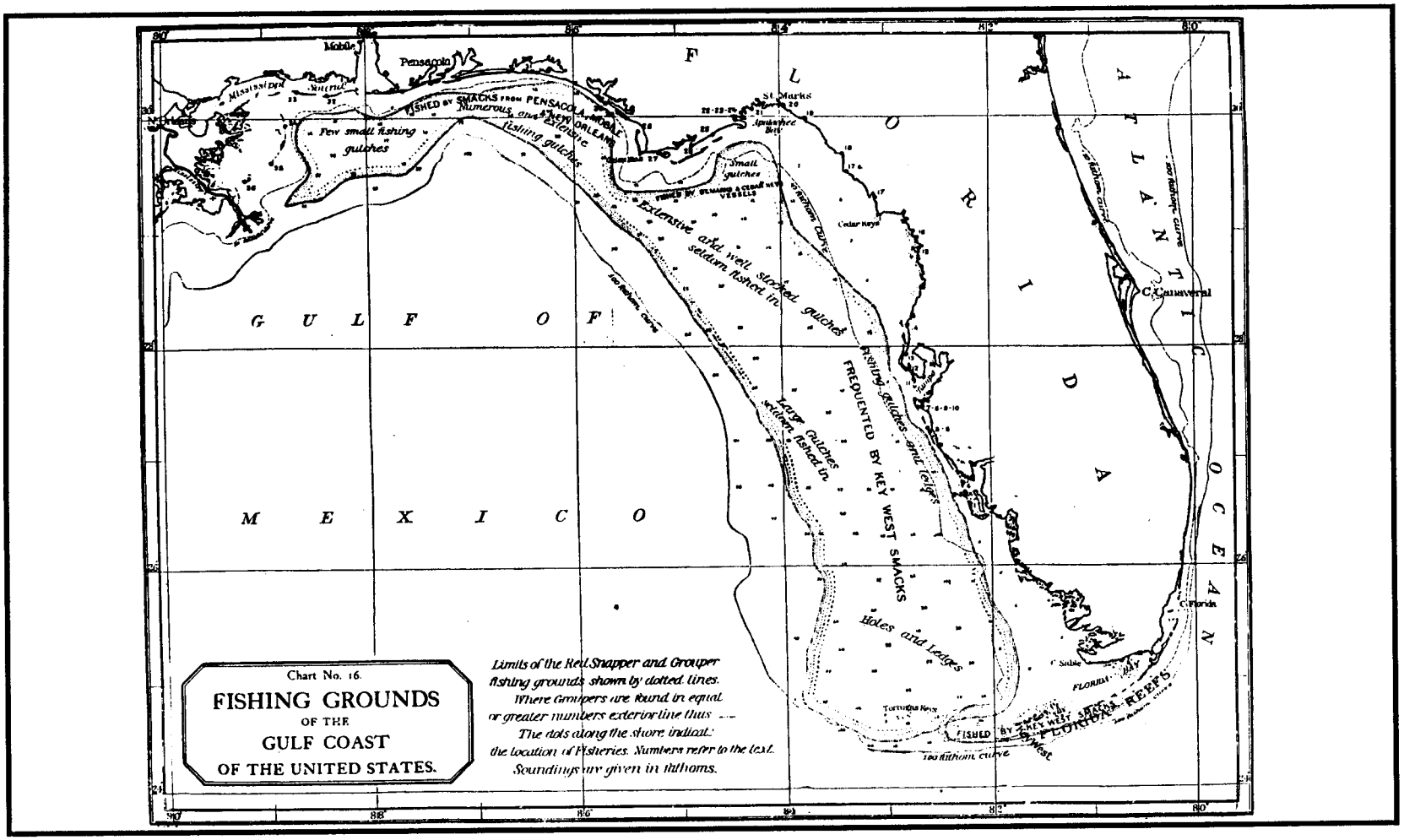


Figure 1. Fishing grounds of the red snapper and grouper fishery as of 1885. Reproduced from George Brown Goode, *Fisheries and Fishery Industries of the United States* (Washington: Government Printing Office, 1887), Section III Chart No. 16.

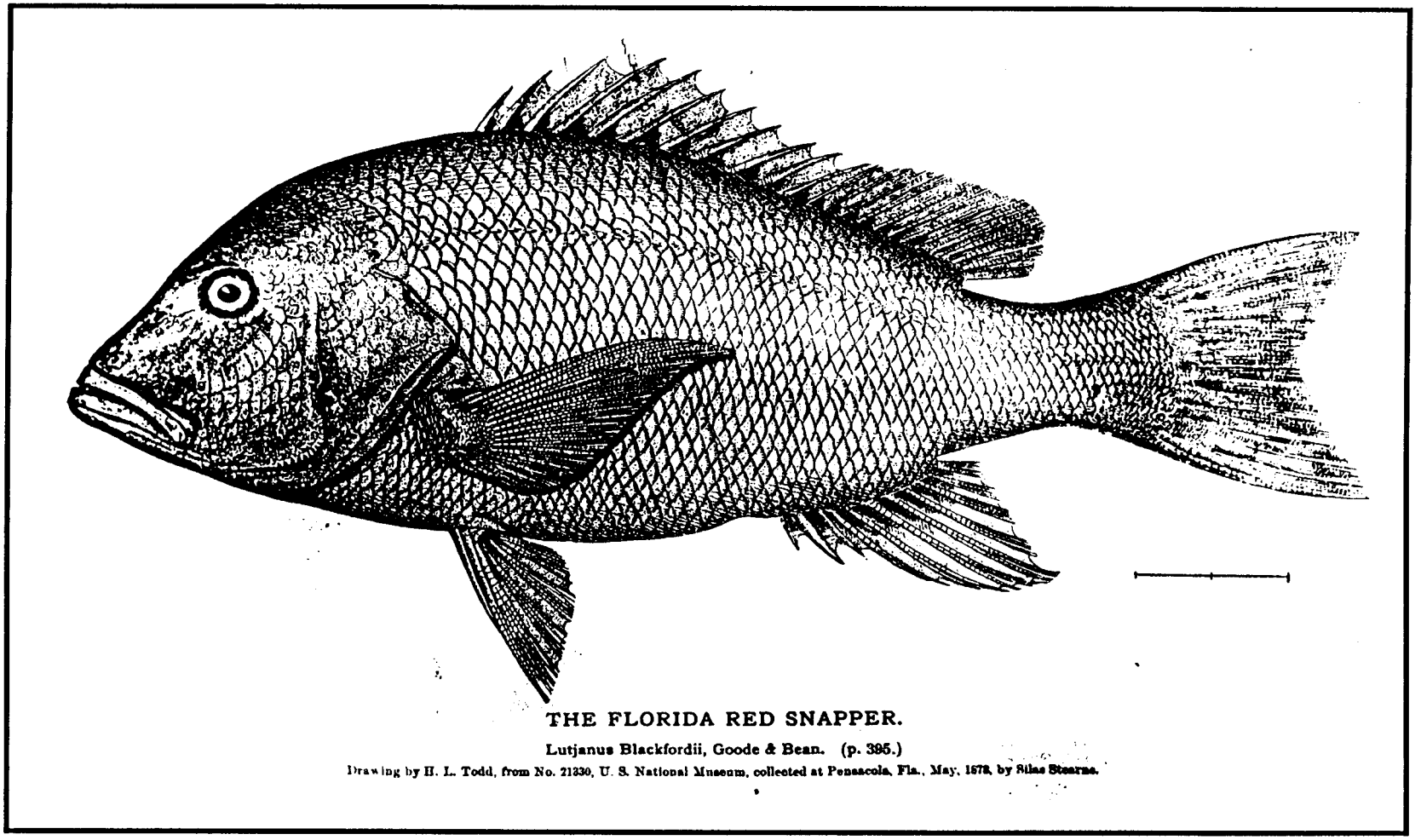


Figure 2. The Florida red snapper (***Lutjanus blackfordii***). Reproduced from George Brown Goode, *Fisheries and Fishery Industries of the United States* (Washington: Government Printing Office, 1887), Section III, Plate 141.

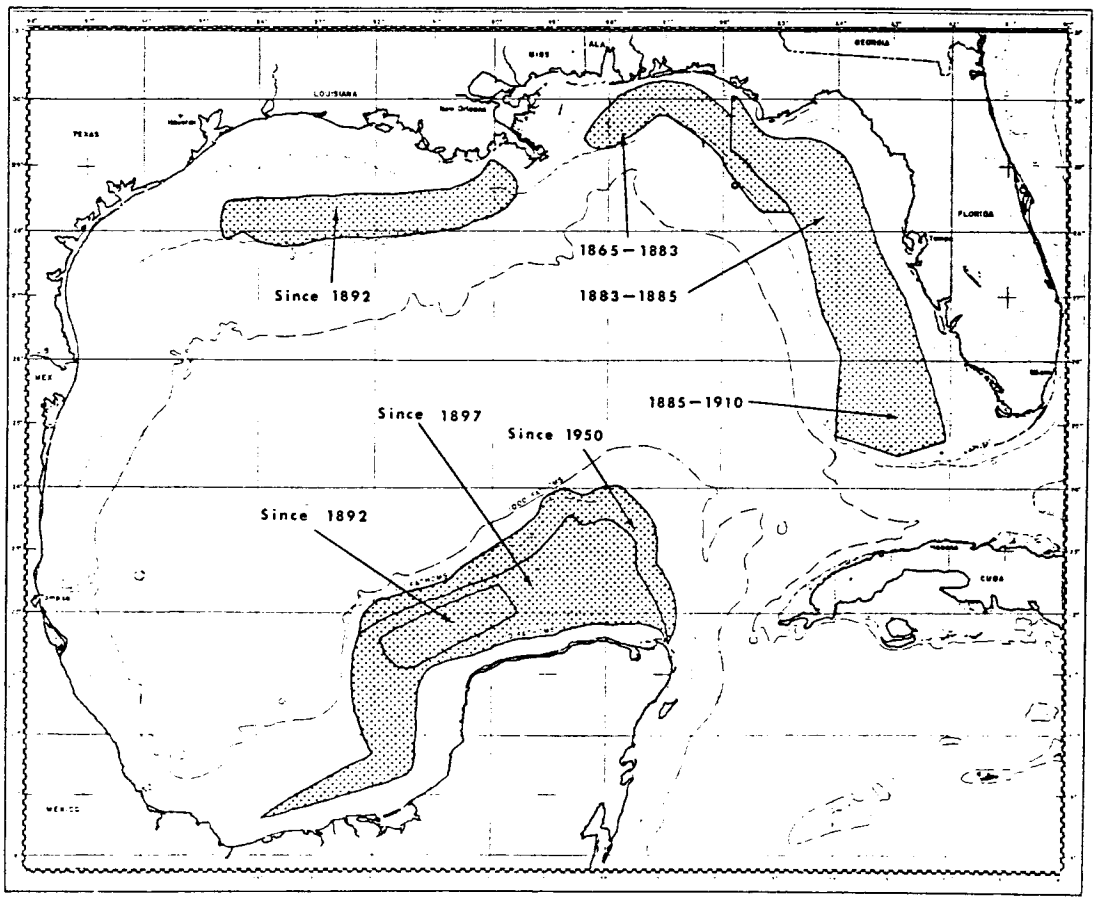
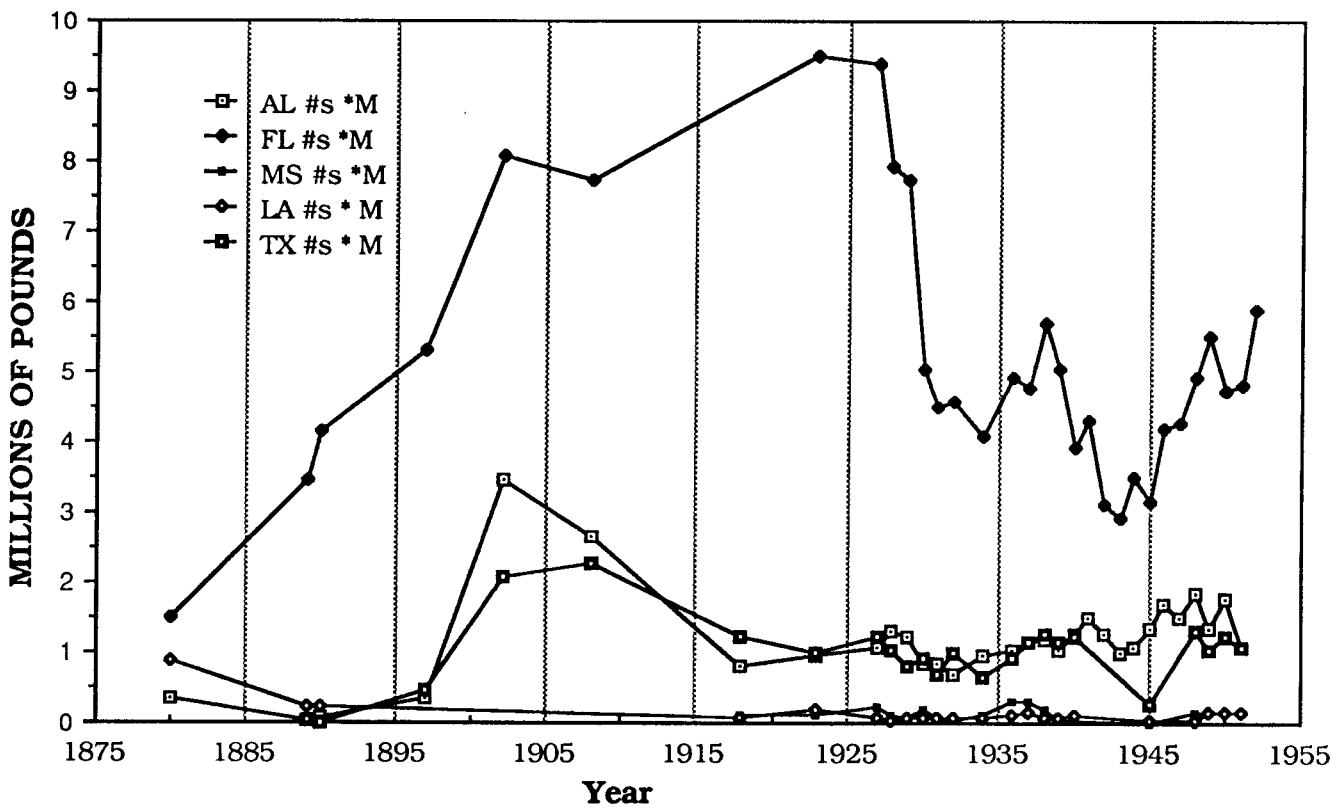
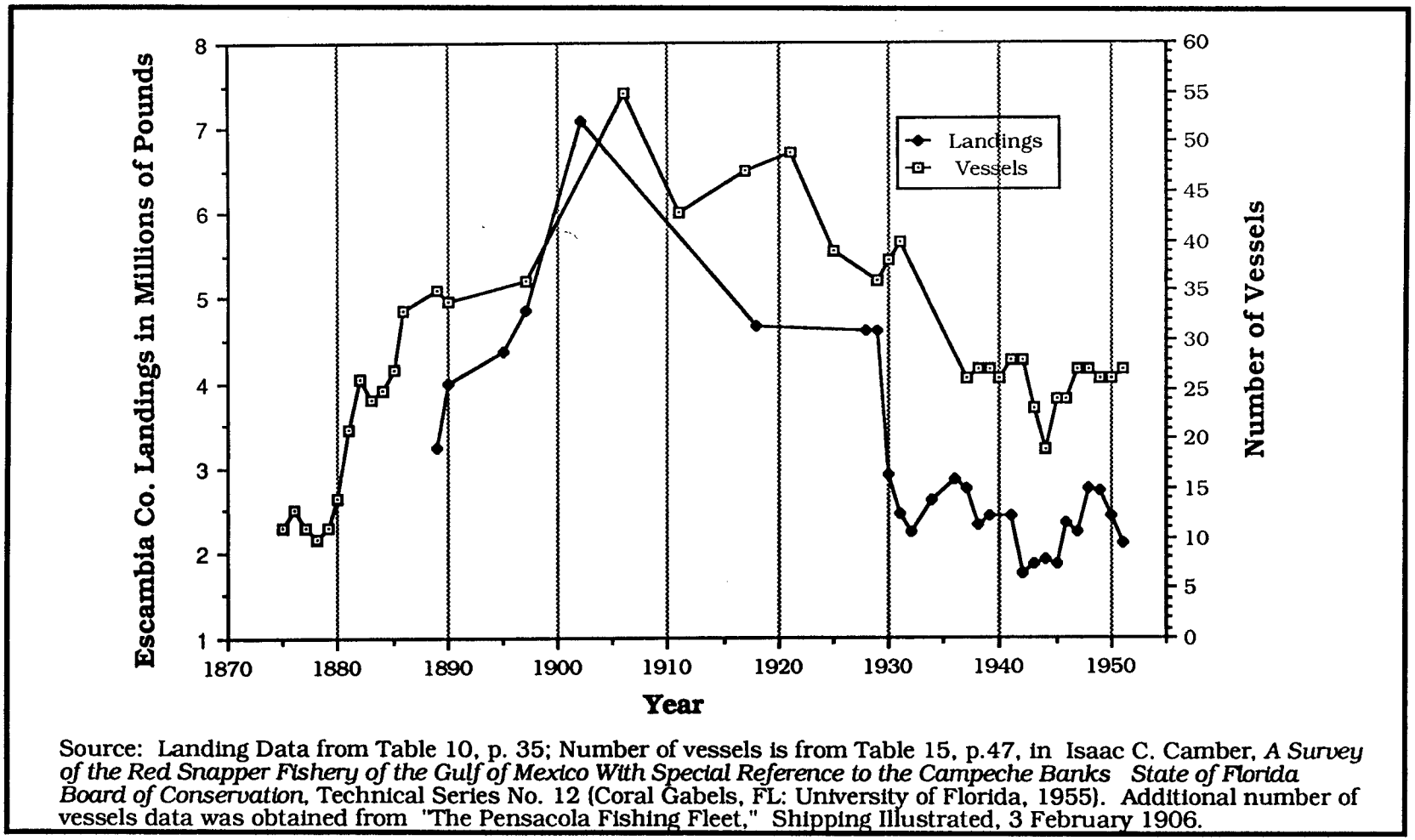


Figure 3. Chart of the Gulf of Mexico illustrating snapper fishing grounds. Reproduced from James S. Carpenter, *A Review of the Gulf of Mexico Red Snapper Fishery*, Circular 208, of the United States Fish and Wildlife Service (Washington: Government Printing Office, 1965), 7.



Source: Landing Data from Table 9, p. 32, in Isaac C. Camber, *A Survey of the Red Snapper Fishery of the Gulf of Mexico With Special Reference to the Campeche Banks* State of Florida Board of Conservation Technical Series No. 12 (Coral Gabels, FL: University of Florida, 1955).

Figure 4. Red snapper landings for Florida, Alabama, Mississippi, Louisiana, and Texas from 1875 to 1952. Note in 1880 that landings of Florida Alabama, and Louisiana, are all less than 1.5 million pounds and that both Louisiana and Alabama decrease in landings as Pensacola increases.



Source: Landing Data from Table 10, p. 35; Number of vessels is from Table 15, p.47, in Isaac C. Camber, *A Survey of the Red Snapper Fishery of the Gulf of Mexico With Special Reference to the Campeche Banks State of Florida Board of Conservation*, Technical Series No. 12 (Coral Gabels, FL: University of Florida, 1955). Additional number of vessels data was obtained from "The Pensacola Fishing Fleet," Shipping Illustrated, 3 February 1906.

Figure 5. Escambia County red snapper landings plotted with the size of the Pensacola fleet from 1875 to 1952.

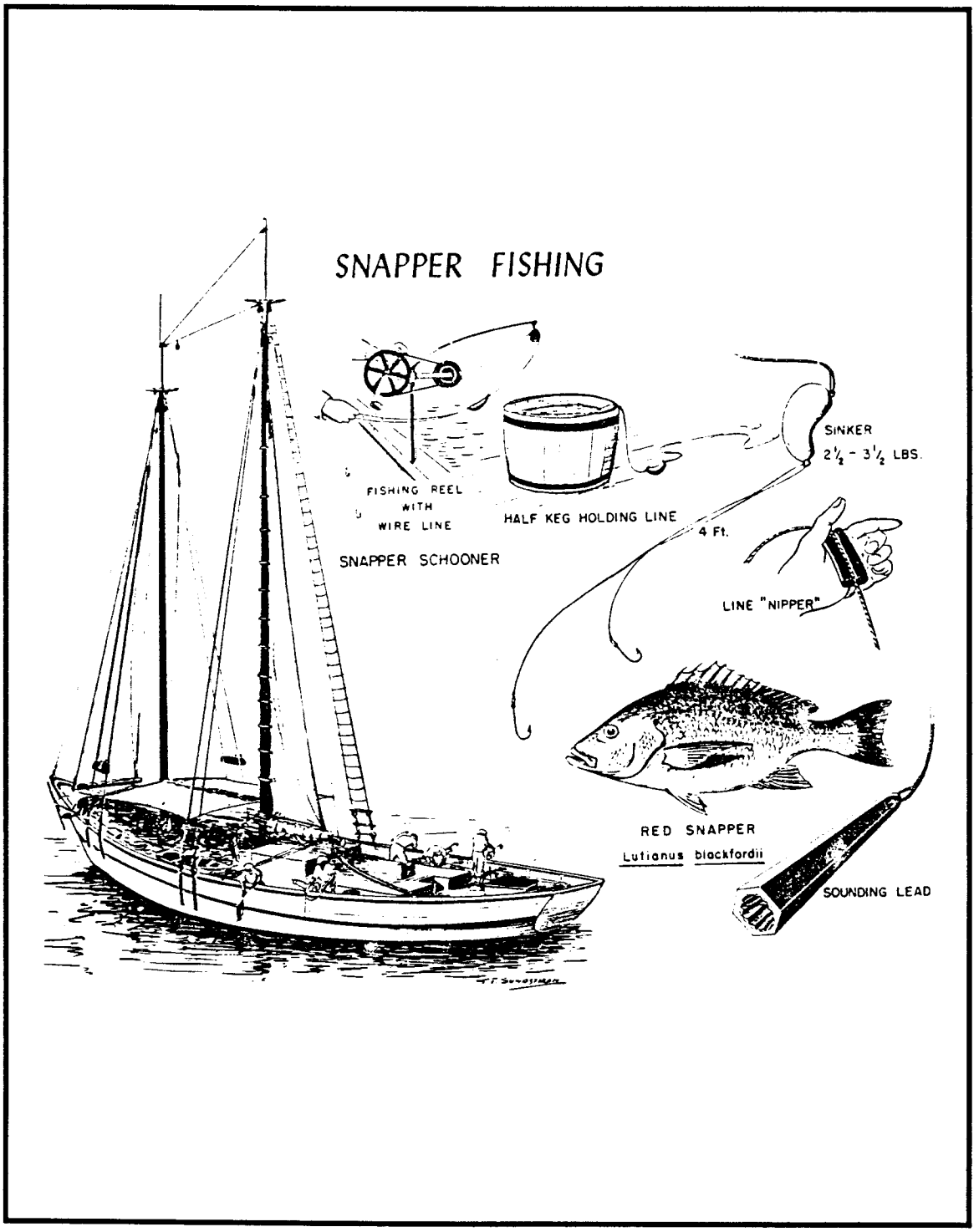
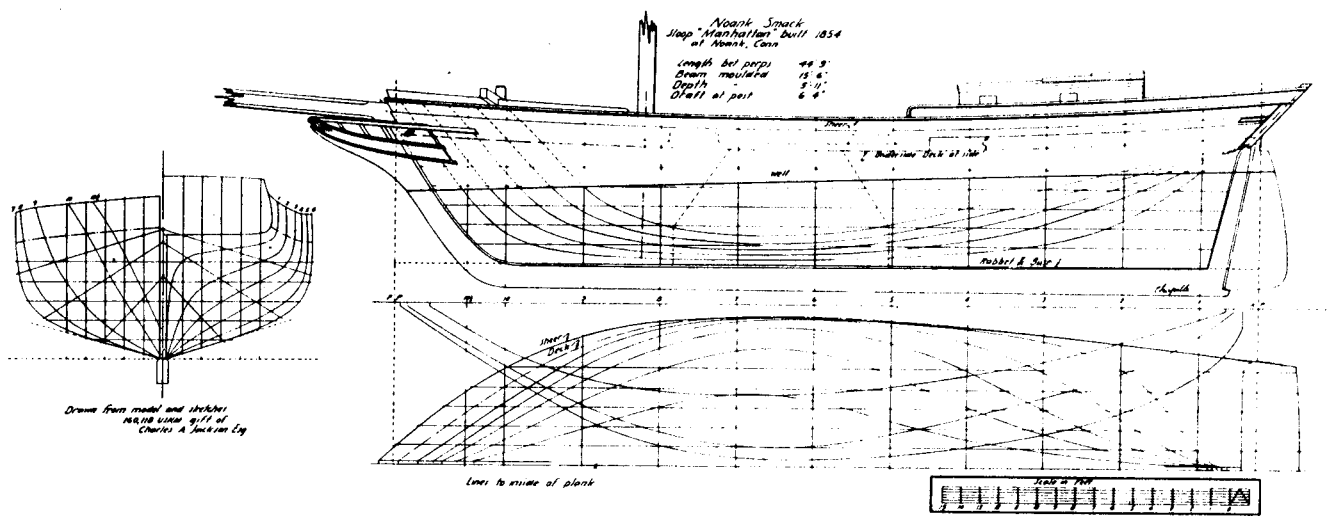


Figure 6. Illustration of red snapper fishing gear. Reproduced from Gustaf T. Sundstrom, *Commercial Fishing Vessels and Gear*, Circular 48 of the United States Fish and Wildlife Service (Washington: Government Printing Office, 1957), 8.



NOANK WELL-SMACK SLOOP *Manhattan*, built at Noank, Connecticut, in 1854 for the New York fisheries. Lines taken off builder's half-model USNM 160118.

Figure 7. Lines plan and sheer profile of the Noank sloop *Manhattan*. Reproduced from Howard I. Chapelle *National Watercraft Collection* (United States National Museum, Bulletin No. 219, Washington: Government Printing Office), 267.

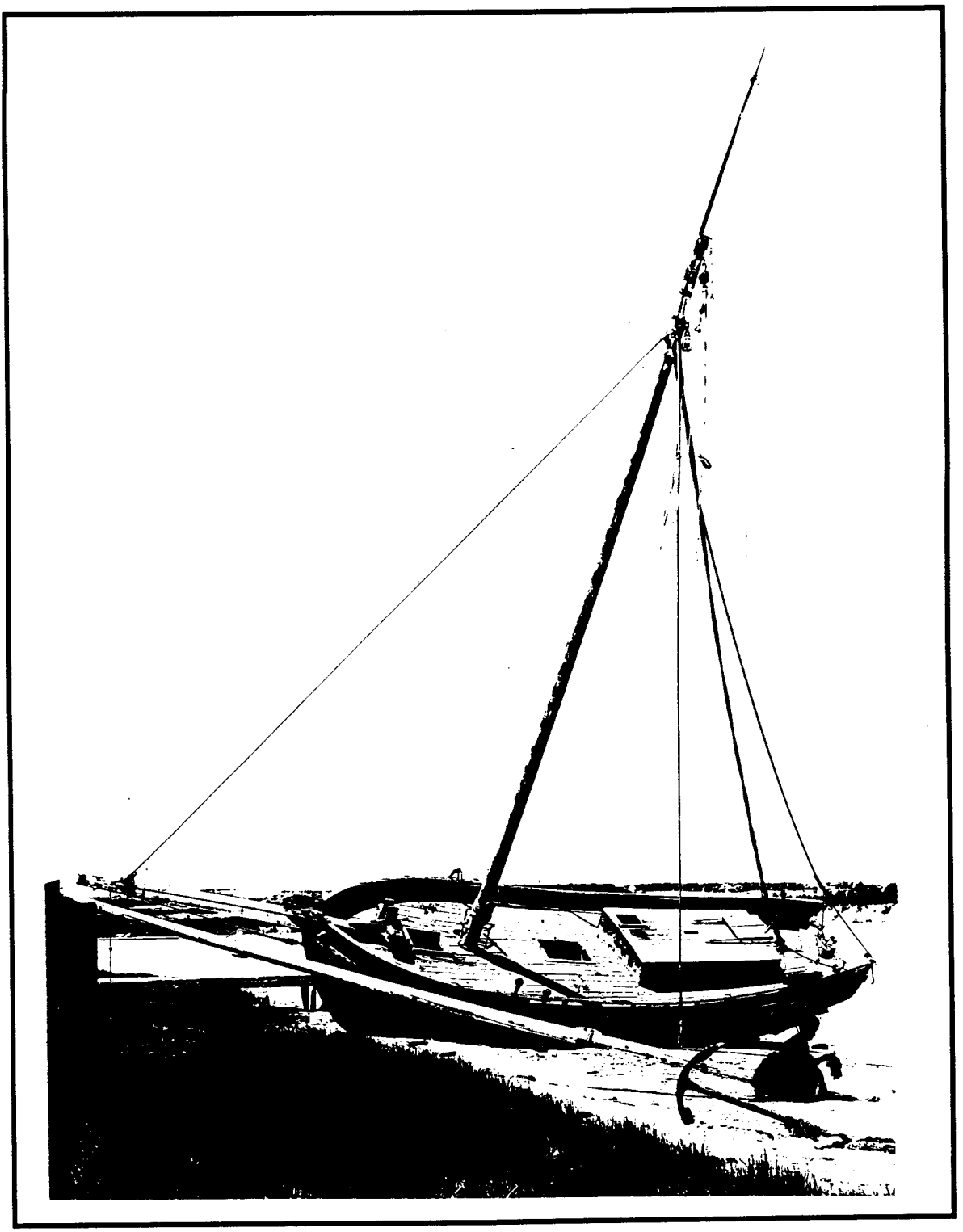


Figure 8. Illustration of the Noank sloop smack *Mars*. Reproduced courtesy of the Society for the Preservation of New England Antiquities.

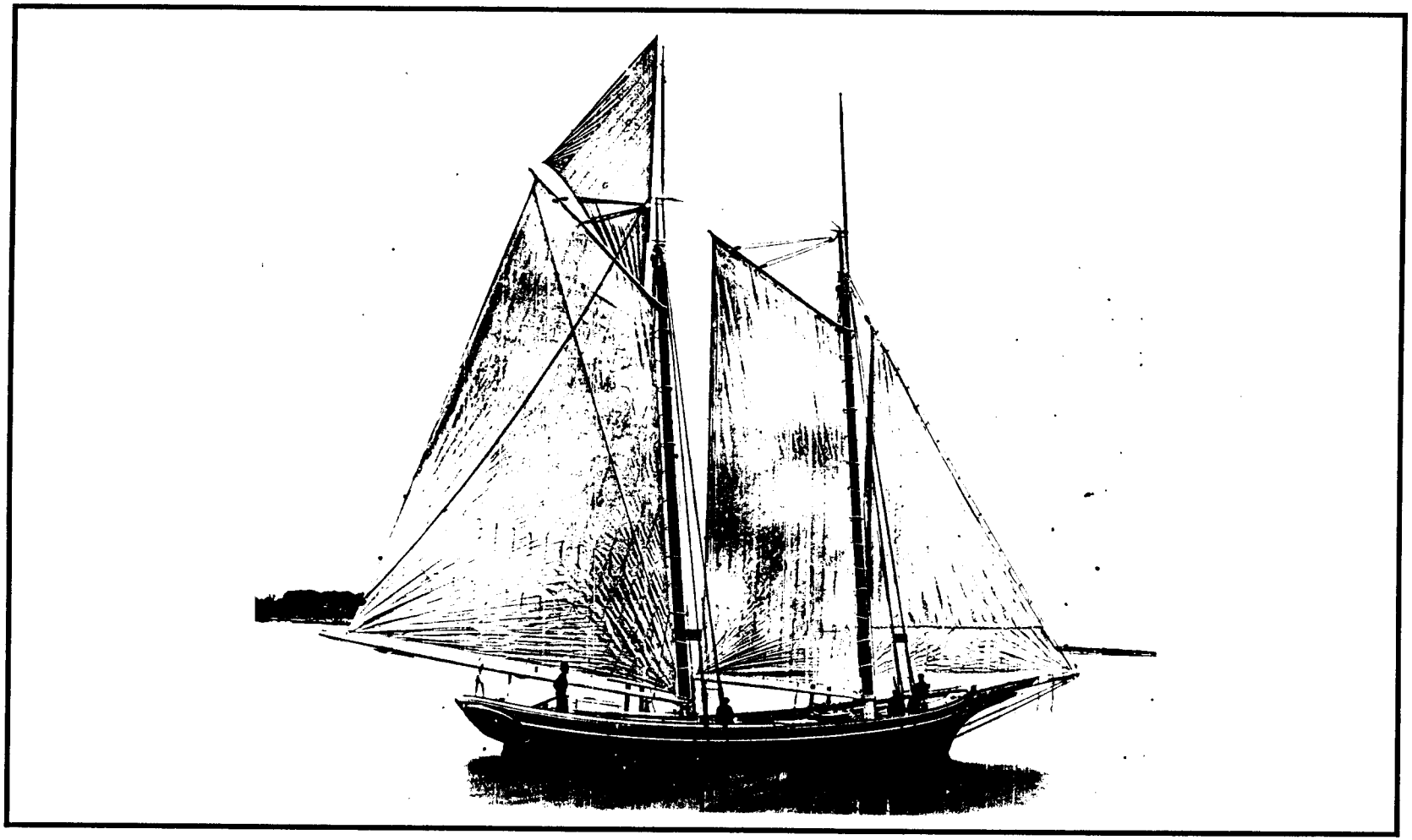


Figure 9. Illustration of Noank schooner *Mary E. Hoxie*. Reproduced courtesy of Mystic Seaport Museum Inc.

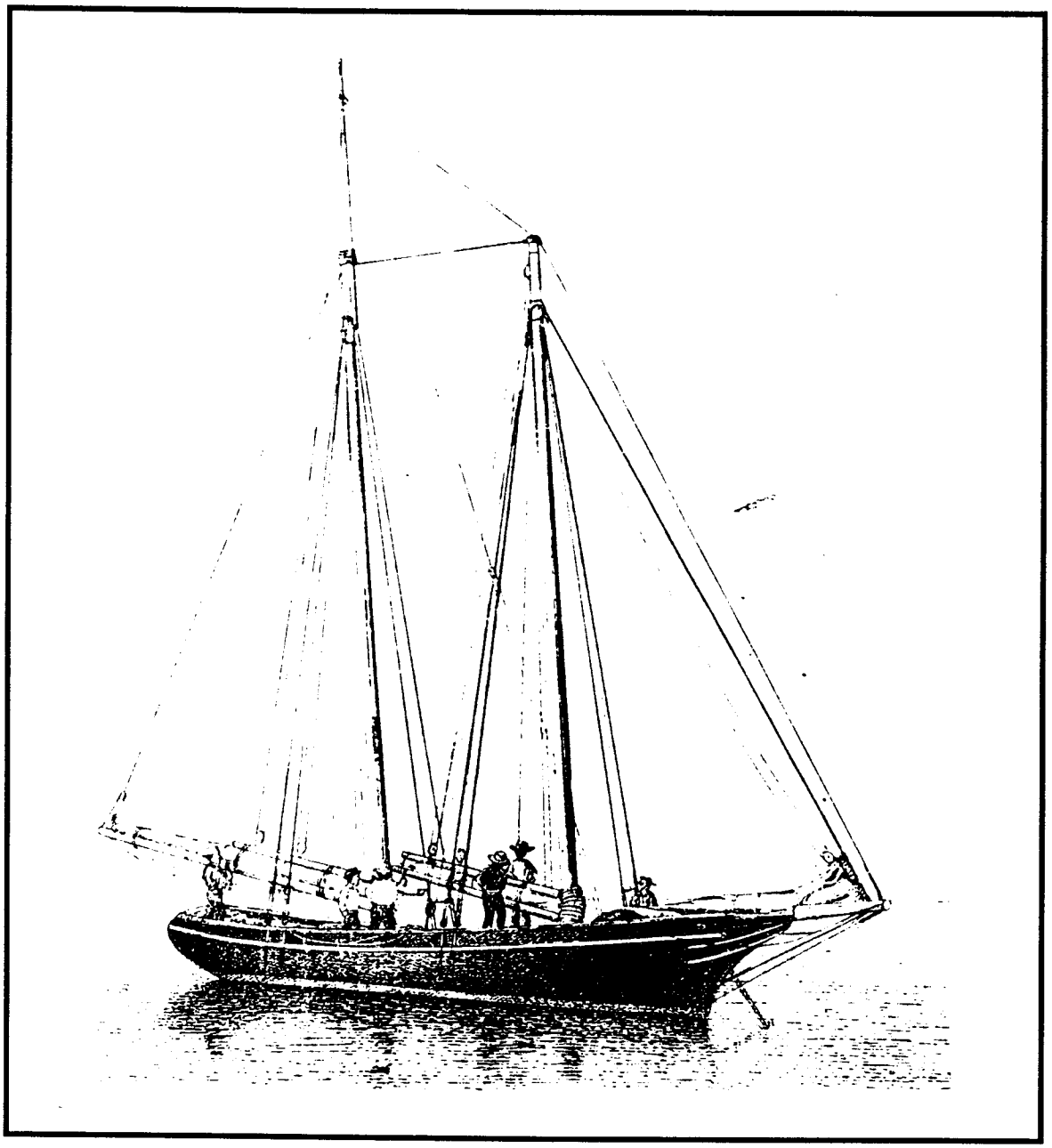


Figure 10. Illustration of a "Pensacola Fishing Schooner." Reproduced from, J. W. Collins, "Report on the Discovery and Investigation of the Fishing Grounds, Made by the Fish Commission Steamer *Albatross* During a Cruise Along the Atlantic Coast and in the Gulf of Mexico; With Notes on the Gulf Fisheries," *Annual Report of the United States Fish Commission for 1885* (Washington: Government Printing Office, 1887).

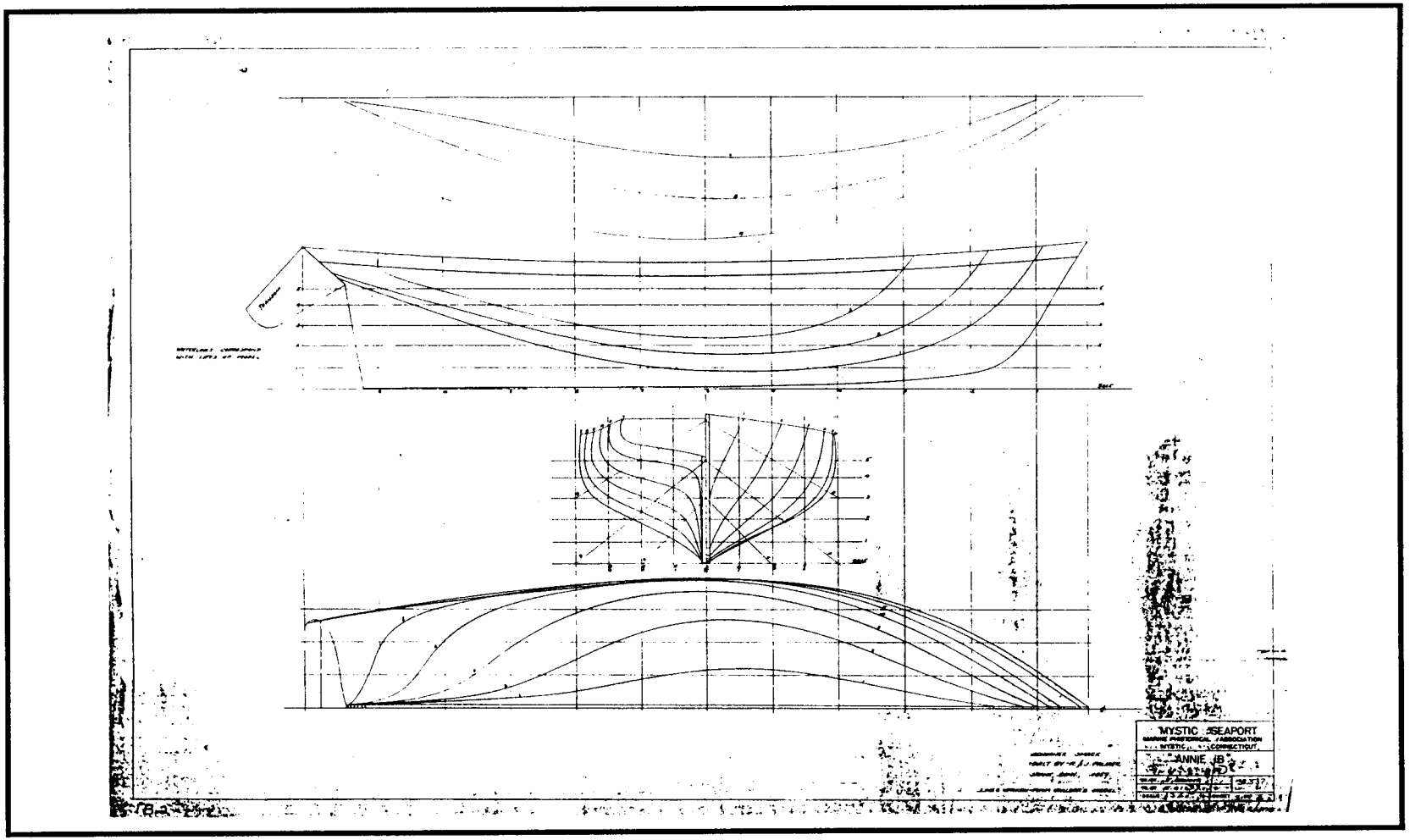


Figure 11. Lines plan of the Noank schooner *Annie B.* built by R. J. Palmer of Noank, 1859. Lines taken from builders half model by E. Schock. Reproduced courtesy of Mystic Seaport Museum Inc.

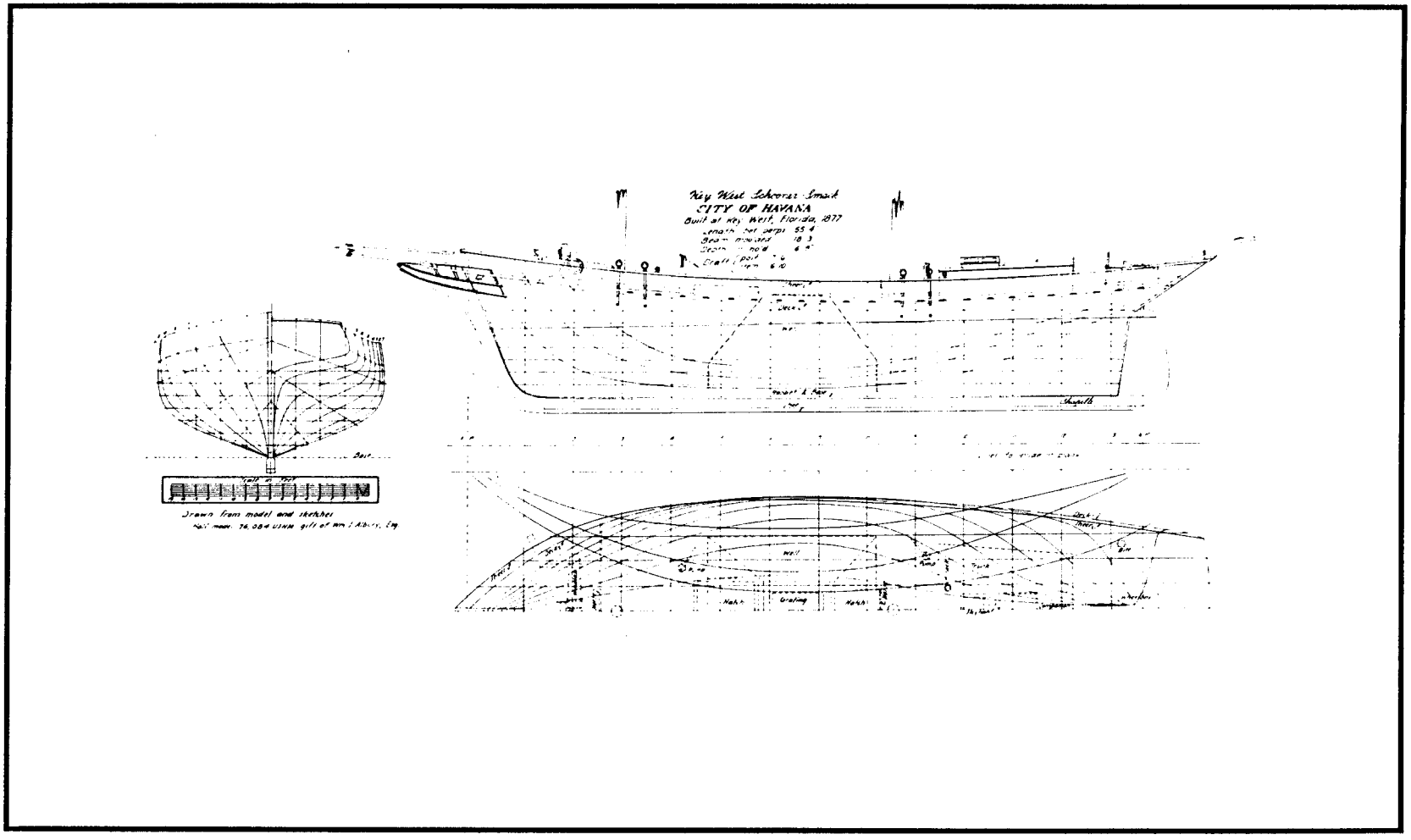


Figure 12. Lines plan and sheer profile of the schooner smack *City of Havana*. Reproduced from Howard I. Chapelle, *National Watercraft Collection* (United States National Museum, Bulletin No. 219, Washington: Government Printing Office, 1960), 213.

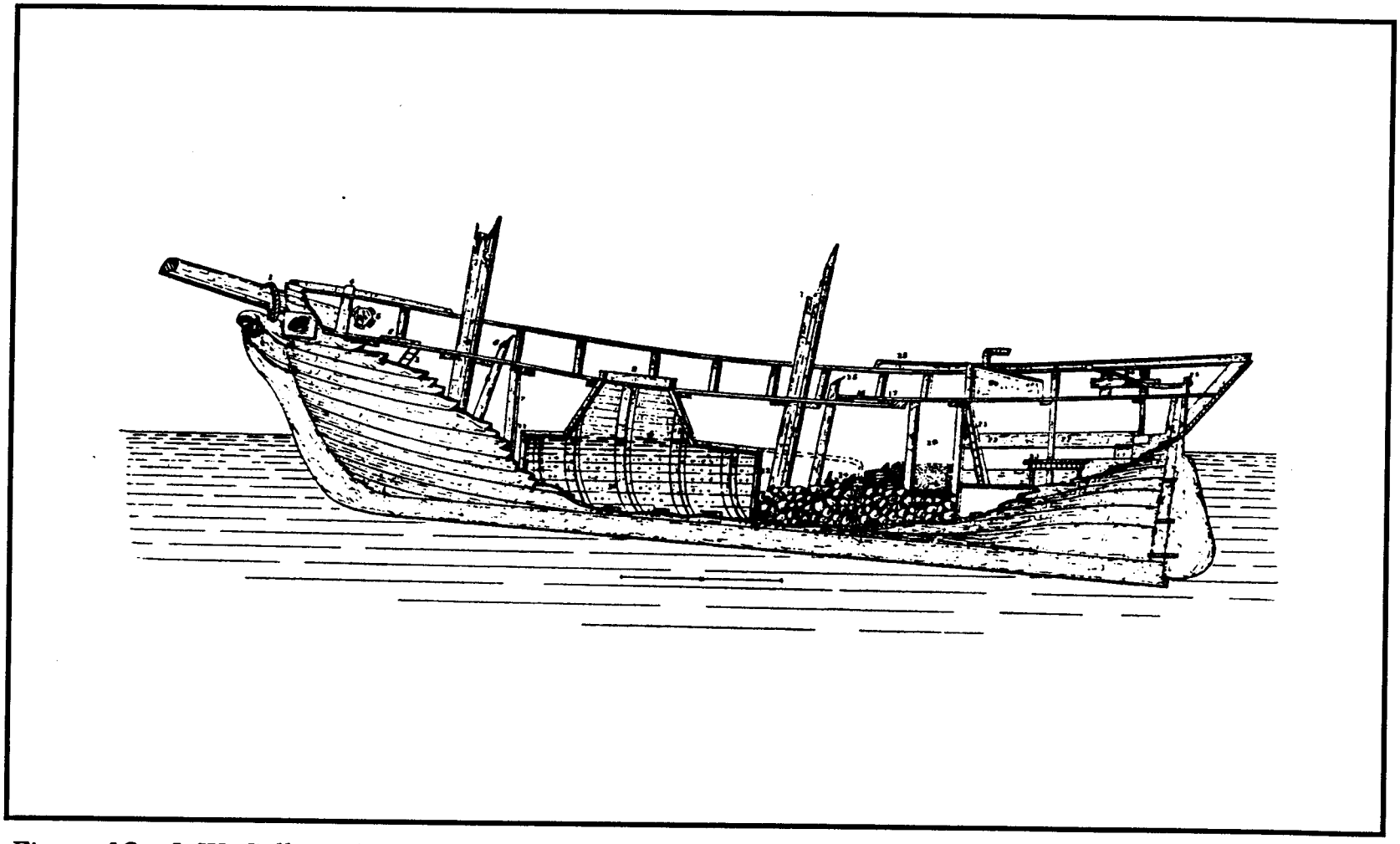


Figure 13. J. W. Collins' drawing of a well-smack employed in the fresh halibut trade. Reproduced from, George Brown Goode, *Fisheries and Fishery Industries of the United States* (Washington: Government Printing Office, 1887), Section V, Vol. II, Plate 4.

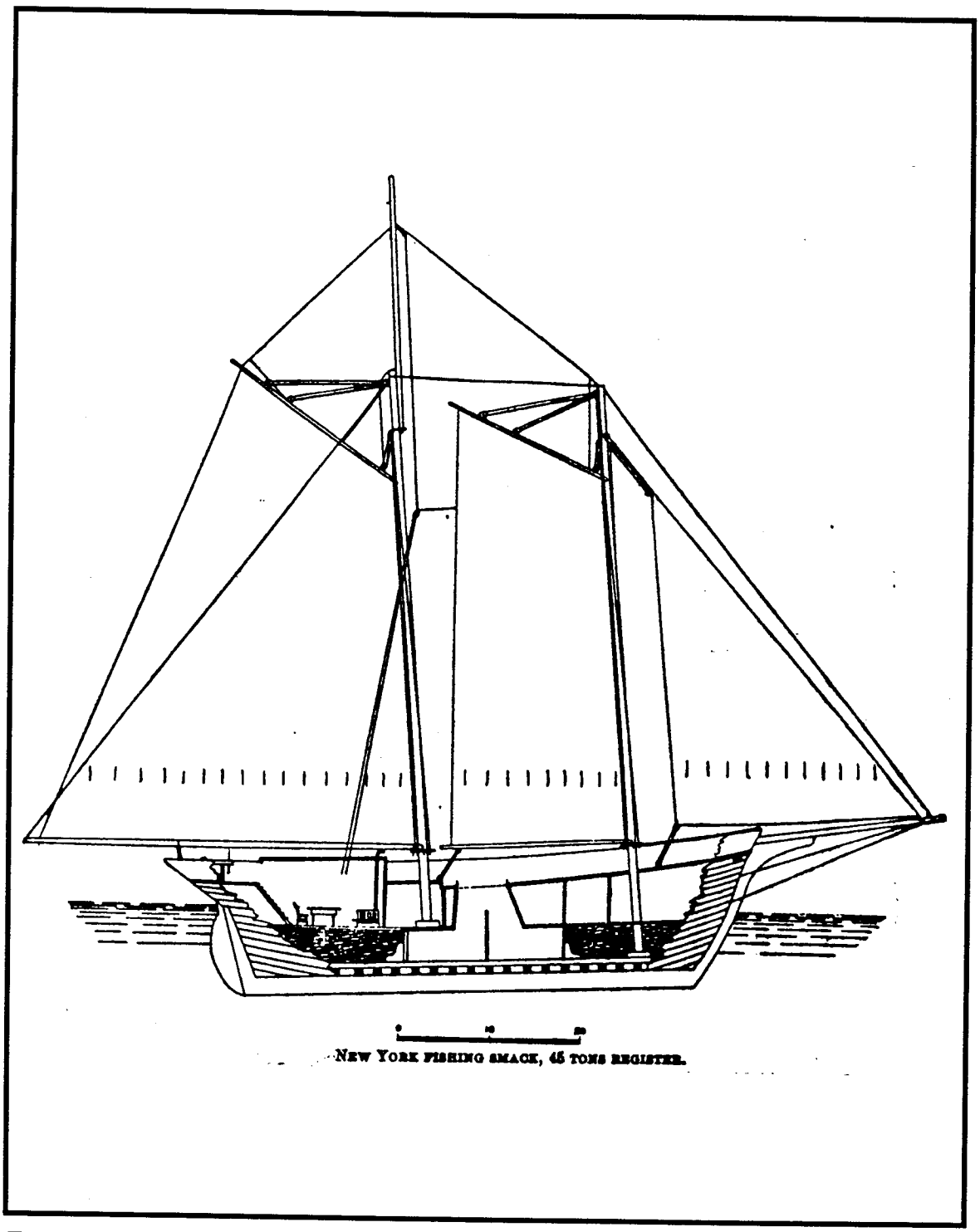


Figure 14. Drawing of a "New York Fishing Smack." Reproduced from Henry Hall, "Report on the Shipbuilding Industry of the United States," *Tenth Census of the United States* (Vol. VII, Washington: Government Printing Office, 1884, 19.

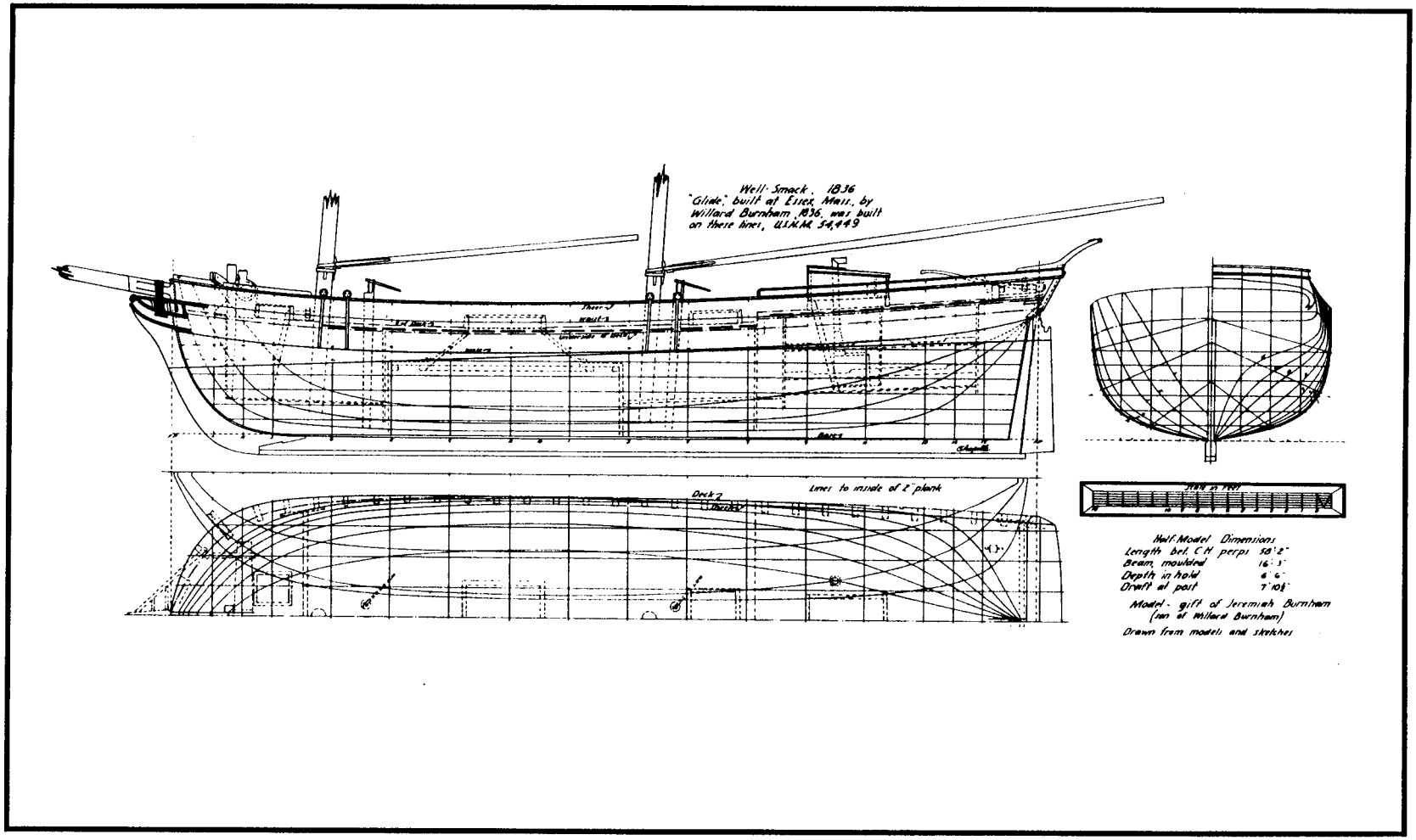


Figure 15. Lines and sheer plan for the schooner smack *Glide*. Reproduced from, Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (New York: W. W. Norton & Company, Inc., 1973), 60.

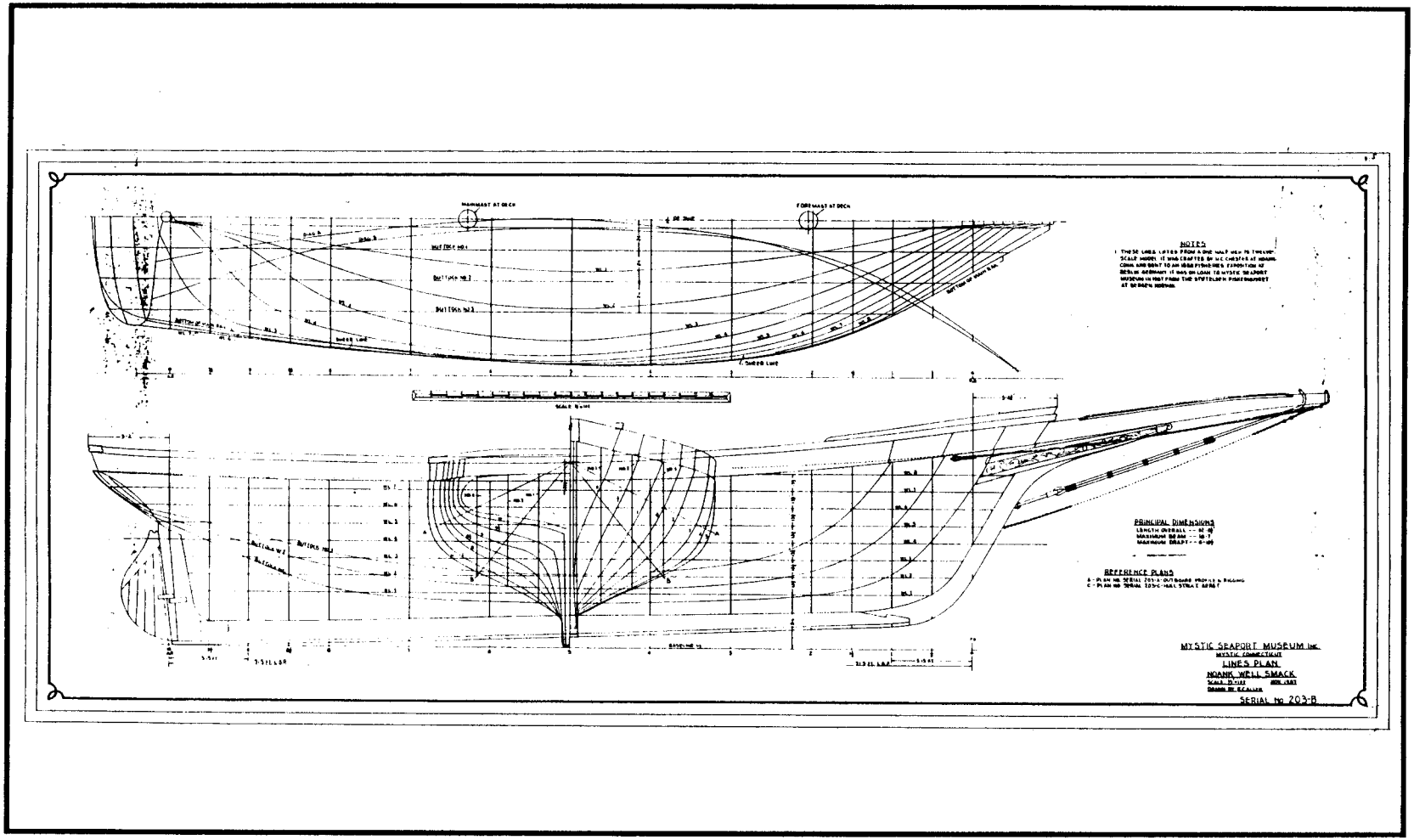


Figure 16. Lines plan of the Noank well smack model at the Bergen Norway Fisheries Museum. Reproduced from R. C. Allen, Plan No. 203-B, Mystic Seaport Museum Inc., Mystic, Connecticut, 1987.

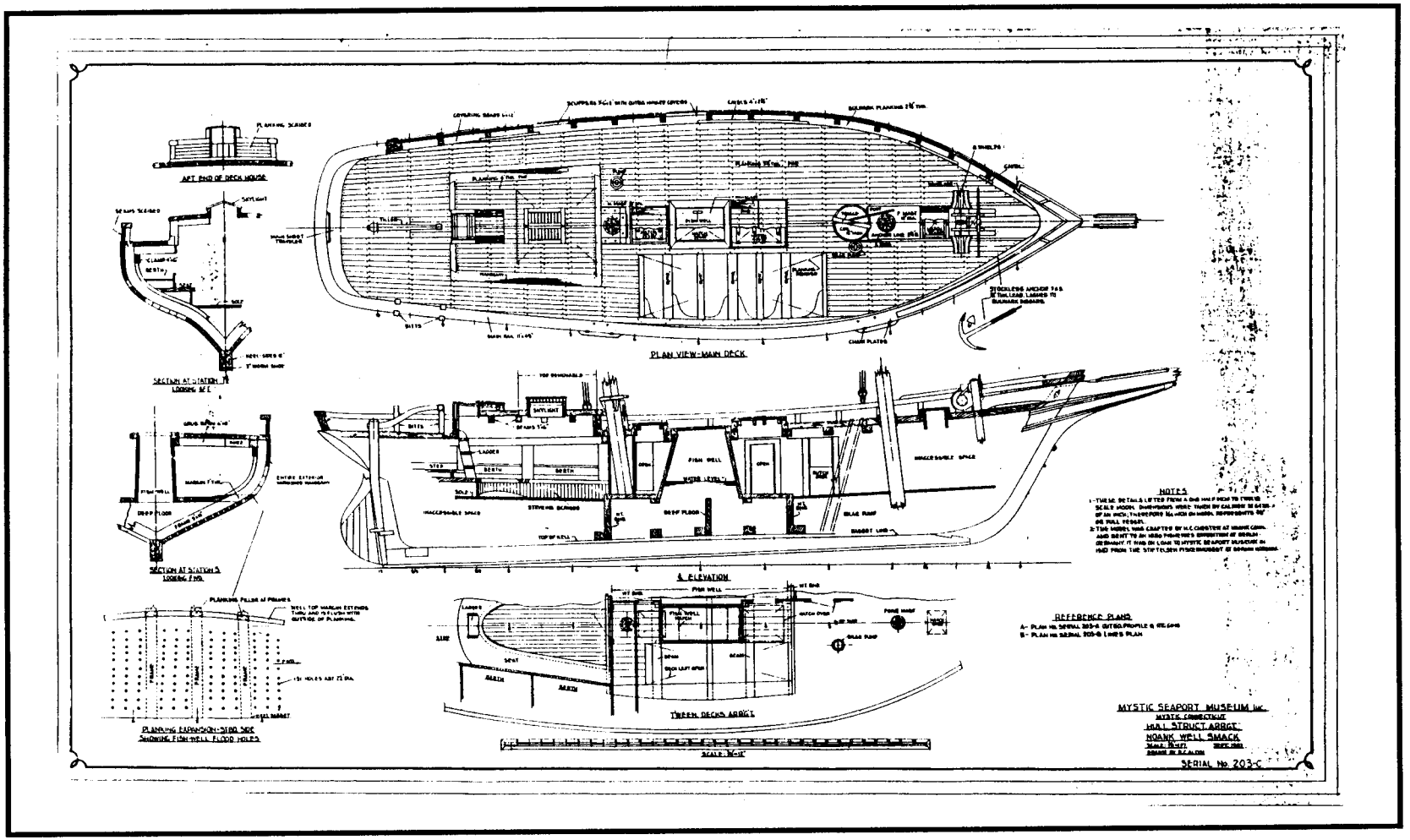


Figure 17. Hull structure and arrangement plan of the Noank well smack model at the Bergen, Norway Fisheries Museum. Reproduced from, R. C. Allen, Plan No. 203-C, Mystic Seaport Museum Inc., Mystic, Connecticut, 1987.

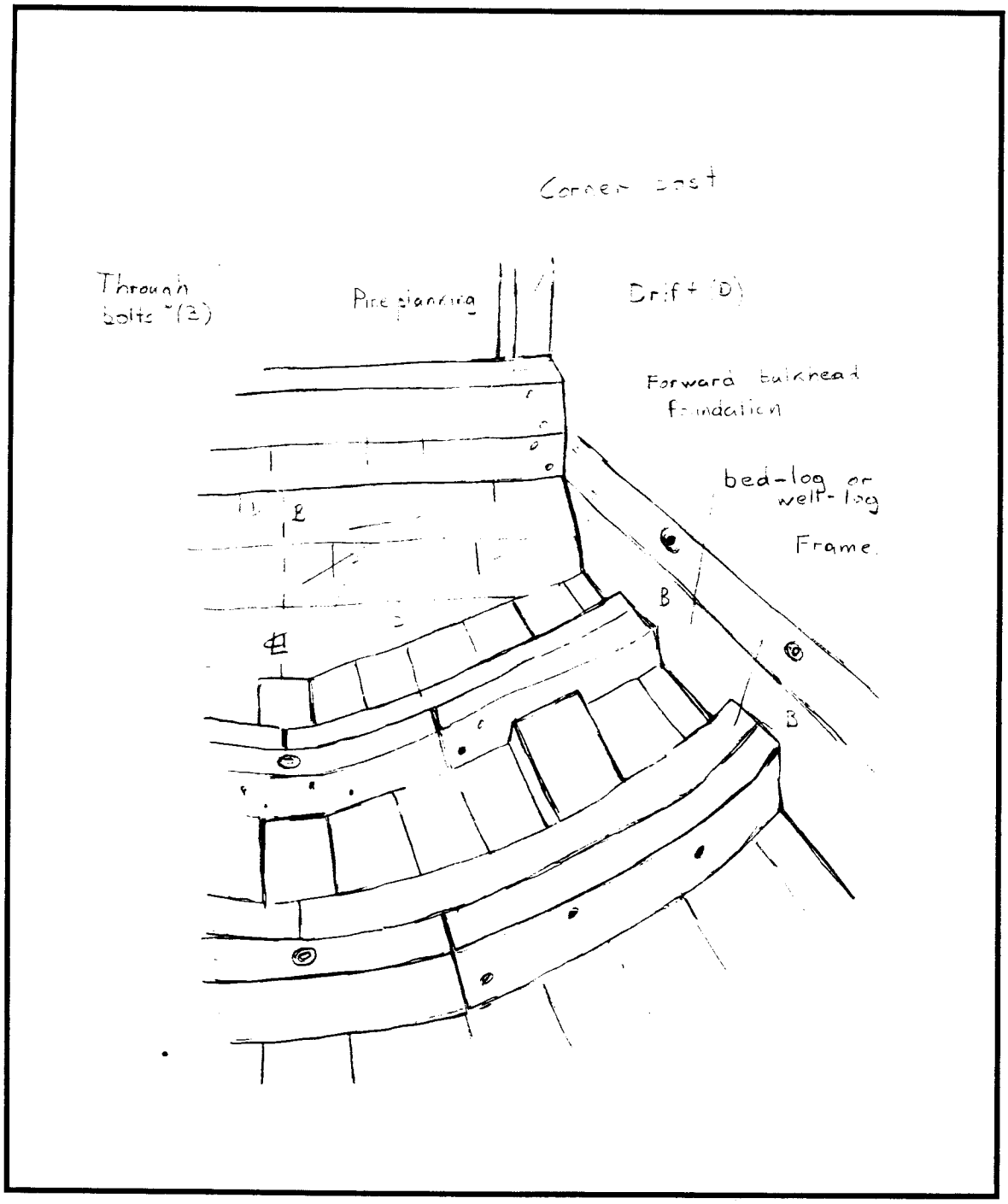


Figure 18. Perspective drawing of a "plumb foundation box well." The drawing is redrawn and altered from Willits D. Ansel, *Restoration of the Smack Emma C. Berry* (Mystic, Connecticut: Marine Historical Association, Inc., 1973), 68.

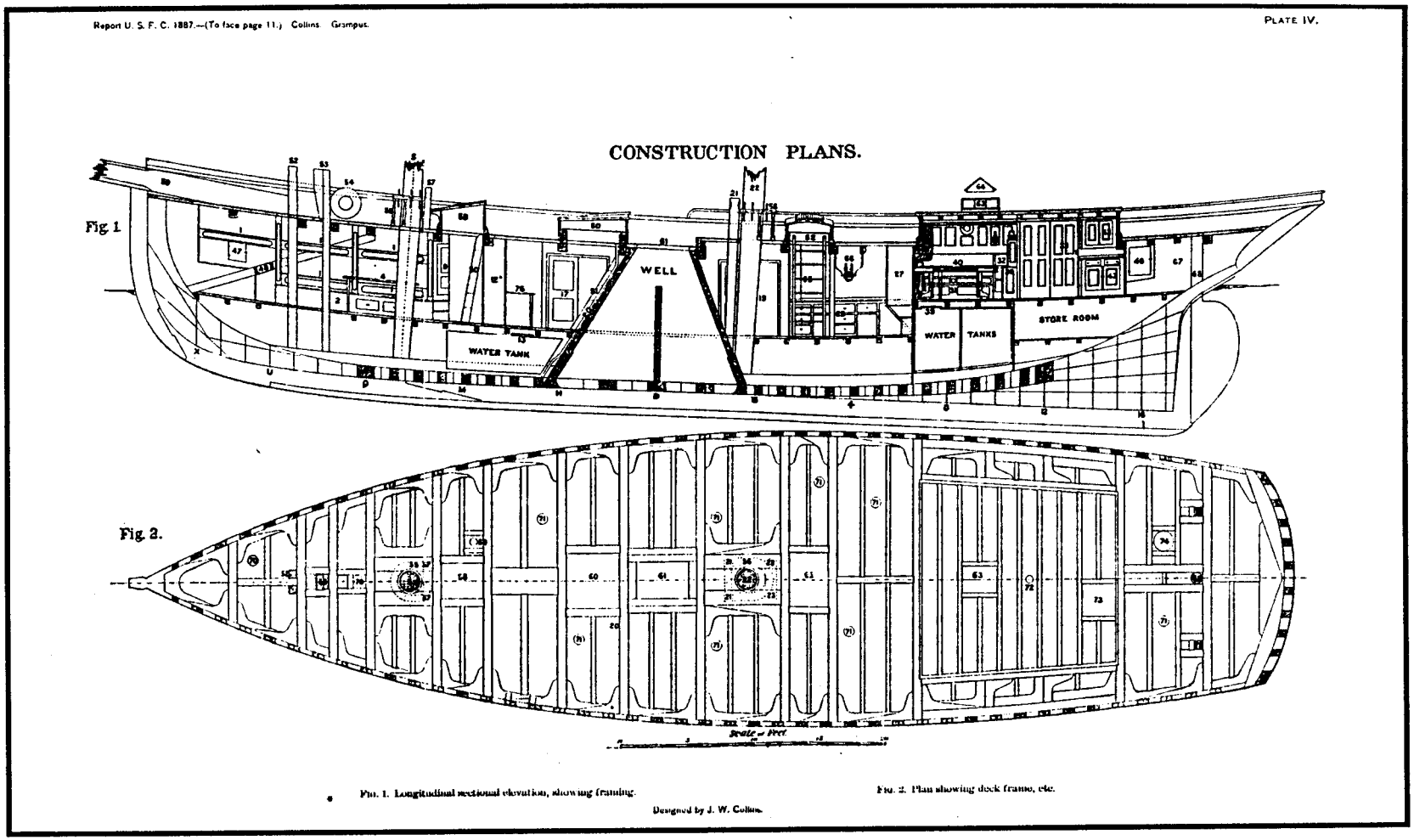


Figure 19. Construction plan of the schooner *Grampus*. Reproduced from J.W. Collins, "Report on the Construction of the Schooner *Grampus:* 1885-1887," *Annual Report of the United States Fish Commission for 1887* (Washington: Government Printing Office, 1891), Plate IV.

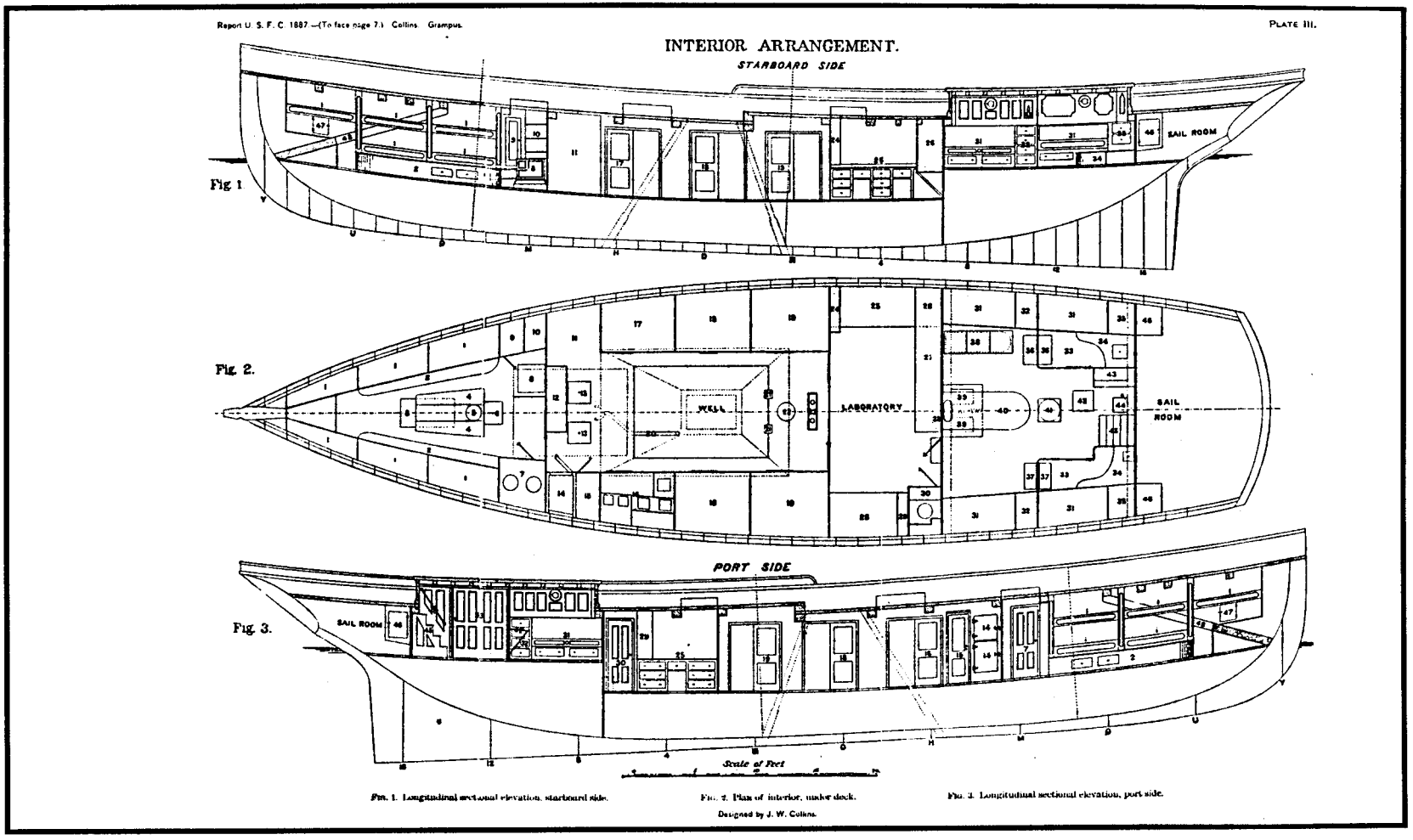
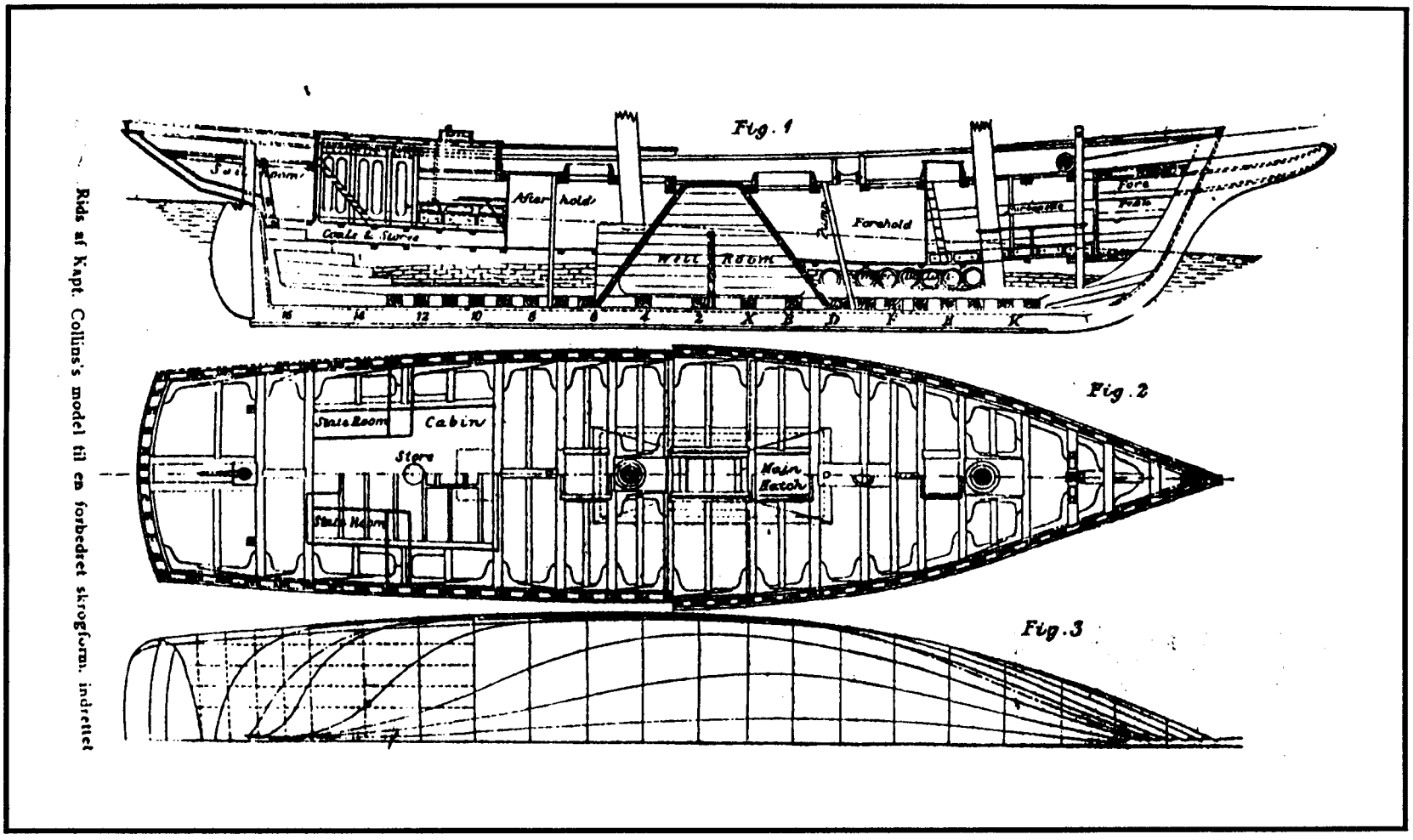


Figure 20. Interior arrangement plan of the schooner *Grampus*. Reproduced from J.W. Collins, "Report on the Construction of the Schooner *Grampus:* 1885-1887," *Annual Report of the United States Fish Commission for 1887* (Washington: Government Printing Office, 1891), Plate III.



Riss af Kapt. Collins's model til en forbedret skrogform, indrettet

Figure 21. Lines and construction plan of the "Captain Collins Model." Reproduced from the live well research file, Shipyard Research, Mystic Seaport Museum, Inc., Mystic, Connecticut.

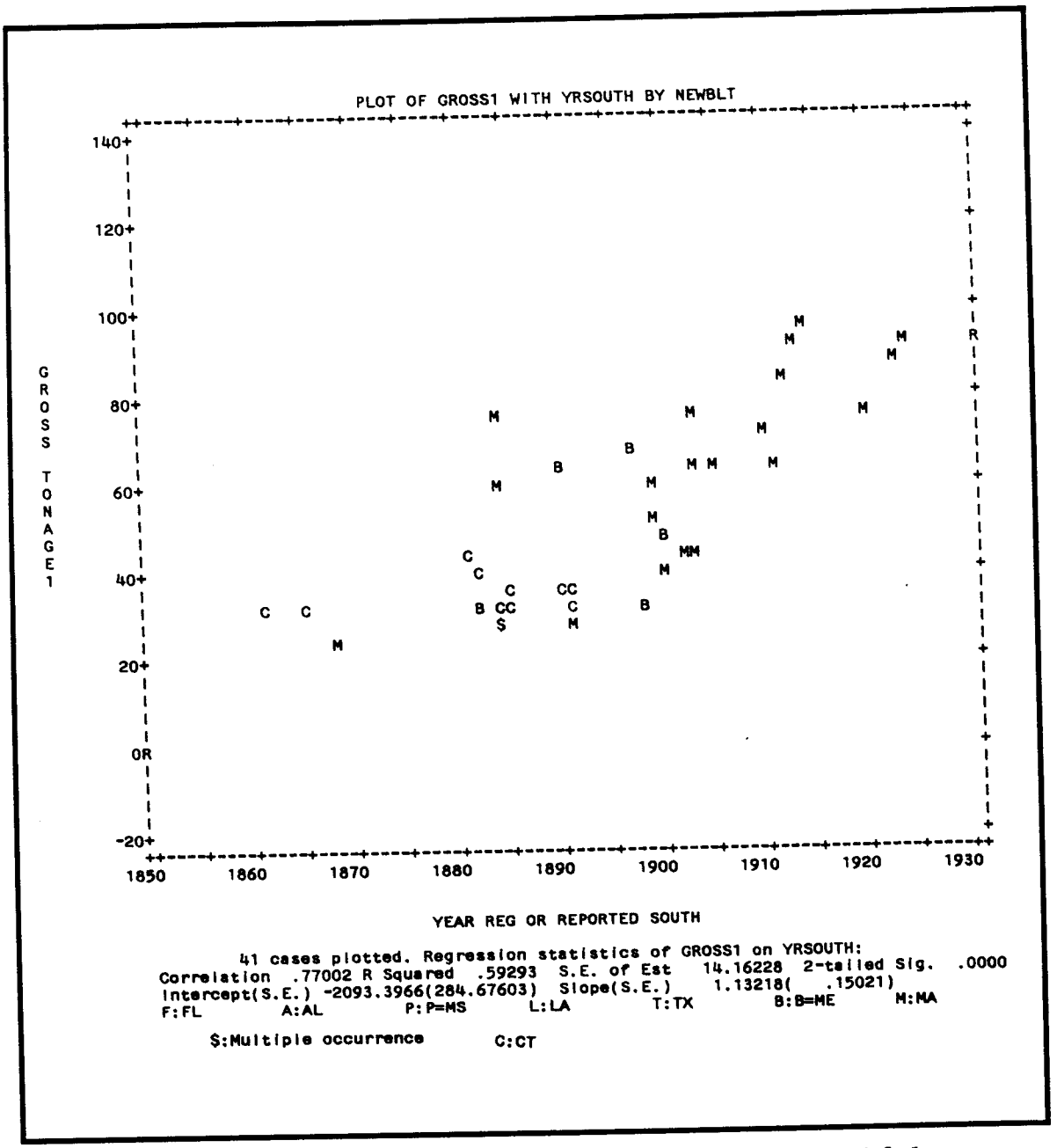


Figure 22. Scatterplot of the gross tonnage of New England fishing schooners in and the year that the vessels were imported into the red snapper fishery illustrates a trend for introducing increasingly larger watercraft into the industry.

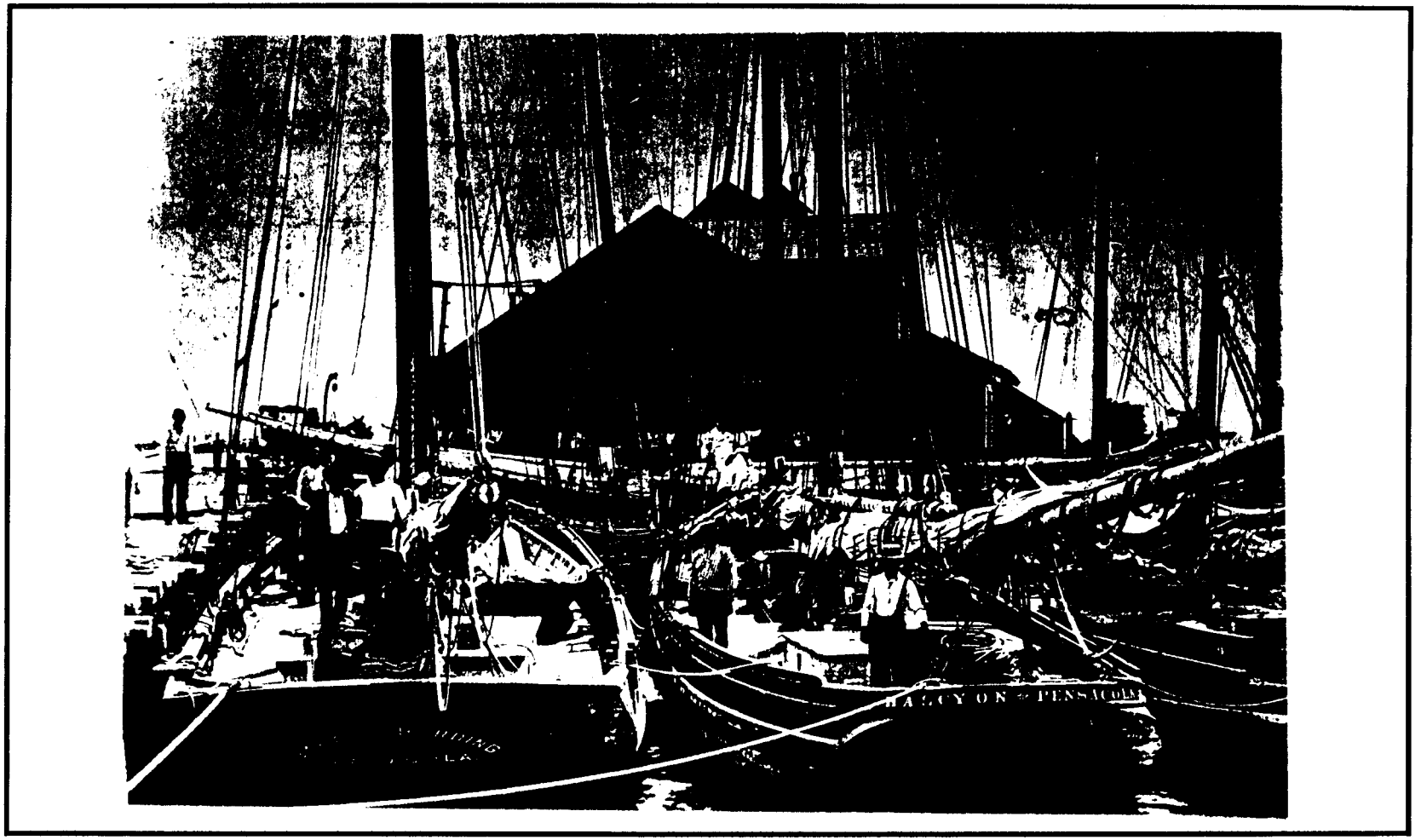


Figure 23. Illustration of schoooners *Sarah L. Harding* and *Halcyon*. These two schooners at the Warren Fish Co. dock exhibit the diversity in styles present in Pensacola during the latter part of the 1800s. Reproduced Courtesy of the Mariner's Museum, Newport News, Virginia.

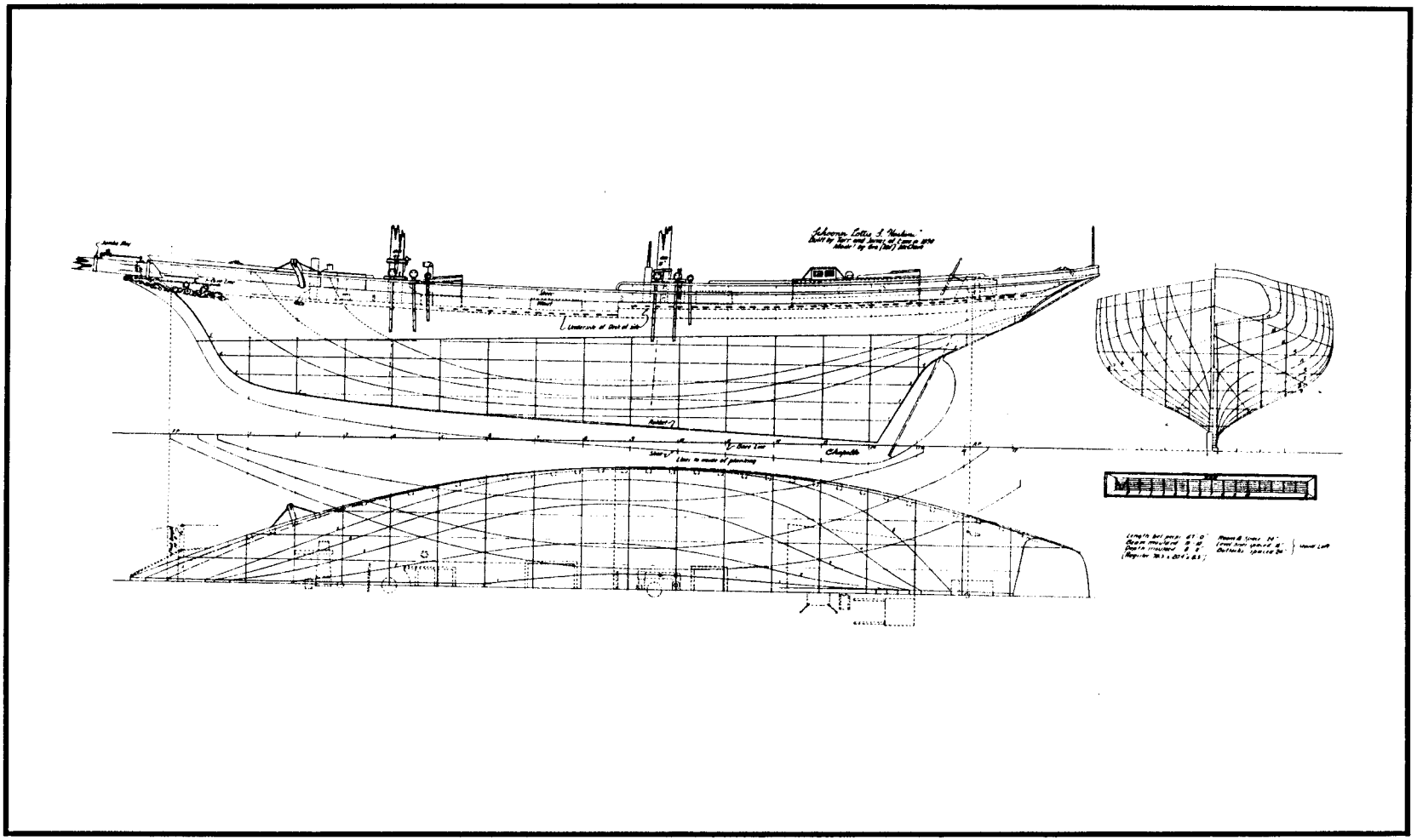


Figure 24. Lines plan and sheer profile of the schooner *Lottie S. Haskins*. Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 178.

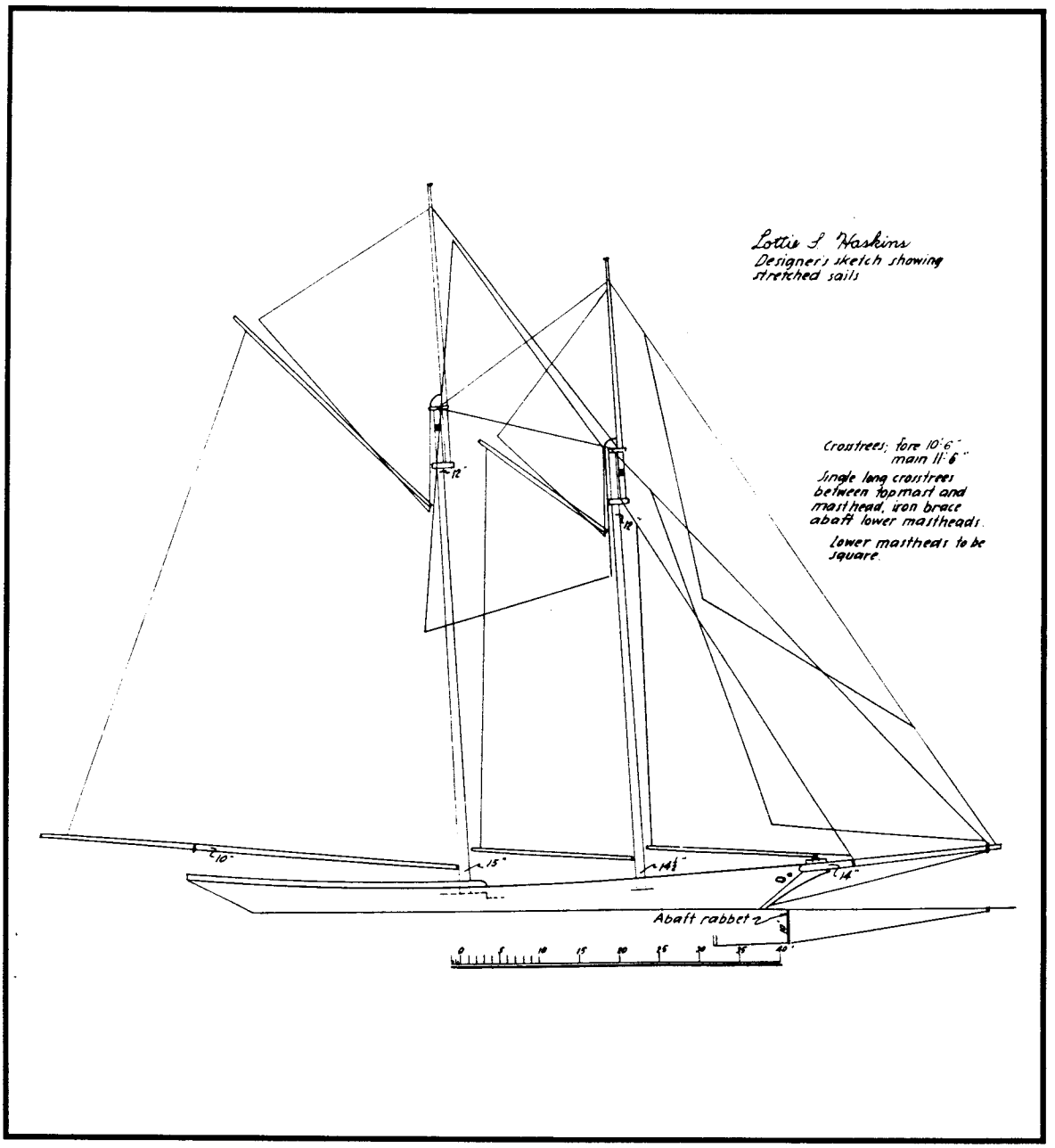


Figure 25. Sail plan of the schooner *Lottie S. Haskins.* Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 178.

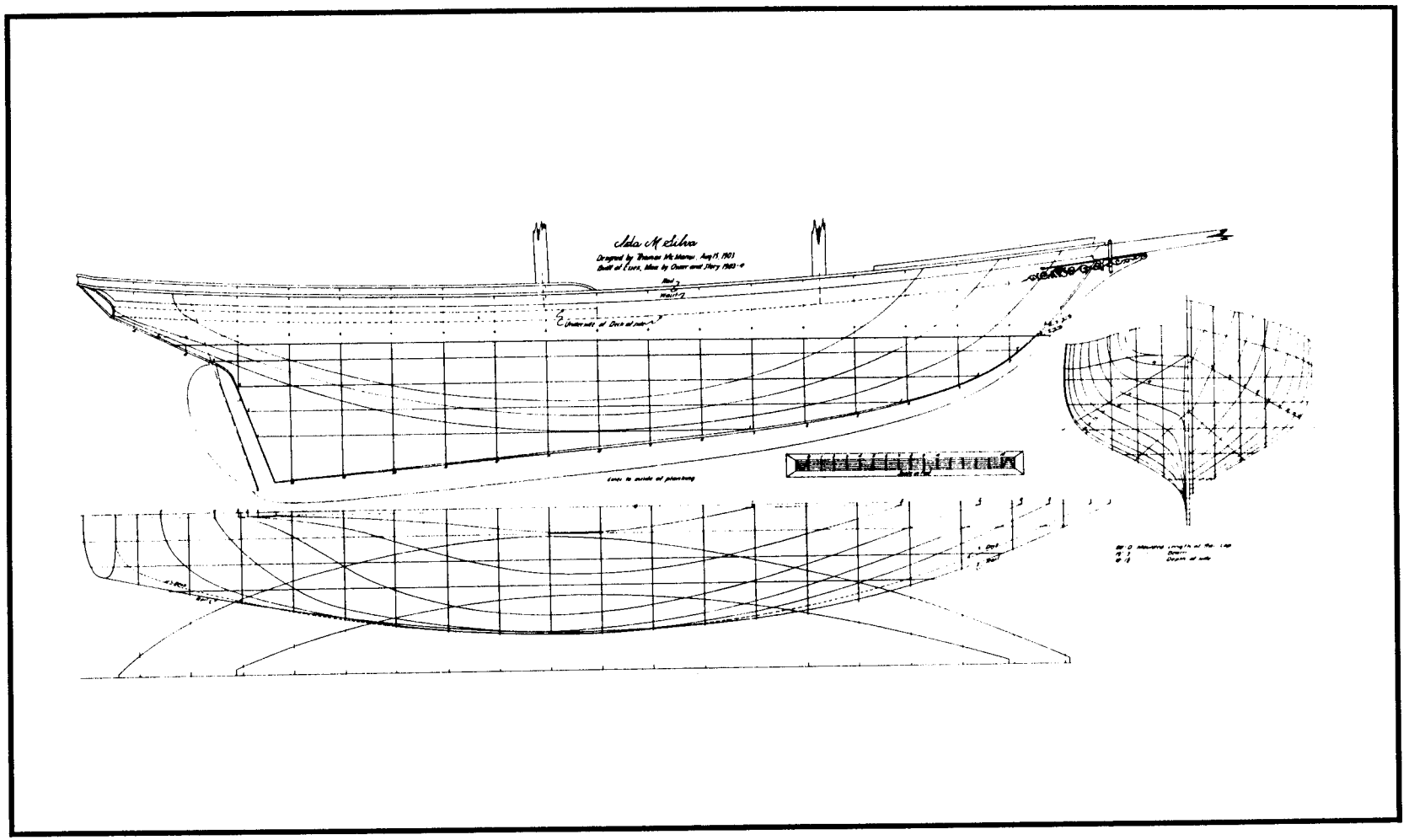


Figure 26. Lines plan of the schooner *Ida M. Silva.* Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 241.

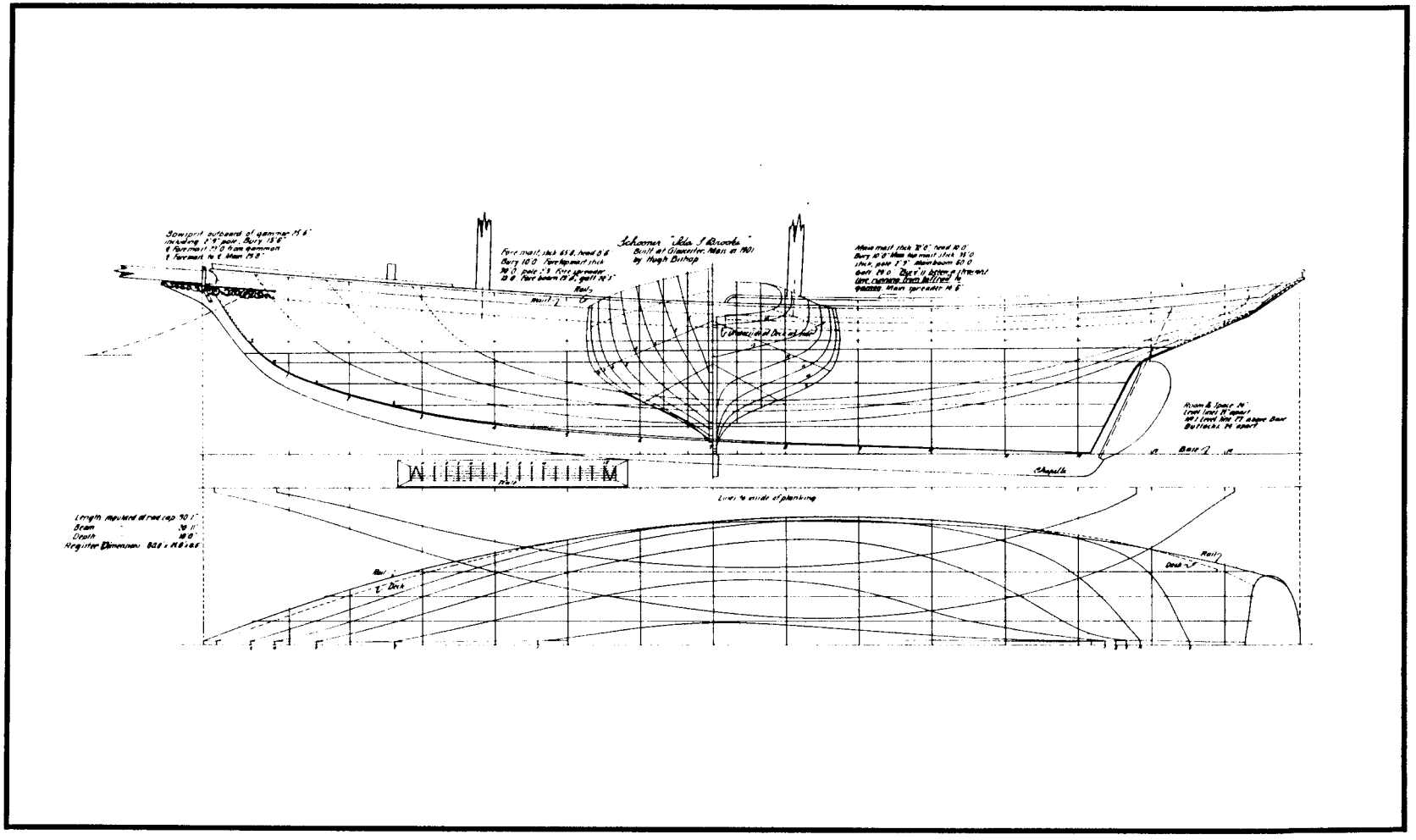


Figure 27. Lines plan of the schooner *Ida S. Brooks*. Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 218.

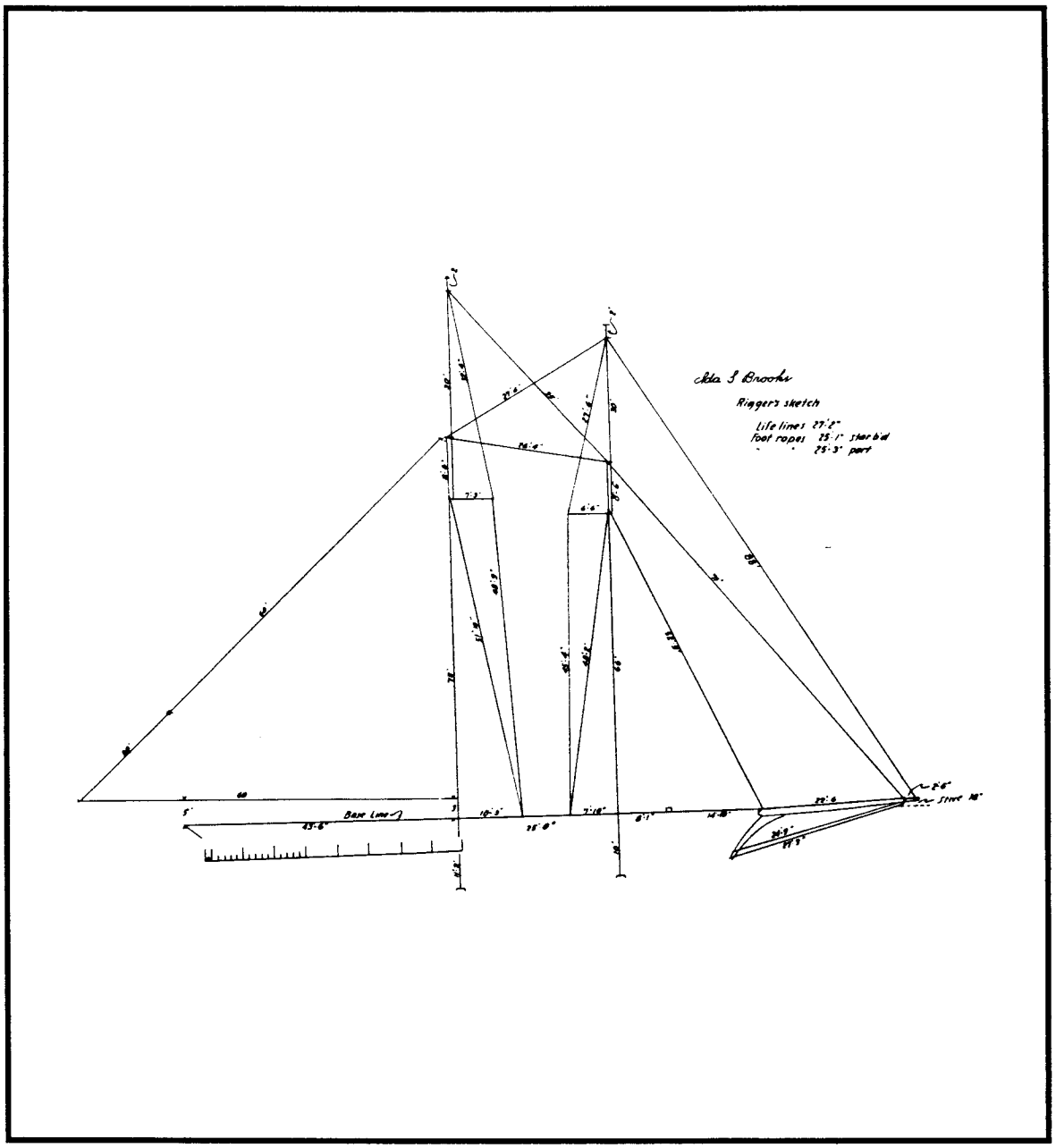


Figure 28. Rigger's sketch of the schooner *Ida S. Brooks*. Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 217.

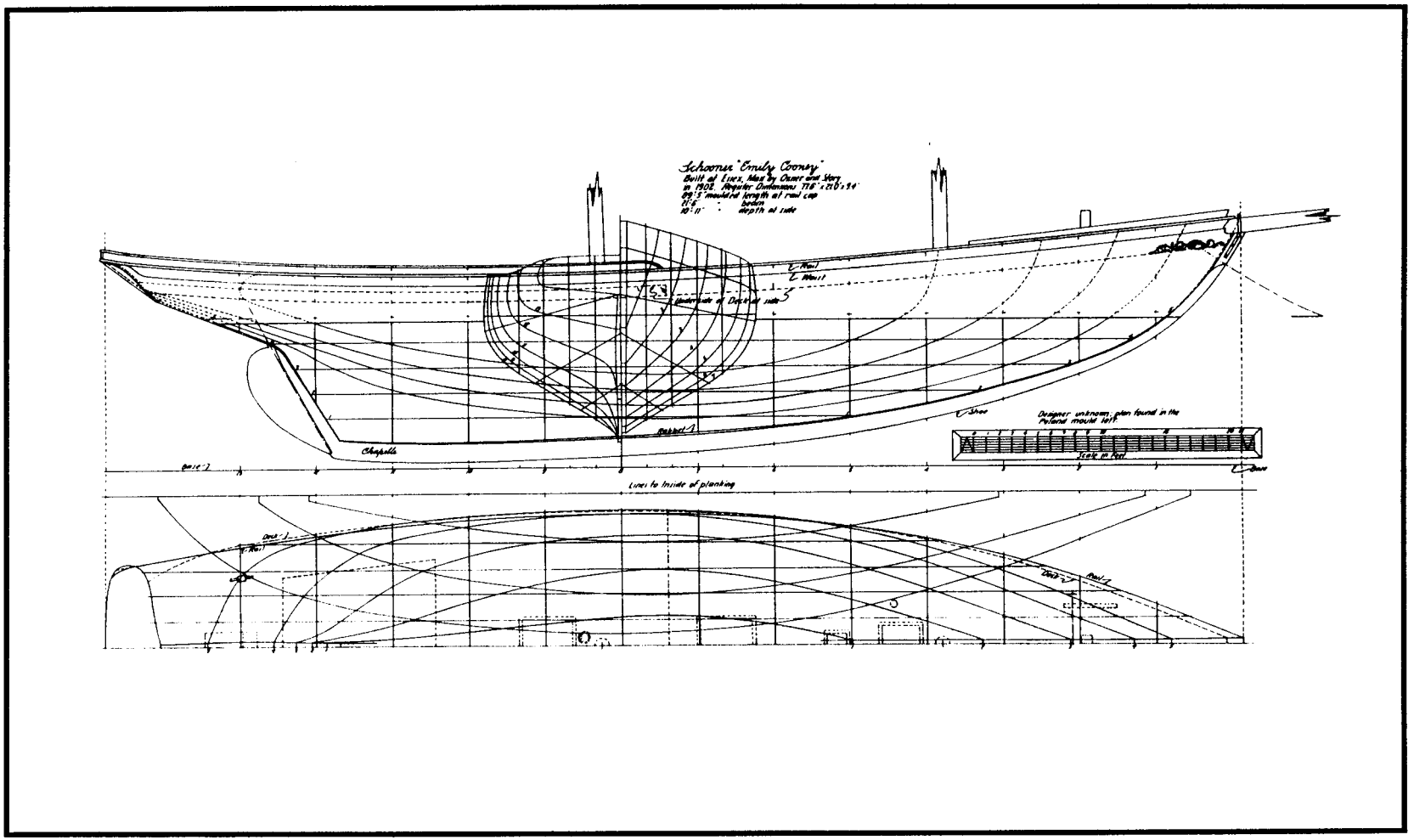


Figure 29. Illlustration of the schooner *Emily Cooney*. Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 232.

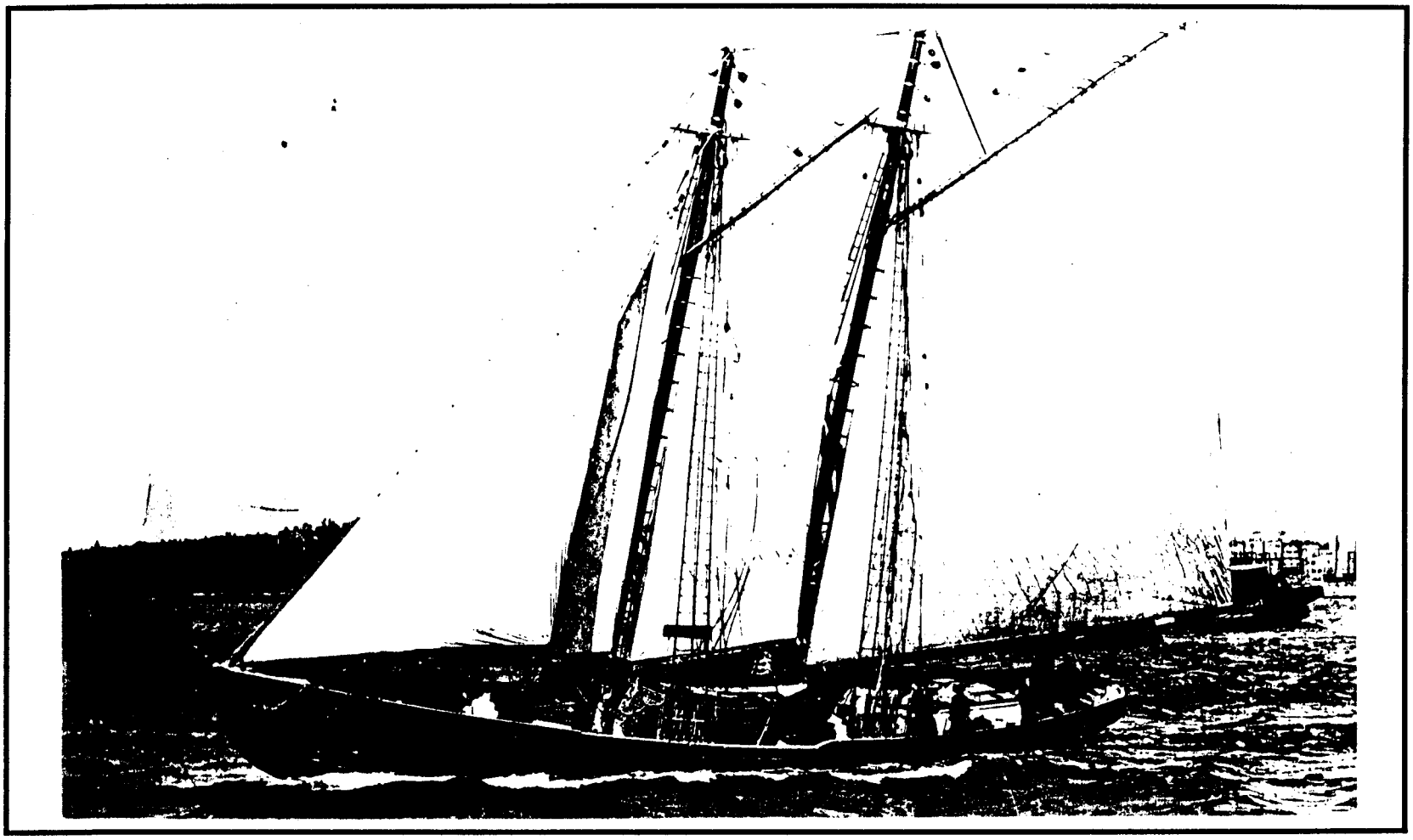


Figure 30. Illustration of the knockabout schooner *Washakie*. Reproduced courtesy of Mystic Seaport Museum Inc., Mystic, Connecticut.

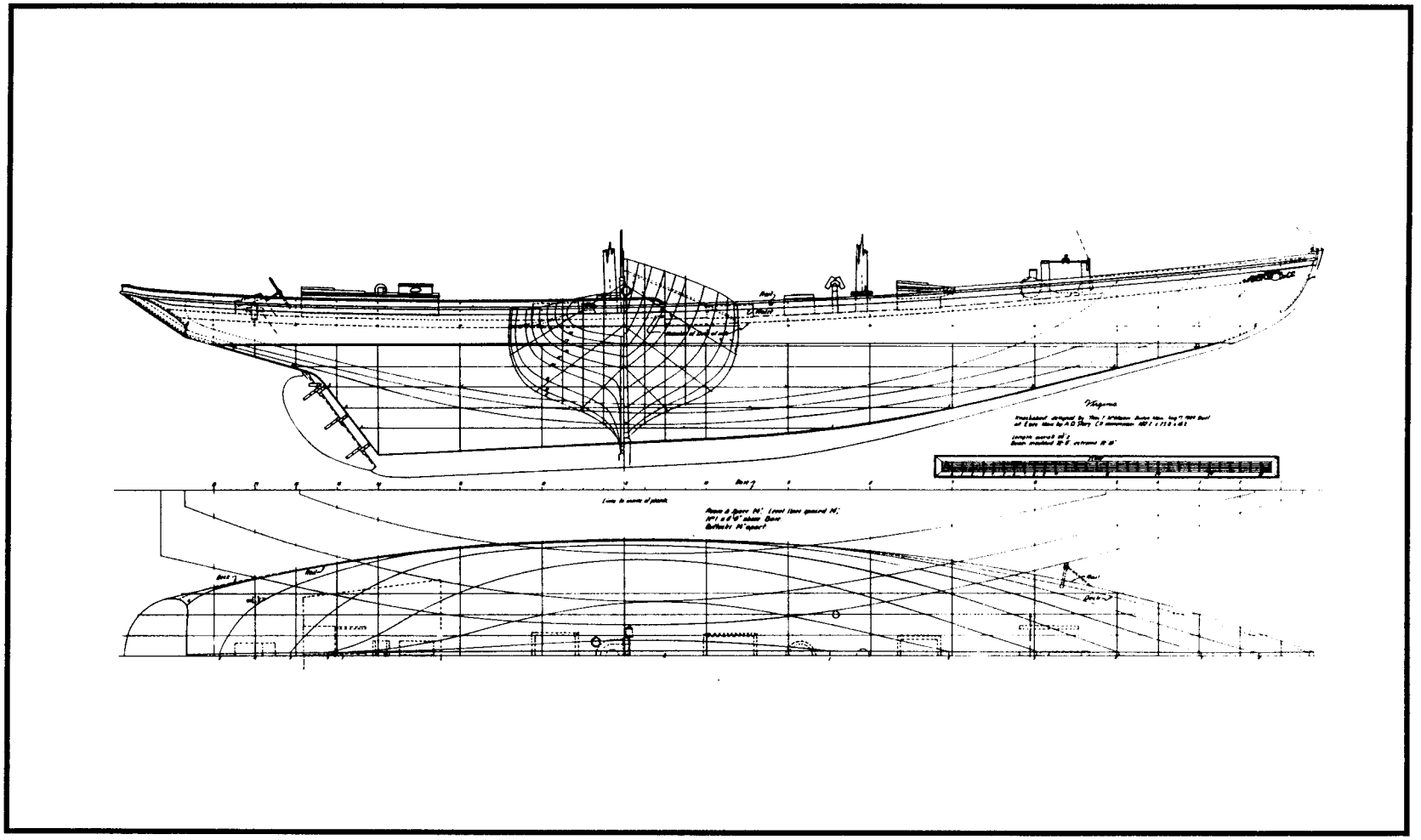


Figure 31. Knockabout schooner *Virginia.* Reproduced from Howard I. Chapelle, *The American Fishing Schooners, 1825-1935* (W. W. Norton & Company, Inc., 1973), 281.

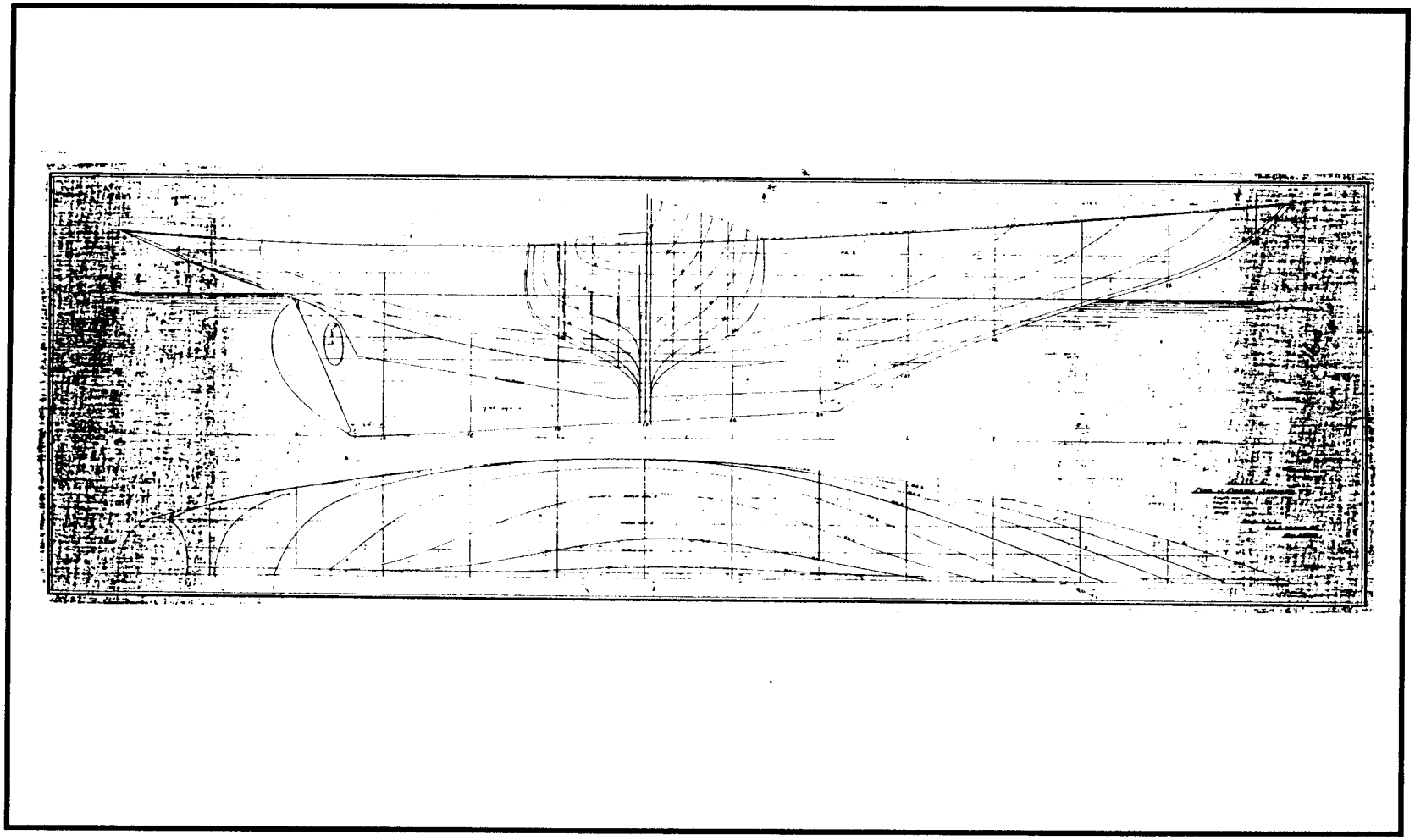


Figure 32. Lines plan of the knockabout schooner *Arcas*. Reproduced courtesy of Mystic Seaport Museum Inc., Mystic, Connecticut.

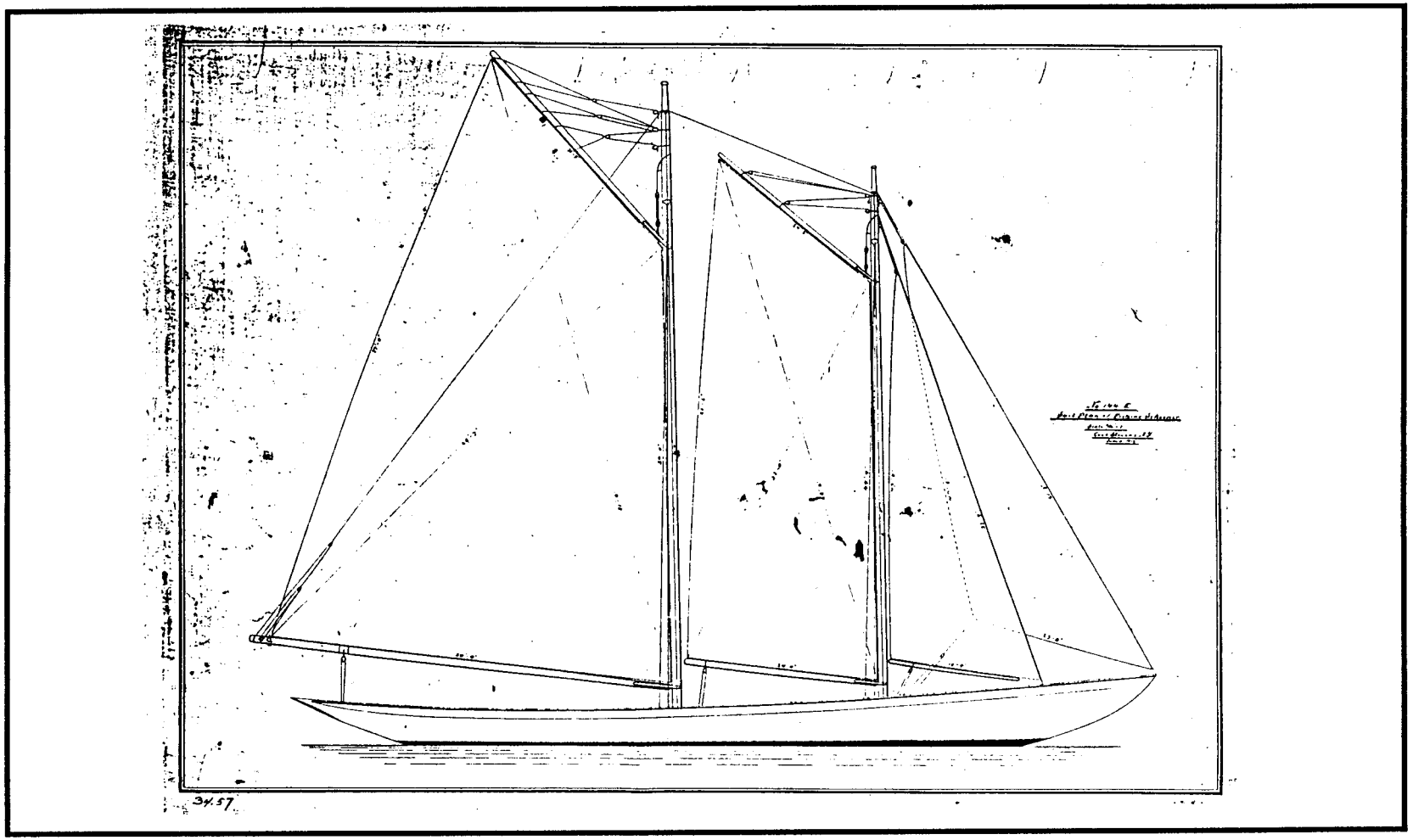


Figure 33. Sail plan of the knockabout schooner *Arcas*. Reproduced courtesy of Mystic Seaport Museum Inc., Mystic, Connecticut.

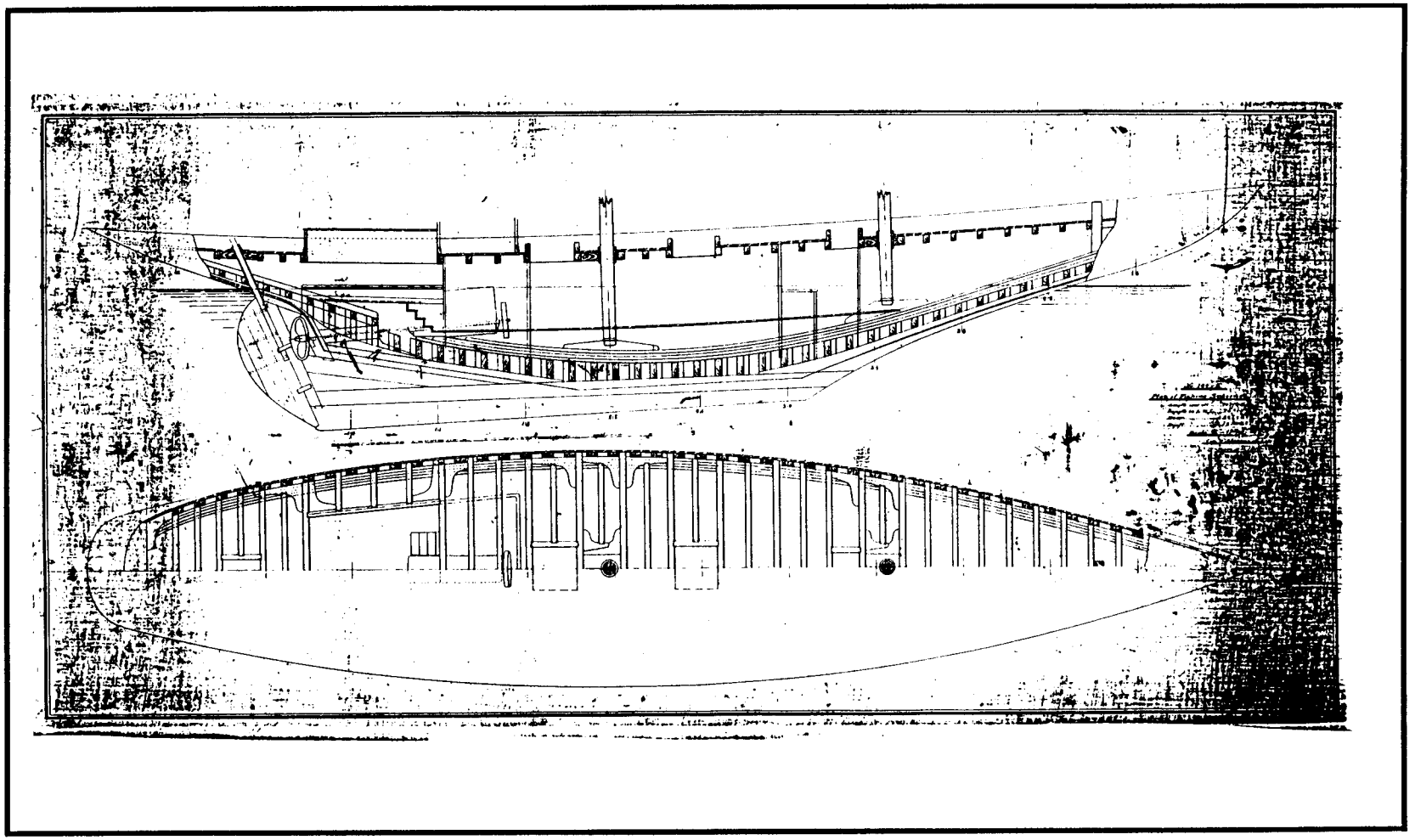


Figure 34. Construction plan of the knockabout schooner *Arcas*. Reproduced courtesy of Mystic Seaport Museum Inc., Mystic, Connecticut.

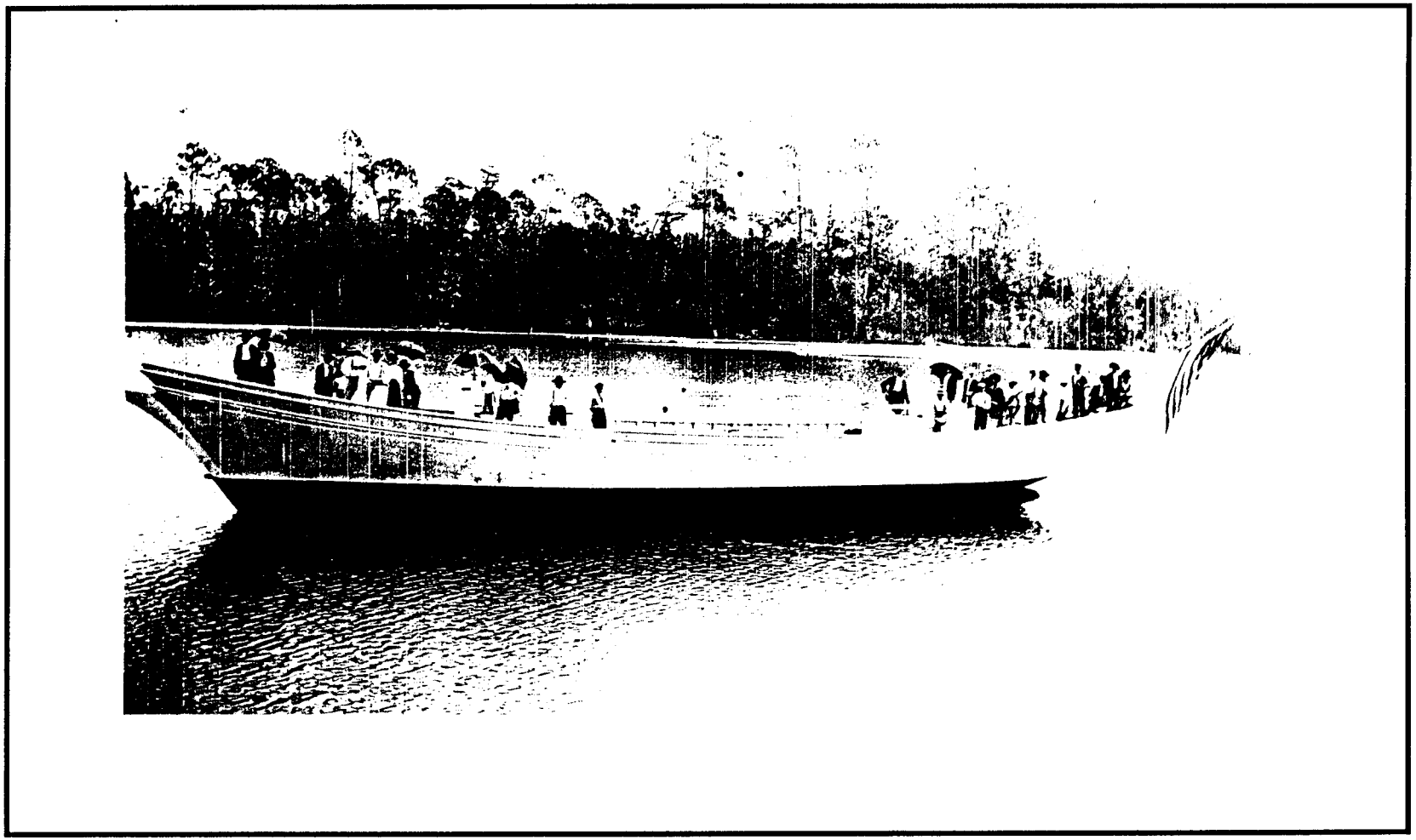


Figure 35. Illustration of the Schooner *Chicopee*. Courtesy of Special Collections, John C. Pace Library, University of West Florida.

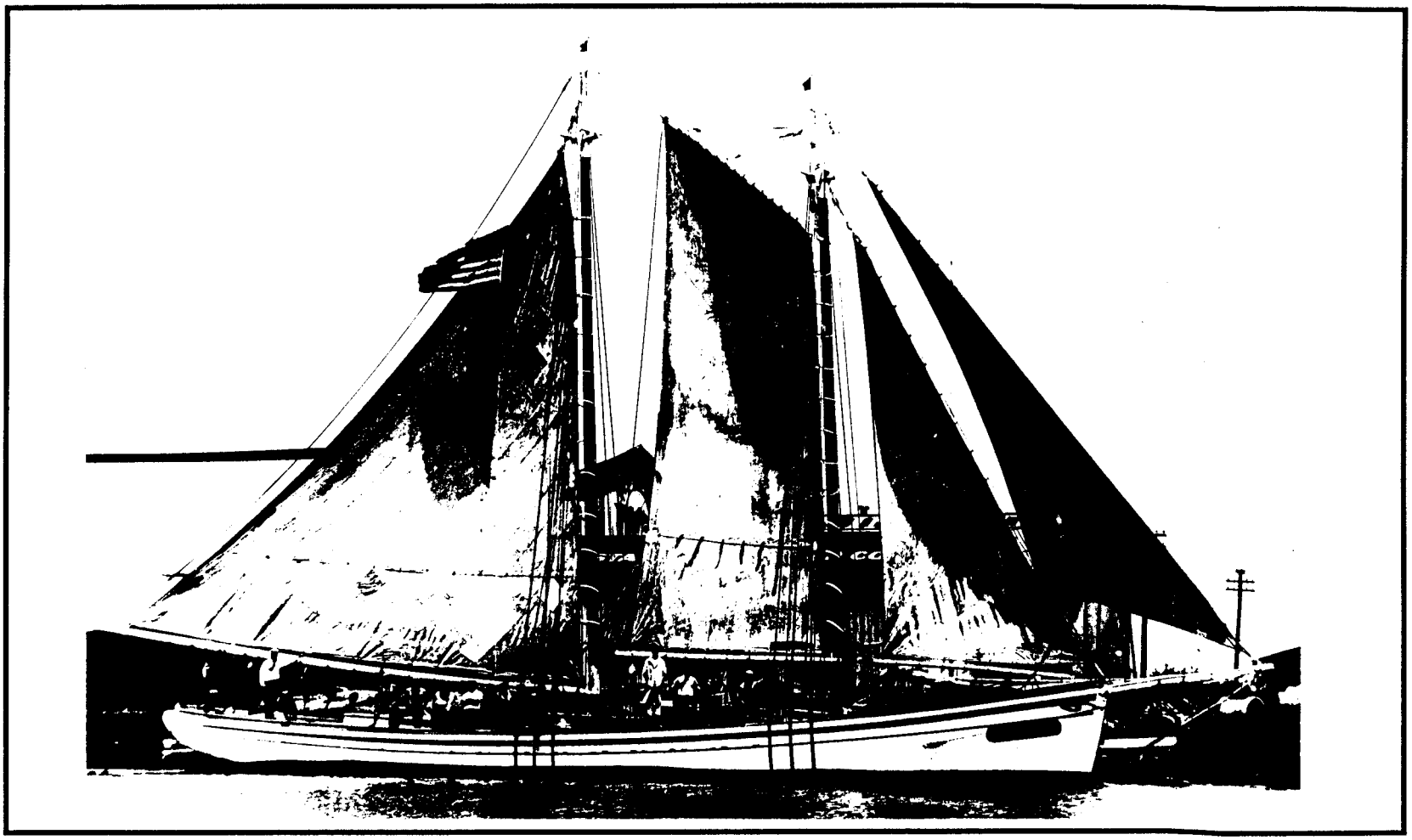


Figure 36. Illustration of the auxiliary schooner *Peggy G.* Courtesy Erik Overbey/ Mobile Public Library Collection, University of South Alabama Photographic Archives.

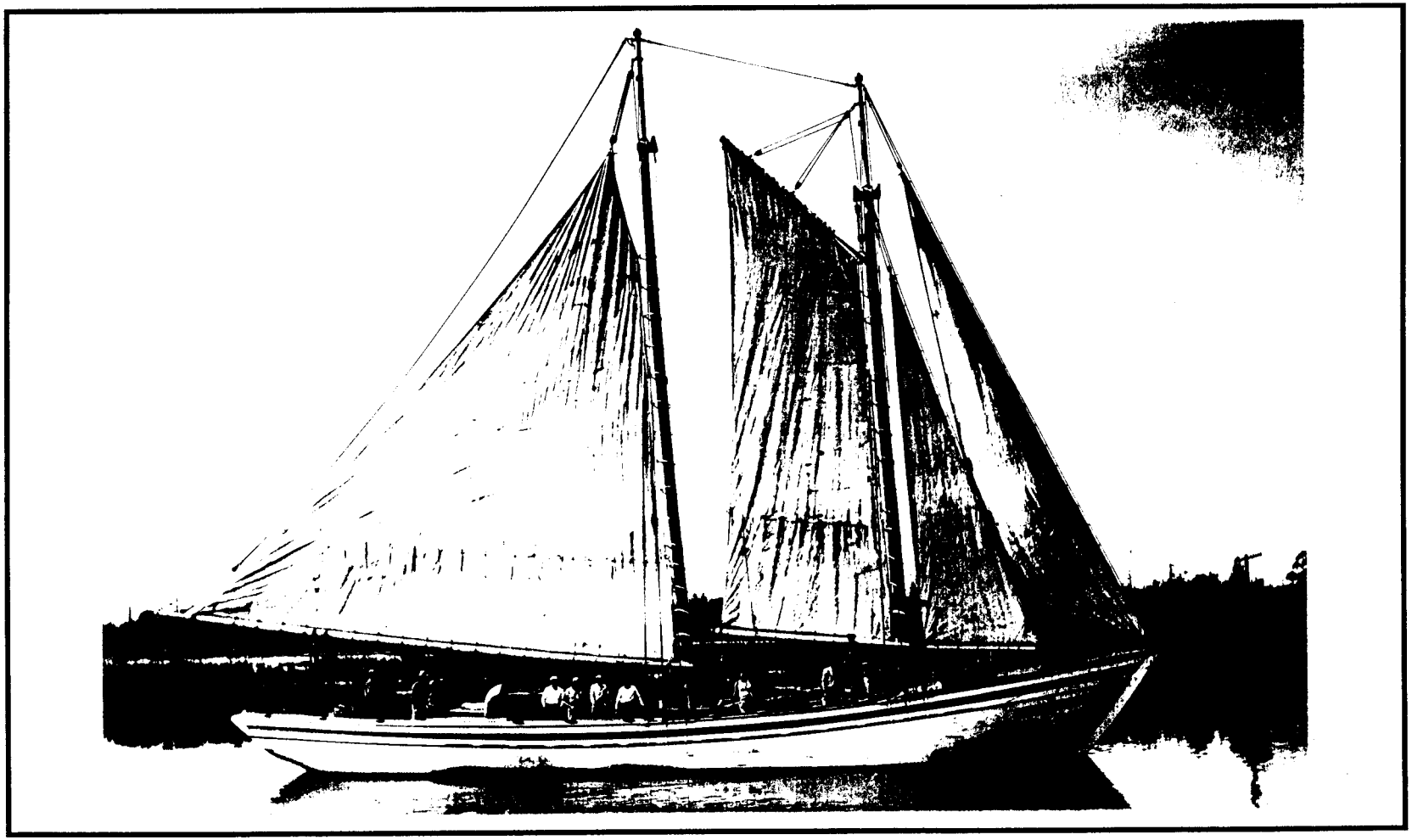


Figure 37. Illustration of the auxiliary schooner *Baby Ann*. Courtesy Erik Overbey/ Mobile Public Library Collection, University of South Alabama Photographic Archives.

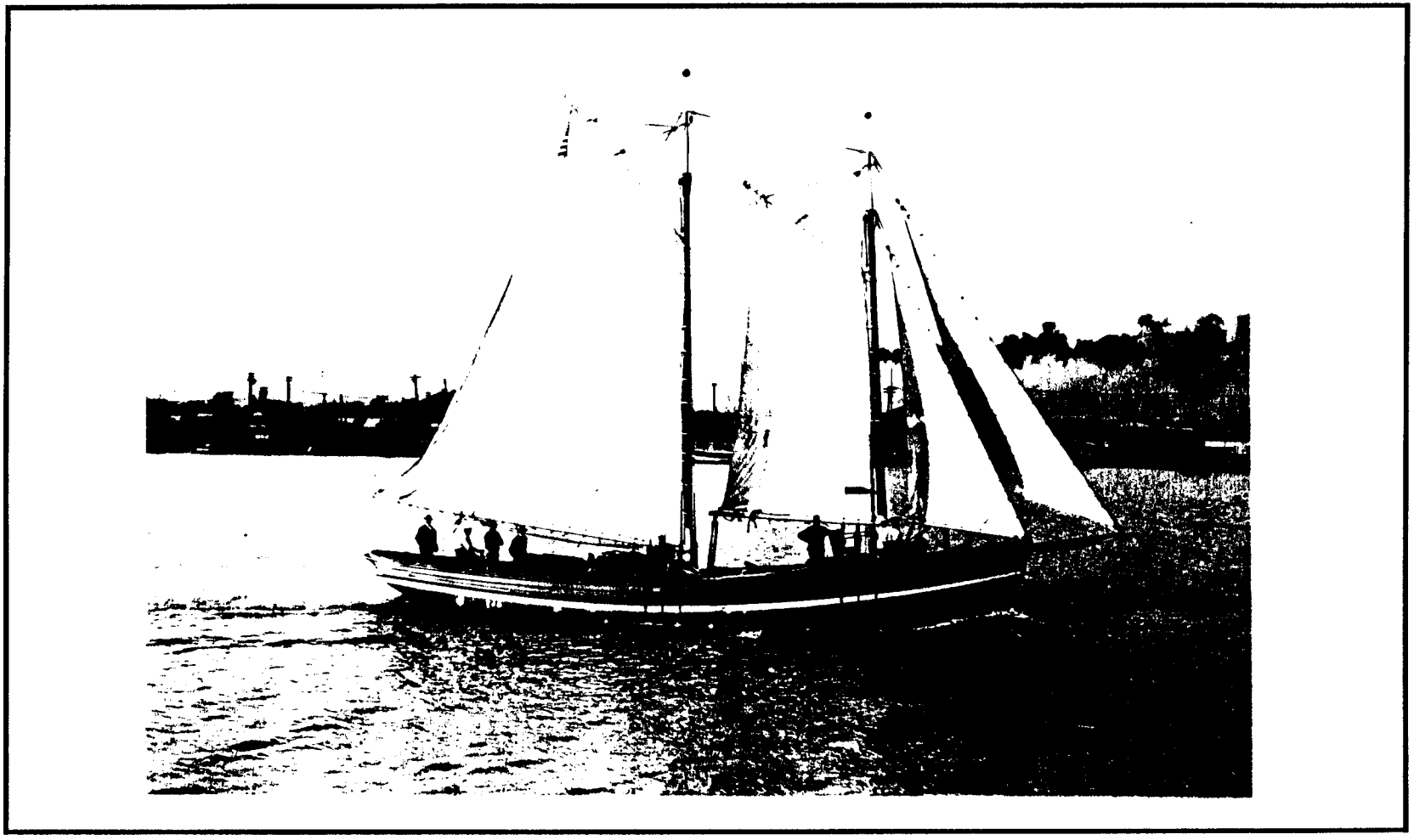


Figure 38. Illustration of the auxiliary schooner *Nelo G.* Courtesy Erik Overbey/ Mobile Public Library Collection, University of South Alabama Photographic Archives.

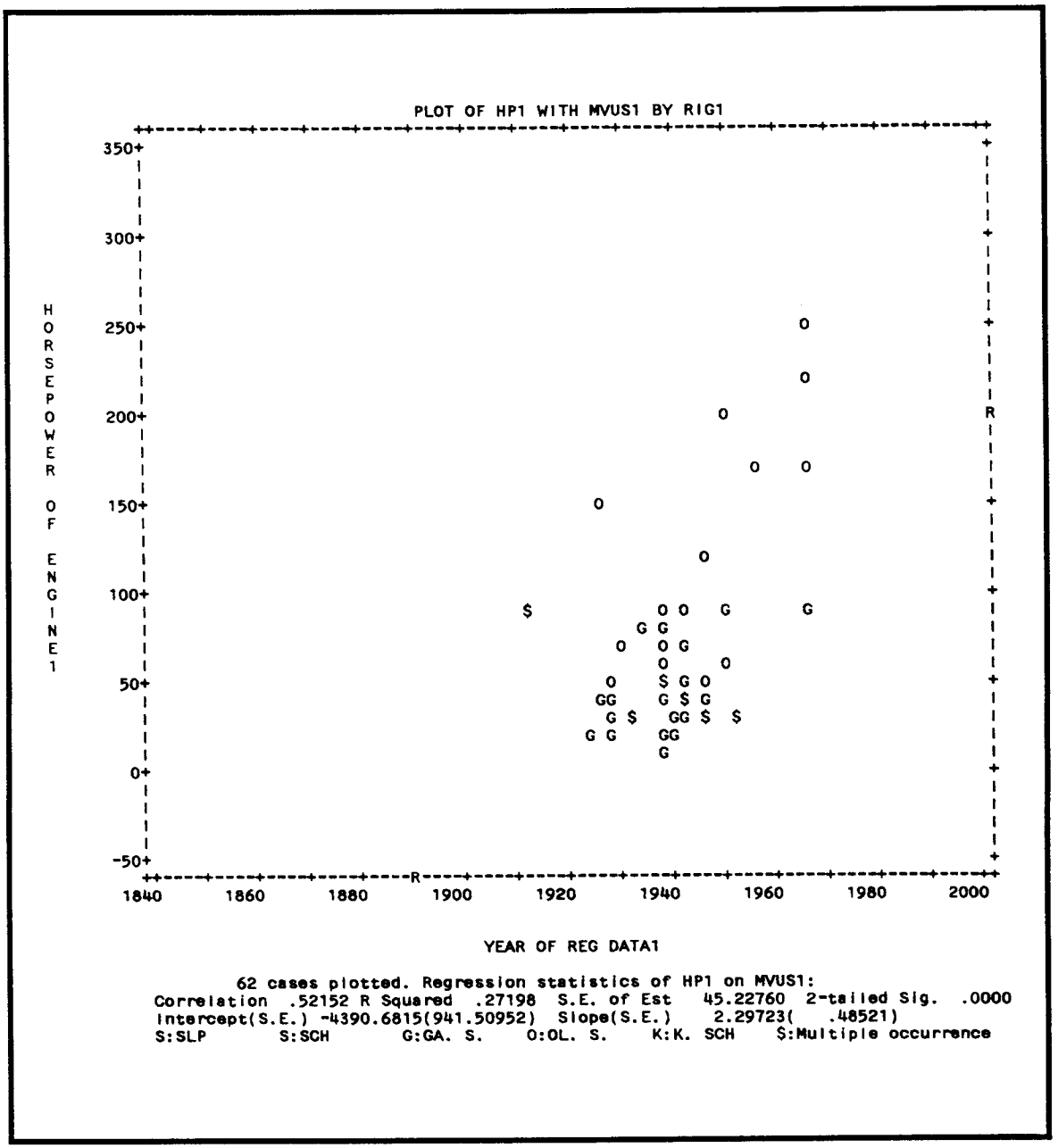


Figure 39. Scatter plot of engine horsepower with year of register information for northern Gulf of Mexico red snapper vessels.

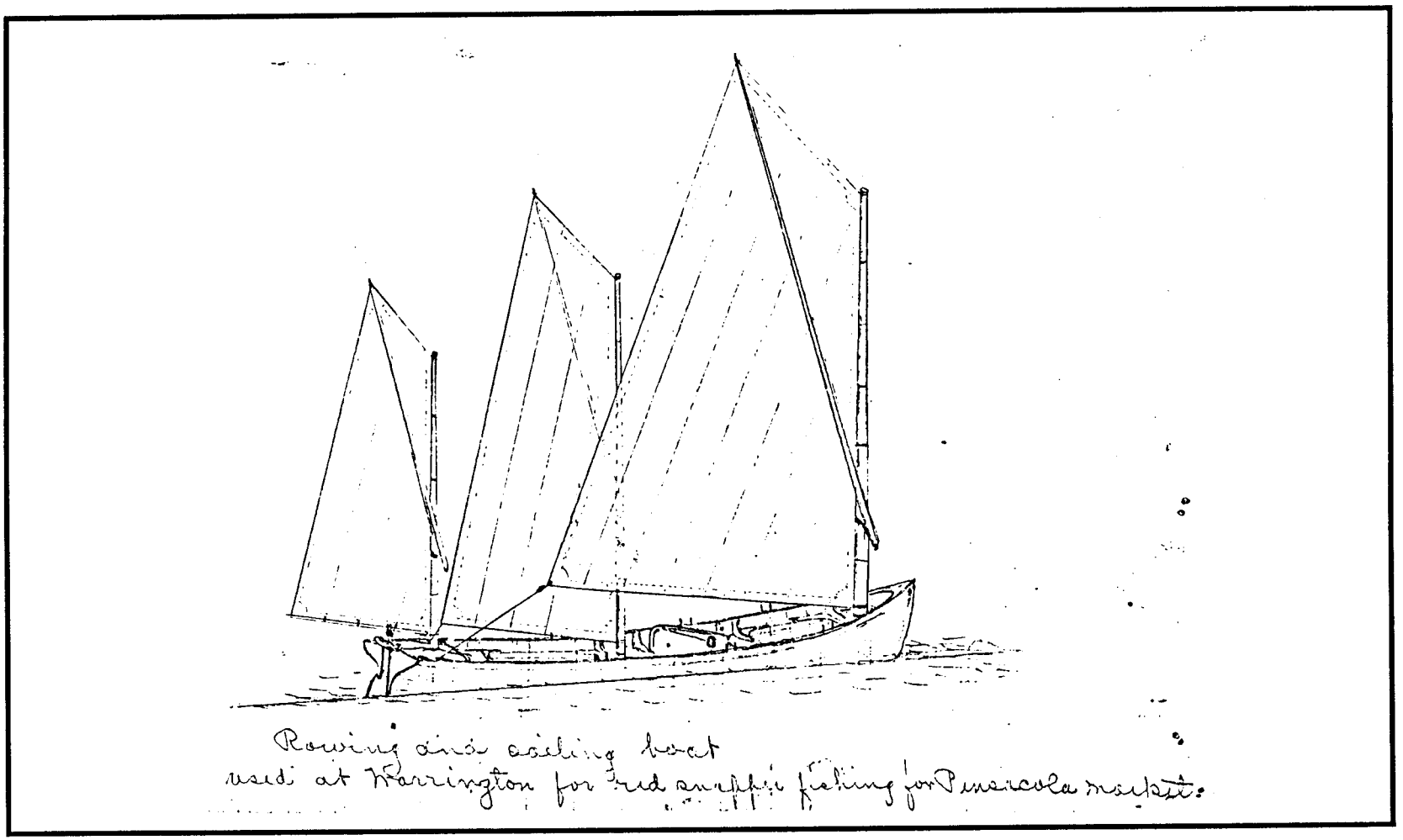


Figure 40. Silas Stearn's pencil sketch of a rowing and sailing boat used at Warrington for red snapper fishing. Courtesy of Special Collections, John C. Pace Library, University of West Florida.

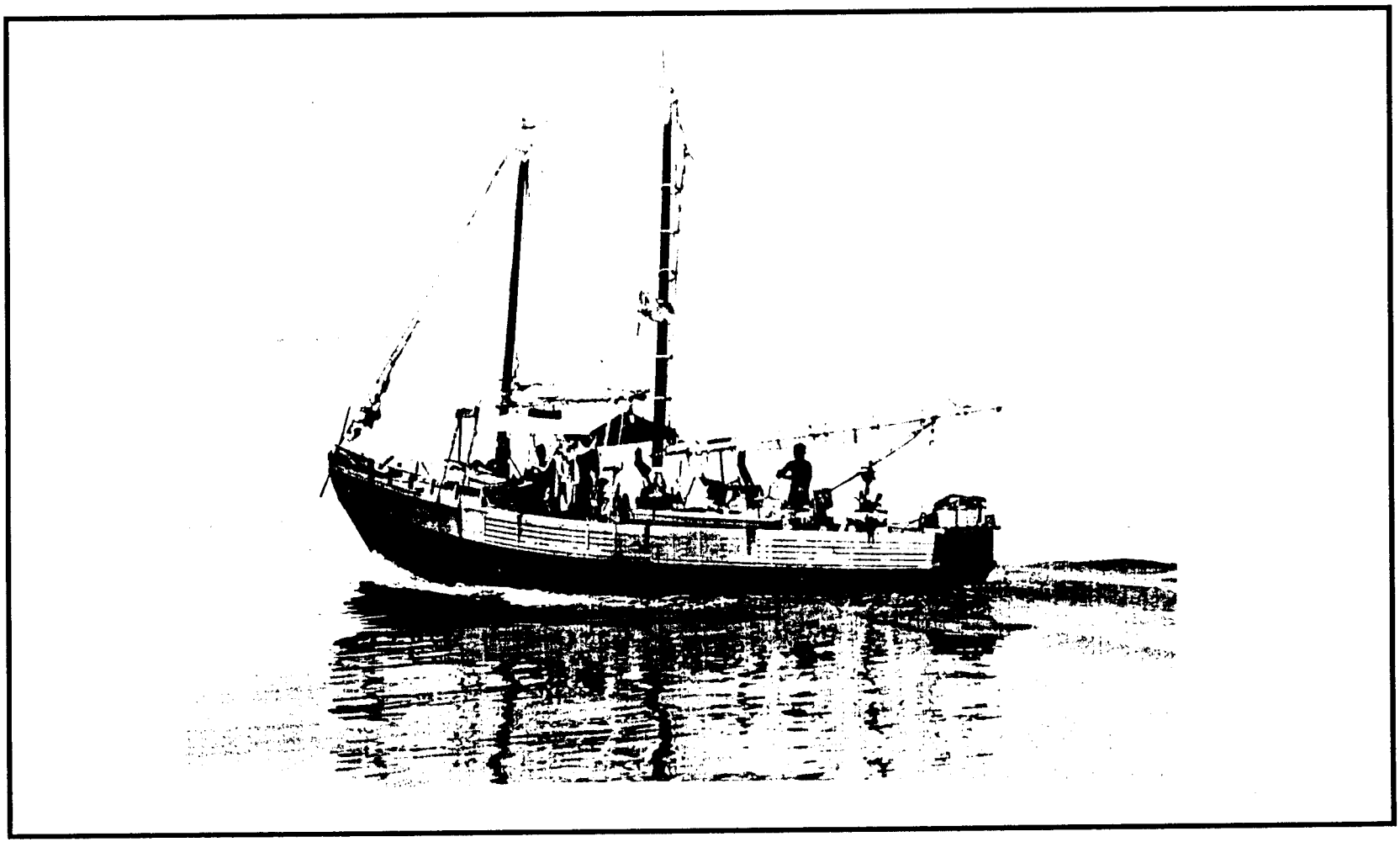


Figure 41. Illustration of a powered ching with reduced rig. Reproduced courtesy of Herbert Baumer, Mobile Alabama.

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APPENDIX A: A PARTIAL LIST OF WELL SMACKS ENGAGED N THE NORTHERN GULF OF MEXICO RED SNAPPER FISHERY 1824-1885

Appendix A: A Partial List of Well Smacks that Engaged in the Gulf of Mexico Red Snapper Fishery and the Key West-Havana Market Fishery During the Period from 1824-1885.

Vessel Name	Rig	Gross	Net	Length	Breadth	Depth	Yr. Blt	Pl. Built.	Builder
Alabama									
Alaska	sch.	36.41	34.59	55.5	18.4	7.4	1867	Mystic, CT	
Alert	sl.	30.00		39.7	14.9	6.4	1823	Mystic, CT	
Albert Haley	sch.	47.95	45.56	61.6	17.1	8.0	1846	Stonington CT	
California	sch.	38.84	36.90				1852	New London, CT	
Caro Piper	sch.	29.64	28.32	49.5	16.7	7.1	1879	Camden, ME	
Caution	sl.	45.00		46.1	17.1	6.8	1838	Mystic,CT	
Challenge	sl.	29.24					1865	Noank, CT	
Charles Hnery									
Charles Hnery	sl.	21.30		44.0	14.6	6.8	1856	Noank, CT	
City of Havana	sch.	44.11	40.96	56.1	18.9	7.8	1877	Key West, FL	
Comet	sch.	27.52	26.25	50.4	17.0	7.0	1860	Noank, CT	
Cuba									
Cuba	sch.	44.89	42.65	62.0	20.8	7.2	1878	Key West, FL	
Daniel Comstock	sch.	38.92					1851	New London, CT	
Dauntless	sch.	37.10					1872	Noank, CT	
Deby									
Decature									
Dread	sl.	36					1818	Stonnington, CT	
Eagle	sl.	34.00		42.9	14.1	6.5	1818	Mystic, CT	
Eliza L Rogers	sch.	31.35	28	55.5	17.4	7.3	1859	North Port, NY	
Ellen E. Files	sch.	46.22					1877	Key West, FL	
Emma B.	sch.	20.52	19.50	55.0	15.6	7.0	1883	Scranton, MS	
Emma L. Lowe	sch.	48.90	46.46	64.0	19.7	8.1	1875	Key West, FL	
Energy									
Enterprise	sl.	44.00		49.3	16.0	6.6	1823	Mystic, CT	
Estella	sch.	38.00	36.00	54.8	18.3	7.2	1877	Noank, CT	
Evergreen									
Fair Play									
Felix	sl.	38.00					1829	Stonnington, CT	Silas Greenman & Co.
Florida									
Florida	sch.	35.95					1872	Mystic, CT	
Francis Ellen	sch.	33.80	32.11				1854	Noank, CT	
Gallant	sl.								
George									
George Storrs	sch.	36.05					1868	Mystic, CT	
Gladiator	sl.	23.90							
Grover G. King	sch.	31.30					1853	Noank, CT	

Appendix A: A Partial List of Well Smacks that Engaged in the Gulf of Mexico Red Snapper Fishery and the Key West-Havana Market Fishery During the Period from 1824-1885 (concluded)

Vessel Name	Rig	Gross	Net	Length	Breadth	Depth	Yr. Blt	Pl. Built.	Builder
In Time	sch	36.44					1872	Noank, CT	
Indenpendance									
J.B. Adams									
J.W. Wherrin	sch.	25.59						MA	
James Monroe									
Loreta									
Laurel	sch.	33.07						ME	
Lenora	sch.	32.02	30.40	50.0	18.1	7.2	1868	Noank, CT	
Liberty									
Mary Ann									
Mary Ellen									
Mary Matilda	sch.	30.00					1853	Groton, CT	
Mary Potter	sch.	36.23	34.42	53.5	18.4	8.0	1868	Noank, CT	
Mississippi				49.6	17.1	7.0	1837	New London, CT	
Mizappa	sl.	30.25	28.74	51.0	17.5	7.0	1860	Noank, CT	
Morning Star									
Mystic									
Niantic	sch.	45.87	43.28	62.0	17.9	8.5	1848	Waterford, CT	
Perseverance	sl.	27.00		39.1	14.4	5.1	1816	Mystic, CT	
Relief	sch.	32.43					1869	Manatee, FL	
Relief									
Ripple	sch.	28.82	27.38	49.5	16.8	7.2	1860	Noank, CT	
Riverside	sch.	46.26					1878	Manatee, FL	
Sea Bird	sch.	27.80					1865		
Storm King	sch.	43.30	41.20	58.8	19.8	8.2	1861	Green Port, NY	
Tickler	sl.	34.00		42.8	15.3	6.3	1818	Mystic, CT	
Trimmer									
Two Brothers	sl.	24.00		40.5	14.0	4.5	1795	Mystic, CT	Jesse Willcocks
Velociphide	sch.	36.22		58.5	19.0	7.40	1872	New London, CT	
[Veneidor]	sl.	35.47						New England?	
Wallace Blackford	sch.	46.24	43.93	68.0	19.6	7.10	1871	Noank, CT	

APPENDIX B: 1880 CENSUS DATA ON WELL SMACKS ENGAGED IN THE KEY WEST-HAVANA MARKET FISHERY

Appendix B: Part 1—U. S. Fish Commission Census Data for Vessels in the 1879 -1880 Key West -Havana Market Fishery

Vessel	Rig	Gross	Net	Length	Breadth	Depth	Yr. Built.	Place Built	Owner*
Alaska	sch.	36.41	34.59	55.5	18.4	7.4	1867	Mystic, CT	[A. Vitzilis]?
California	sch.	38.84	36.90	51.9	17.9	7.0	1852	New London, CT	W. D. Cash
City of Havana	sch.	44.11	40.96	56.1	18.9	7.8	1875	Key West, FL	John, Lowe Jr.
Cuba	sch.	44.89	42.65	62.0	20.8	7.2	1878	Key West, FL	Fredrick W. Johnson
Daniel Comstock	sch.	38.92	38.43	62.4	17.3	7.3	1851	New London, CT	Thomas Shultz
Dauntless	sch.	37.10					1872	Noank, CT	Fernando C. Peno
Eliza L. Rogers	sch.	31.35	28.00	55.5	17.4	7.3	1859	North Port, NY	Joseph Carballo
Ellen E. Files	sch.	46.22					1877	Key West, FL	Samuel [Files]
Emma L. Lowe	sch.	48.90	46.46	64.0	19.7	8.1	1875	Key West, FL	John, Lowe Jr.
Florida	sch.	35.95		52.7	18.2	8.1	1872	Mystic, CT	F. J. Mosino
George Storrs	sch.	36.05		56.0	18.0	8.0	1868	Mystic, CT	[Arguiles] Carballo
Grover G. King	sch.	31.30		50.3	17.9	7.1	1853	Noank, CT	William A. Pitcher
In Time	sch	36.44	36.44	54.6	18.8	7.0	1872	Noank, CT	James C. Curtis
Mary Matilda	sch.	30.00		54.6	17.2	7.9	1853	Groton, CT	Jeremiah Fogarty
Mazappa	sl.	30.25	28.74	51.0	17.5	7.0	1860	Noank, CT	Wm. Curry
Relief	sch.	32.43					1869	Manatee, FL	Jeremiah Fogarty
Riverside	sch.	46.26					1878	Manatee, FL	Wm. Fogarty
Sea Bird	sch.	27.80					1865		J.W. Perice (Agent)
Velociphide	sch.	36.22	36.22	58.5	19.7	7.4	1872	New London, CT	[Joeinto] [Broloto]
Veneidor	sl.	35.47						New England	
Wallace Blackford	sch.	46.24	43.93	68.0	19.6	7.1	1871	Noank, CT	Henry Lowe

Appendix B: Part 2—U. S. Fish Commission Census Data for Vessels in the 1879 -1880 Key West -Havana Market Fishery (concluded)

Vessel	Gr. Stocks	Profits	Pay/ month.	Pounds Fish	Master*	Orig.inal Cost	Present Value	Crew
Alaska	$6,518.80	$4,718.80	$39	81,485	A. Vilzilis	$6,000	$3,000	6
California	$6,953.84	$5,453.84	$45	86,923	J. H. Albuny		$3,000	6
City of Havana	$7,363.12	$5,763.12	$50	92,039	Richard Roberts	$8,000	$7,000	6
Cuba	$8,037.04	$6,237.04	$50	100,463	John Buekley		$6,000	6
Daniel Comstock	$6,972.96	$5,472.96	$45	87,162	F. Diaz		$2,000	6
Dauntless	$6,626.24	$5,026.24	$42	82,828	R A. Russel	$5,200	$4,000	6
Eliza L. Rogers	$5,612.96	$4,112.96	$35	70,162	A. Carballo		$3,000	6
Ellen E. Files	$8,275.12	$6,675.12	$60	103,439	J. D. Sands	$10,000	$10,000	5
Emma L. Lowe	$8,755.04	$6,755.04	$50	109,438	J. Russell	$7,000	$7,000	7
Florida	$6,436.48	$4,936.48	$50	80,456	J. H. Dimeintt		$3,000	5
George Storrs	$6,454.32	$4,654.32	$35	80,679	M. Carballo		$4,000	7
Grover G. King	$5,603.12	$4,103.12	$40	70,039	Charles Nottage		$6,000	5
In Time	$6,416.08	$4,916.08	$50	81,451	Samuel Morgan	$5,000	$4,000	5
Mary Matilda	$5,366.40	$3,366.40	$33	67,080	H. Taylor	$7,000	$7,000	5
Mizappa	$5,415.84	$3,915.84	$40	67,689	W. J. Russell		$2,000	5
Relief	$5,806.16	$4,306.16	$45	72,577	Jebadiah Allen		$3,500	5
Riverside	$8,282.32	$6,282.32	$40	103,529	James Wittaker	$6,000	$6,000	8
Sea Bird	$4,972.80	$3,472.80	$35	62,106	J. W. Pierce		$4,000	5
Velociphide	$6,484.72	$4,984.72	$40	81,059	J. Guerria		$4,000	6
Veneidore	$6,350.48	$4,850.48	$50	79,381	Th. A. Franklin		$1,500	5
Wallace Blackford	$8,271.36	$6,171.36	$60	103,392	Thomas Blake		$5,000	5

* The names of masters and owners are transcribed as close as possible to Silas Stearns' hand written field notes.

APPENDIX C: A PARTIAL LIST OF VESSELS ENGAGED IN THE NORTHERN GULF OF MEXICO RED SNAPPER FISHERY FROM 1840-1960

Appendix C: Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960

Vessel Name	Rig	Offical	# Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
A. F. Warren	sch.	223989	[127.00]	[103.00]	68.80	22.9	11.30	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
A. J. Chapman	sch.	1243	48.18	45.78	65.20	19.8	8.40	1860	New London, CT	E. E. Saunders & Co.	Pensacola, FL
Ada	sch.	105488	16.46	15.64	51.00	15.00	7.00			Pensacola, Ice Co.	Pensacola, FL
Albatross 1934										C. C. Co.	Biloxi, MS
Albert Haley	sch.	113071	47.90	45.50	61.70	17.10	8.00	1870	Mystic, CT		New Orleans, LA
Alcina	ga. s.	107447	79.00	66.00	83.60	23.00	9.40	1899	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Althea Fraklin	sch.	1399	36.00	34.00	55.80	18.40	7.60	1867	Noank, CT	Warren Fish Co.	Pensacola, FL
American Eagle	ol. s.	226668	35.00	13.00	55.00	14.50	8.30	1927	Biloxi, MS	Warren Fish Co.	Pensacola, FL
Amy Wixen	sch.	105006	47.34	45.06	67.50	21.00	6.60	1870	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Anna Bell										Bay Fisheries?	Panama City, FL
Anelda Lee											Pascagoula, MS
Arcas	ol. s.	210839	84.00	50.00	93.20	22.30	11.00	1912	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Ariola	sch.	201479	50.00	20.00	73.30	20.00	8.20	1904	Milton, FL	Warren Fish Co.	Pensacola, FL
Audrey	ga. s.	223270	28.00	14.00	47.10	16.00	7.00	1923	Pensacola, FL	Bayou Fish Co.	Pensacola, FL
Author G.	ga. s.	232791	39.00	11.00	58.30	17.30	6.50	1933	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Avalon	sch.	167291	59.00	52.00	74.00	20.00	10.00	1896	Friendship, ME	Gulf Fisheries Co.	Galveston, TX
Babs	ol. s.	297648	65.00	53.00	64.20	20.00	8.20	1965	Coden, AL	Star Fish & Oyster Co.	Mobile, AL
Baby Ann	ol. s.	229079	45.00	17.00	68.00	19.00	7.30	1929	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Barbara	ga. s.	224287	16.00	12.00	40.20	12.70	6.10	1924	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Barcelona	sch.	212780	77.00	41.00	82.10	21.30	9.50	1914	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Bernace 1899											Pensacola, FL
B. F. Sutter	sch.	7207	36.00	34.00	56.8	19.3	7.0	1865	Chelsea, MA		Pensacola, FL
Betty G.	ol. s.	505236	80.00	67.00	66.10	22.10	9.20	1966	Coden, AL	Star Fish & Oyster Co.	Mobile, AL
Billy	ga. s.	224272	16.00	12.00	41.40	12.70	6.10	1924	Bay Point, FL	E. E. Saunders & Co.	Pensacola, FL
Bonita	sch.	3939	44.00	44.00	72.50	19.60	8.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Buccaneer										Star Fish & Oyster Co.	Mobile, AL
Challange (80)	sl.		31.00						Noank, CT	Mobile Marketmen	Mobile, AL
Caldwell H. Colt	sch.	126449	64.00	61.00	79.00	21.50	9.10	1887	Green Port, NY	Warren Fish Co.	Pensacola, FL
Cape Horn	sch.	223270	77.00	51.50	85.50	21.30	10.00	1903	Essex, MA	Gulf Fisheries Co.	Galveston, Tx
Carmen	ol. s.	298243	66.00	57.00	69.70	21.00	7.80	1965	Shieldsboro, MS	Star Fish & Oyster Co.	Mobile, AL
Caro Piper	sch.	125715	29.64	28.32	49.00	16.00	7.00	1879	Camden, ME	E. E. Saunders & Co.	Pensacola, FL
Caroline Kage	sch.	125409	20.55	19.35	43.70	14.40	5.30	1875	Pensacola, FL	James Dillion	Pensacola, FL
Carrie N. Chase	sch.	137637	48.00	24.00	69.50	20.10	8.10	1899	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Caviare	sch.	126781	62.89	59.83	74.30	20.07	8.70	1891	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Cavalier	sch.	126469	50.00	48.00	65.00	20.10	9.30	1887	Glenn Cove, NY	E. E. Saunders & Co.	Pensacola, FL
Charles Henry (80)	sl.		30.00		44.00	14.60	6.80	1857	Noank, CT	C. Strobe?	New Orleans, LA

Appendix C: Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (continued)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Charles Morgan	sch.	5930	50.75	48.22	72.70	19.70	7.20	1874	New Orleans, LA		Pensacola, FL
Cherokee (1914-15)										Campeche Fish Co.	Gulfport,MS
Chicopee	sch.	206963	55.00	29.00	72.80	21.00	8.20	1909	Milton, FL	Warren Fish Co.	Pensacola, FL
Clara B. Taylor	ol. s.	257009	31.00	21.00	49.70	12.90	6.70	1942	Norfolk, VA	Warren Fish Co.	Pensacola, FL
Clara M. Littlefield	sch.	126825	63.00	30.00	71.80	20.50	9.00	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Clara P. Sewall	sch.	127020	52.00	50.00	75.80	19.60	8.00	1894	Gloucester, MA	Warren Fish Co.	Pensacola, FL
Clara R. Grimes	sch.	126206	34.28	32.57	61.00	17.80	6.80	1884	Bristol, ME		Pensacola, FL
Clara R. Harwood	sch.	126727	58.90	55.95	71.00	20.40	8.50	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Clara 1898											Pensacola, FL
Clarence Barclay	sch.	4133	25.32	23.77	58.40	16.60	5.60	1855	Salem, MA	Warren Fish Co.	Pensacola, FL
Comet	sch.	5027	27.52	26.15	50.40	17.00	7.00	1860	Noank, CT		Noank, CT
Contest	sch..	125644	67.00	64.00	72.30	22.30	7.50	1879	Kennebunk, ME		Pensacola, FL
Cuba	sch.	127584	44.00	44.00	72.50	9.60	8.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Culebra	ga. s.	209268	68.00	58.00	77.10	21.10	9.70	1911	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Danny Boy	ol. s.	227142	49.00	17.00	68.00	19.00	8.00	1927	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Dauntless	sch.	157484	38.00	38.00	60.20	17.20	7.60	1893	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Dell G.	ol. s.	288664	67.10	54.00	64.10	20.80	10.10	1962	Coden, AL	Star Fish & Oyster Co.	Mobile, AL
Dixie	sch.	125677	44.00	44.00	72.50	19.60	8.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Dixie 1899											Pensacola, FL
Dolphin	ga. s.	224571	80.00	72.00	84.70	21.50	9.00	1925	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Dorothy	sch.	157482	38.00	38.00	60.20	17.20	7.60	1897	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Dorothy	sch.	200613	70.67	44.45	79.00	21.30	8.60	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
E. W. Fowler	ga. s.	224341	59.00	53.00	74.20	20.60	9.10	1924	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Edith L. Conley	sch.	185212	58.00	55.00	74.00	21.00	7.00	1876	Gloucester, MA	E. E. Saunders	Pensacola, FL
Edith Silveria	ga. s.	204724	86.00	53.00	83.00	24.40	10.30	1907	Essex, MA	Warren Fish Co.	Pensacola, FL
Edna C.	sch.	7635	24.30	23.00	58.00	15.00	5.00	1860	N.Y., N.Y.		Galveston, TX
EESCO	ga. s.	215012	64.00	33.00	78.10	20.00	8.60	1917	Milton, FL	E. E. Saunders & Co.	Pensacola, FL
Emily Cooney	sch.	136982	73.00	44.00	77.60	21.00	9.40	1902	Essex, MA		Pensacola, FL
Ella Mae G.	ol. s.	279528	66.00	59.00	65.00	20.50	10.20	1959	Biloxi, MS	Star Fish & Oyster Co.	Mobile, AL
Ellen C. Burk	sch.	137019	92.00	60.00	90.50	23.80	10.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Elmo	sch.	137036	44.00	44.00	72.50	19.60	8.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Emilia Enos	sch.	137651	97.53	66.59	89.00	23.90	9.50	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Emilie G.										Star Fish & Oyster Co.	Mobile, AL
Emma M.	ga. s.	205613	11.00	9.00	54.00	12.00	3.20	1908	Saint Andrews, FL	Annie E. Moats	Gulfport, MS
Estella	sch.	125274	38.70	36.64	54.87	18.34	7.20	1877	Noank, CT	E. E. Saunders & Co.	Mobile, AL
Eualie G.	ol. s.	240226	58.00	43.00	67.70	19.00	8.60	1940	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL

Appendix C: Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (continued)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Evelyn	sch.	230293	78.00	73.00	82.50	21.50	10.30	1930	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Favorite[1]	sch.	120912	45.78	44.45	68.90	19.20	8.80	1892	East Booth Bay, ME		Pensacola, FL
Fish Halk	sch.	121251	90.00	60.00	86.20	24.40	10.20	1902	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Florida 1899	sch.	120339	30.95	29.40	54.90	16.40	6.10	1879	Keennebunk, ME		Pensacola, FL
Flora J. Sears[2]	sch.	290804	77.99	46.00	81.40	21.50	9.40	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Flossie B. Welles	ga. s.	231370	63.00	53.00	77.80	20.50	9.30	1931	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Fortuna	sch.	121236	44.00	44.00	72.50	19.60	8.60	1902	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Four Friends	sch.	9006	29.00	27.00	56.00	17.30	6.60	1865			Pensacola, FL
Francis Ellen	sch.	8096	65.02	64.77	68.50	21.04	6.98	1845	Belfast, ME	Bartholmew Tallon &Co.	N.O., LA
Francis H.	sch.	201035	64.00	22.00	74.80	20.10	8.40	1904	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Francis V. Sylvia	sch.	201610	95.00	64.00	85.00	21.70	10.20	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
G. L. Daboll	sch.	85192	49.00	46.00	64.0	10.7	7.7	1872	Noank, CT	E. E. Saunders & Co.	Pensacola, FL
George G. Welles	ga. s.	230356	72.00	65.00	80.70	20.20	9.70	1930	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Gertrude Summers	sch.	85173	64.40	61.20	75.20	22.00	7.40	1871	East Boothbay, ME		Noank, CT
Gladiator	sl.		23.90							Pensacola Ice Co.	Pensacola, FL
Good Hope	sch.	200097	77.00	51.00	86.20	21.30	10.00	1903	Essex, MA	Gulf Fisheries Co.	Galveston, TX
H. S. Rowe	sch.	11589	59.47	56.50	70.00	20.20	7.50	1859	Essex, MA		Pensacola, FL
Haze	sch.	11115	56.26	53.45	74.10	19.30	7.00	1853	New York, NY	Warren Fish Co.	Pensacola, FL
Halcyon	sch.	95961	27.91	26.52	52.40	14.80	5.80	1888	Essex, MA	Warren Fish Co.	Pensacola, FL
Harris J. Booras	ol. s.	238209	63.00	26.00	64.60	20.00	8.00	1938	Galveston TX	Liberty Fish Oyster	Galveston, TX
Hatteras	sch.	200209	78.00	50.00	85.50	1.40	9.80	1903	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Henrietta Frances	sch.	95748	77.73	73.84	85.50	23.50	7.50	1883	Cohasset, MA		Portland, ME
Helen	sch y.									Munn ?	Galveston, TX
Hope	sch.	202752	72.55	54.00	84.40	21.60	9.80	1905	Woolwitch, ME ?	Warren Fish Co.	Pensacola, FL
Hope	sl.	11581	5.64	5.36	30.80	12.20	3.10	1866	Santa Rosa Co., FL	Warren Fish Co.	Pensacola, FL
Ida	sch.	100409	11.24	10.68	43.00	15.20	3.50	1886	Bayou, Boisdore, MS		Pensacola, FL
Ida	ga. s.	233624	15.00	10.00	40.30	12.40	6.30	1934	Tampa, FL	John Felcionie	Tampa, FL
Ida Q.	ga. s.	224800	19.00	13.00	37.90	14.00	7.60	1924	New Orleans, LA	Angelo Caravagelia	Galveston, TX
Ida M. Silva	sch.		55.14	55.14	70.30	19.30	9.00	1903	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Ida S. Brooks	sch.	100740	72.00	47.00	80.00	21.60	8.60	1901	Gloucester, MA		Pensacola, FL
Irma	sch.	190435	6.67	6.46	39.20	12.20	3.50	1888	Wolf River, MS		Pensacola, FL
Isabelle	sch.	100028	35.04	33.29	55.90	18.90	6.80	1872	Noank, CT	Warren Fish Co.	Pensacola, FL
J. E. Plew(1940-41)										Niceville Fish Co.	Niceville, FL
J. H. Pierpoint	ol. s.	257269	31.00	21.00	49.70	12.90	6.70	1942	Portsmouth, VA	Warren Fish Co.	Pensacola, FL

1 Rebuilt and renamed *Isabelle*.

2 Rebuilt and renamed *Thomas E. Welles* in 1925.

Appendix C: Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (continued)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
J. W. Wherrin	sch.		25.59							Pensacola Ice Co.	Pensacola, FL
James P. Collins	sch.		13.00	13.00	38.80	14.80	4.50	1898	Town Point, FL		Pensacola, FL
James and Esther	sch.		76.28	47.60	81.70	21.90	9.80	1903	Essex, MA	Bay Fish Co.	Pensacola, FL
Jewel	ga. s.	23203	16.00	13.00	46.00	14.20	4.70		Millville, FL	Felcionie & Sons	Tampa, FL
John D. Lustro	sch.	76515	21.49	20.41	51.60	16.60	6.00	1884	Bay Point, FL	Santa Rosa Fish Co	Milton, FL
John Pew	sch.	12728	44.35	42.36	63.10	18.40	7.70	1852	Essex, MA	Warren Fish Co.	Pensacola, FL
John & William(80)	sl.									Bartholmew Tallon &Co.	N.O., LA
Juno	ga. s.	228701	68.00	68.00	84.50	21.90	9.70	1929	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Josie May	sch.	76.399	47.83	45.44	67.70	19.7	7.0	1883	Bath, ME	E. E. Saunders & Co.	Pensacola, FL
Kate Smith (80)	sl.		28.63						New Orleans, LA	S.A. Graham	Mobile, AL ?
Kwasind[1]	sch.	136011	65.00	62.00	78.50	21.90	9.00	1888	City Island, NY	E. E. Saunders & Co.	Pensacola, FL
Lady Alden	ga. s.	211930	20.00	14.00	49.00	15.10	4.80	1914	Bay Point, FL	E. E. Saunders & Co.	Pensacola, FL
Laurel	sch.			31.00	43.30	14.80	6.00	1856	Noank, CT		Mobile, AL
Leo G. 50's											-
Leonora	sch.		32.02	30.42	50.00	18.10	7.20	1865	Noank, CT		
Lettie G. Howard[2]	sch.	141261	59.00	56.00	74.60	21.00	8.40	1893	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Lillian	ga. s.	141838	28.00	14.00	51.40	12.00	3.20	1908	Gloucester, MA	Annie E. Moats	Gulfport, MS
Lisa G.	ol. s.	270955	66.00	59.00	65.50	20.50	10.20	1956	Biloxi, MS	Star Fish & Oyster Co.	Mobile, AL
Lizzie B. Adams	sch.		61.90	58.80	75.50	20.20	9.40	1892	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Lois G.	ol. s.	275015	57.00	39.00	71.80	18.60	8.40	1957	Biloxi, MS	Star Fish & Oyster Co.	Mobile, AL
Lottie S. Haskins	sch.	141056	58.00	55.00	70.50	20.40	8.50	1890	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Louis F. Harper	sch.		62.00	62.00	80.10	22.50	9.20	1887	Harkers Island, NC	E. E. Saunders & Co.	Pensacola, FL
Louise	ol. s.	224786	40.00	15.00	63.70	19.00	5.50	1925	Pascagoula, MS	Liberty Fish Oyster	Galveston, TX
Lucky Strike[3]	ol. s.	223821	77.00	69.00	86.20	22.30	10.20	1924	Millville, FL	Warren Fish Co.	Pensacola, FL
Ludwig M. [4]	ga. s.		27.00	15.00	46.20	15.70	8.60	1916	Swans Island, ME	M. Mirabella	Tampa, FL
M. Muller	sch.	92161	33.46	31.79	46.70	17.00	6.80	1890	Pensacola, FL		Pensacola, FL
M. Madeleine	ga. s.	92566	31.04	25.49	57.00	17.20	7.00	1894	Essex, MA	Marsant & Co.	Galveston, TX
Margaret W.	ga. s.	225529	28.00	22.00	58.80	15.50	6.80	1926	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Maria Antonia	sl.	90165	15.90	15.10	40.00	14.20	5.10		New Orleans LA	Bartholomew Tallon Co.	N. O., LA
Marie Kathlyn	ga. s.	223497	24.00	10.00	66.40	15.80	7.20	1923	Mobile, AL	Fred M Johnson	Mobile, AL
Marion R.	sch.		40.00	23.00	65.00	18.20	7.00	1907	Jacksonville, FL	Texas Star Fisheries	Galveston, TX

[1] Formerly the ga. s. *Elbridge T Gerry*

[2] Rebuilt in Bay Point Florida in 1923 and renamed the *Mystic C.*

[3] Possibly the former *Juno H. Laird*

[4] Formerly the ga. s. *Audrey & Theo.*

Appendix C Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (continued)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Marler 1935										Star Fish & Oyster Co.	Mobile, AL
Mary A. Gleason	sch.	92918	65.10	65.10	78.40	21.30	8.00	1889	Essex, MA	Falk Fish Co.	Pensacola, FL
Mary B. Greer	sch.	204983	79.00	49.00	85.20	21.40	9.10	1908	Essex, MA	Warren Fish Co.	Pensacola, FL
Mary C.	ga. s.	235633	33.00	14.00	59.00	17.30	6.60	1936	Pascagoula, MS	Liberty Fish Oyster	Galveston, TX
Mary Carman[1]	ol. s.	225317	27.00	13.00	49.00	15.30	5.40	1926	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Mary E. Cooney	sch.		88.00	57.00	85.00	22.60	10.20	1903	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mary E. Hoxie	sch.	17579	30.00	29.00	43.90	17.80	7.10	1868	Noank, CT		Pensacola, FL
Mary Gus			46.00	38.00	60.60	18.60	7.60	1951	Pascagoula, MS	Liberty Fish Oyster	Galveston, TX
Mary Jane	ga. s.		29.00	14.00	47.10	16.60	7.00	1924	Pensacola, FL	Bayon Fish Co.	Pensacola, FL
Mary Louise	sch.	91341	9.00	8.00	36.00	13.00	3.90	1881	Pensacola, FL		Pensacola, FL
Mary Potter	sch.	17580	36.20	34.40	53.50	18.40	8.00	1868	Noank, CT	J. E. Morgan	Noank, CT
Mary S. Harty 1899											
Maud F. Silva	ga. s.	200862	86.00	77.00	85.00	22.00	10.20	1904	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Maud Spurling	sch.	92679	53.00	51.00	70.00	19.90	9.00	1895	Boothbay, ME		Pensacola, FL
Mendocino			79.00	50.00	87.00	21.30	10.00	1903	Essex, MA	Gulf Fisheries Co.	Galveston, TX
Millie Wales	st. s.	90795	85.50	60.50				1875	Boothbay, ME	Pensacola Ice Co.	Pensacola, FL
Mineola	sch.	208298	55.00	27.00	70.00	20.80	8.40	1910	Milton, FL	Warren Fish Co.	Pensacola, FL
Minnie W. 1906											
Nelo G.	ga. s.	225202	27.00	5.00	49.00	15.50	5.50	1925	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Nellie T. Campbell[2]	sch.	18656	67.58	64.70	70.30	20.50	7.50	1870	Bath, ME	E. E. Saunders & Co.	Pensacola, FL
Neo(1914-15)										Campeche Fish Co.	Gulfport, MS
Neptuna	ol. s.	235718	29.00	14.00	51.30	15.20	7.30	1936	Corpus Christi, TX	G. T. Nelson	Corp Christi, TX
Niantic	sch.	18401	45.87	43.28	62.00	17.90	8.50	1848	Waterford, CT	Pensacola Ice Co.	Pensacola, FL
Nuebo	ol. s.	287254	57.00	39.00	56.10	18.20	9.40	1961	Biloxi. MS	Arcas Co. Inc.	Pascagoula, MS
Oceanic	ga. s.	260695	11.00	9.00	31.20	11.00	6.00	1924	Destine, FL.	D. C. Richbourg	Pensacola, FL
Olga	sch.	155320	7.00	5.00	31.90	11.50	3.34	1898	Bay Point, FL		Pensacola, FL
Ospray	sch.	18836	31.00	29.00	52.00	17.30	6.70	1858	Boothbay, ME	E. E. Saunders & Co.	Pensacola, FL
Over The Waves	ga. s.	214839	25.00	7.00	50.50	14.80	7.10	1917	Friendship, ME	Star Fish & Oyster Co.	Mobile, AL
Patsy 1939											
Pattie Leigh	ol. s.	284937	53.00	43.00	64.40	19.80	7.50	1961	Bayou La Batre, AL	Theodore Leister Jr.	Mobile, AL
Patty	ga. s.	223364	28.00	14.00	47.10	16.00	7.00	1923	Pensacola, FL	Bayon Fish Co.	Pensacola, FL
Peerless	ga. s.	225960	77.00	69.00	85.20	22.50	10.50	1926	Pensacola, FL	Warren Fish Co.	Pensacola, FL

[1] Sold to Texas interest in 1952 and renamed Christinia Nelson?

[2] Rebuilt and renamed *Henry P. Chapman* in 1899.

Appendix C Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (continued)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Peggy G.	ol. s.	222729	38.00	13.00	73.00	16.80	5.60	1923	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Phainoula[1]	ol. s.	200431	18.00	11.00	44.80	15.00	6.40	1903	Gloucester, MA	B. Mirabella	Tampa, FL
Plegia 1939											
Princess	ga. s.	209746	17.00	5.00	53.30	14.60	3.90	1912	Cromanton, FL	Wilma Mae Holmes	Pensacola, FL
Priscilla	sch.	156644	48.98	46.45	89.90	19.8	8.98	1893	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Providence II.	ol. s.	238221	34.00	7.00	48.90	17.50	8.70	1939	Morgan City, LA	Mary G. Zecckine	Morgan City, LA
R.B. Colman	ga. s.	226164	16.00	6.00	40.1	13.5	6.30	1926	Vinal Haven, ME	W. G. Moore	Apalachicola, FL
R.W. 1941										Niceville Fish Co.	Niceville, FL
Ramona											
Rena A. Percy	ga. s.		77.00	39.00	76.50	21.60	9.40	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Restless Jimmy (41)										Star Fish & Oyster Co.	Mobile, AL
Ripple	sch.	21566	28.30	27.40	49.50	16.80	7.20	1862	Noank, CT	Pensacola Ice Co.	Pensacola, FL
Roatan	ol. s.	504297	78.00	53.00	5.20	20.90	9.30	1966	Bayou La Batre	Arcas Co. Inc.	Pascagoula, MS
Roncador	ol. s.	592251	133.00	101.00	71.00	23.50	11.30	1970	St. Andrews, FL	Clark Seafood	Pascagoula, MS
Roy Krebs[2]	ol. s.	227372	18.00	7.00	60.4	13.2	4.60	1928	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
Ruth	ga. s.		92.00	49.00	85.40	22.10	10.80	1912	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Ruth A. Wells	sch.	200241	31.00	12.00	74.00	20.00	8.00	1903	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
S. Gongales	ga. s.	224298	46.00	11.00	66.00	20.80	5.70	1924	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL
San Francisco G.	ga. s.	233289	24.00	19.00	47.60	14.20	6.00	1934	Pensacola, FL	Rosaria Grasso	Mobile, AL
Sarah L. Harding	sch.	22137	31.30	29.70	53.60	17.50	6.30	1866	Phippsburg, ME	Warren Fish Co.	Pensacola, FL
Seaconnet[3]	sch.	117148	65.00	40.00	78.50	20.80	9.20	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Seafarer	ga. s.	210019	11.00	9.00	35.40	10.50	5.70	1912	Mobile, AL	E. E. Saunders & Co.	Pensacola, FL
Shamrock	ga. s.	233109	9.00	6.00	33.70	11.50	3.60			J. Beadnell	Pensacola, FL
Silas Stearns	sch.	116797	41.00	39.00	67.50	19.80	7.00	1897	Milton, FL	Warren Fish Co.	Pensacola, FL
Silvia	sch.	116049	12.00	11.00	50.00	15.70	3.80	1871	Mobile, AL		Pensacola, FL
Seminole	ga. s.	211728	71.00	64.00	80.00	21.10	9.10	1913	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Snapper King	ga. s.	231352	54.00	23.00	66.60	18.60	7.70	1931	Pascagoula, MS	M. M. Flechas	Gulfport, MS
Snapper	ol. s.	225892	59.00	18.00	57.00	18.70	9.20		Pascagoula, MS	T. A. Thompson	Galveston, TX
Snapper Queen	ol. s.	228141	45.00	22.00	68.00	19.00	8.00	1928	Pascagoula, MS	Liberty Fish Oyster	Galveston, TX
St. Nicholas	ol. s.	236892	57.00	21.00	61.20	20.20	8.60	1937	Pascagoula, MS	Liberty Fish Oyster	Galveston, TX
Star Queen	ol. s.	266497	71.00	60.00	68.20	20.30	9.50	1953	Pascagoula, MS	Star Fish & Oyster Co.	Mobile, AL

[1] The former ga. s. *Diana.*

[2] Renamed *Firewater*

[3] Rebuilt and renamed *Carrie B. Welles* in 1929.

Appendix C Partial List of Vessels Engaged in the Northern Gulf of Mexico Red Snapper Fishery From 1840-1960 (concluded)

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Starland[1]	ga. s.	213614	49.00	44.00	71.80	18.40	7.70	1915	Salsbury, MD	E. E. Saunders & Co.	Pensacola, FL
Storm King	sch..		43.30	41.20	58.80	19.80	8.20	1861	Green Port, NY		Galveston, TX
Telstar	ol. s.	291454	63.30	43.00	61.9	20.80	8.40	1963	Biloxi, MS	Arcas Co. Inc.	Pascagoula, MS
Thelma 1935											
Thomas J. Carroll	sch.		71.00	45.00	82.00	21.50	8.80	1905	Essex, MA	Pierce	Galveston, TX
Tom and Jean[2]	ol. s.	225337	74.00	62.00	64.00	21.00	9.00	1917	Grand Caymon	Star Fish & Oyster Co.	Mobile, AL
Tommy	ga. s.	232454	14.00	11.00	43.10	12.30	4.70	1927	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Try Me 1939											
Tupan	ol. s.		68.00	49.00	65.60	20.60	9.80	1967	Biloxi, MS	Arcas Co. Inc.	Pascagoula, MS
Two Boys	ga. s.		10.00	6.00	32.8	14.4	4.00	1901	East Bay, FL	Falk Fish Co.	Pensacola, FL
Two Sisters 1939											
Undendago 1934										C.C. Company	Pascagoula, MS
Vayu	ga. s.		11.00	11.00	33.00	10.30	7.30	1882	Boston, MA	Velasco Fsh &Oys. Co.	Galveston, TX
Vicking	ol. s.	224647	52.00	45.00	71.40	20.40	9.40	1925	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Victor	ol. s.	211477	35.00	13.00	66.60	17.80	6.80	1917	Pascagoula, MS	E. W. Jamason	Mobile, AL
Virginia[3]	k. sch.		106.90	73.00	102.20	23.00	10.20	1909	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Wander	sl.		3.00						Biloxi, MS	Richard Mundy	Pensacola, FL
Washakie[4]	sch.	205794	78.00	47.00	89.00	21.20	10.00	1908	Chelsea, MA	Warren Fish Co.	Pensacola, FL
Wilhemina E.	ol. s.	231020	29.00	9.00	55.00	14.20	6.60		Harbor Island, BI	Star Fish & Oyster Co.	Mobile, AL
William Hays	ga. s.	210537	69.00	61.00	76.40	21.20	9.60	1912	Pensacola, FL	Warren Fish Co.	Pensacola, FL
William Smith	sch.	26572	8.98	8.53	34.80	11.20	4.10	1864	Pensacola, FL		Pensacola, FL
Weskettle 1899											
Wm. H. Warren	sch,		31.00	29.00	56.90	18.2	6.3	1867	Harpswell, ME	Warren Fish Co.	Pensacola, FL
Wm. V. McDonald	ga. s.	223987	59.00	48.00	81.50	20.80	8.50	1924	Bay Point, FL	E. E. Saunders & Co.	Pensacola, FL
Yakima	sch.	27688	108.50	71.10	96.60	24.50	10.40	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Yucatan	k. sch..		84.00	52.00	93.00	22.30	1.10	1912	Essex, MA	Gulf Fisheries Co.	Galveston, TX

[1] The former gas yacht *Starling*,
[2] The former *Atwood H. Carson*,
[3] Rebuilt and renamed the *Buccaneer* in 1925.
[4] Renamed *John Francis Taylor*.

APPENDIX D: A LIST OF THE 1884-1885 PENSACOLA RED SNAPPER FLEET

Appendix D: Pensacola's Red Snapper Fleet 1884-1885

Vessel Name	Rig	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner
Ada	sch.	16.46	15.64	51.00	15.00	7.00			Pensacola, Ice Co.
Caro Piper	sch.	29.64	28.32	49.00	16.00	7.00	1879	Camden, ME	E. E. Saunders & Co.
Clarence Barclay	sch.	25.32	23.77	58.40	16.60	5.60	1855	Salem, MA	Warren Fish Co.
Comet	sch.	27.52	26.15	50.40	17.00	7.00	1860	Noank, CT	Pensacola, Ice Co.
Estella	sch.	38.70	36.64	54.87	18.34	7.20	1877	Noank, CT	E. E. Saunders & Co.
H. S. Rowe	sch.	59.47	56.50	70.00	20.20	7.50	1859	Essex, MA	Warren Fish Co.
Henrietta Frances	sch.	77.73	73.84	85.50	23.50	7.50	1883	Cohasset, MA	Warren Fish Co.
Hope	sl.	5.64	5.36	30.80	12.20	3.10	1866	Santa Rosa Co., FL	Warren Fish Co.
J. W. Wherrin	sch.	25.59							Pensacola Ice Co.
John D. Lustro	sch.	21.49	20.41	51.60	16.60	6.00	1884	Bay Point, FL	Santa Rosa Fish Co
John Pew	sch.	44.35	42.36	63.10	18.40	7.70	1852	Essex, MA	Warren Fish Co.
Maria Antonia	sl.	15.90	15.10	40.00	14.20	5.10		New Orleans, LA	Warren Fish Co.
Mary Potter	sch.	36.20	34.40	53.50	18.40	8.00	1868	Noank, CT	Pensacola, Ice Co.
Niantic	sch.	45.87	43.28	62.00	17.90	8.50	1848	Waterford, CT	Pensacola Ice Co.
Ripple	sch.	28.30	27.40	49.50	16.80	7.20	1862	Noank, CT	Pensacola Ice Co.
Sarah L. Harding	sch.	31.30	29.70	53.60	17.50	6.30	1866	Phippsburg, ME	Warren Fish Co.

Source: J. W. Collins, "Report on the Discovery and Investigation of Fishing Grounds, Made By the Steamer *Albatross* During a Cruise Along the Gulf of Mexico; With Notes on the Gulf Fisheries," *Annual Report of the United States Fish Commission For 1885* (Washington: Government Printing Office, 1887), 284.

APPENDIX E: A LIST OF THE 1899 PENSACOLA RED SNAPPER FLEET

Appendix E: A List of Vessels in Pensacola's 1899 Red Snapper Fleet.

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
A. J. Chapman	sch.	1243	48.18	45.78	65.20	19.80	8.40	1860	New London, CT	E. E. Saunders & Co.	Pensacola, FL
Althea Fraklin	sch.	1399	36.00	34.00	55.80	18.40	7.60	1867	Noank, CT	Warren Fish Co.	Pensacola, FL
B. F. Sutter	sch.	7207	36.00	34.00	56.80	19.30	7.00	1865	Chelsea, MA		Pensacola, FL
Carrie B. Welles	sch.	126794	41.00	39.00	66.20	18.70	7.80	1891	Booth Bay, ME		Pensacola, FL
Carrie N. Chase	sch.	137637	48.00	24.00	69.50	20.10	8.10	1899	East Booth Bay, ME		Pensacola, FL
Charles Morgan	sch.	5930	50.75	48.22	72.70	19.70	7.20	1874	New Orleans, LA		Pensacola, FL
Clara P. Sewall	sch.	127020	52.00	50.00	75.80	19.60	8.00	1894	Gloucester, MA	Warren Fish Co.	Pensacola, FL
Clara R. Grimes	sch.	126206	34.28	32.57	61.00	17.80	6.80	1884	Bristol, ME	-	Pensacola, FL
Clarence Barclay	sch.	4133	25.32	23.77	58.40	16.60	5.60	1855	Salem, MA	Warren Fish Co.	Pensacola, FL
Contest	sch..	125644	67.00	64.00	72.30	22.30	7.50	1879	Kennebunk, ME	-	Pensacola, FL
Dixie											Pensacola, FL
Edith L. Conley	sch.	185212	58.00	55.00	74.00	21.00	7.00	1876	Gloucester, MA		Provincetown, MA
Favorite[1]	sch.	120912	45.78	44.45	68.90	19.20	8.80	1892	East Booth Bay, ME		Pensacola, FL
Florida	sch.	120339	30.95	29.40	54.90	16.40	6.10	1879	Keennebunk, ME		Pensacola, FL
Four Friends	sch.	9006	29.00	27.00	56.00	17.30	6.60	1865			Pensacola, FL
G. L. Daboll	sch.	85192	49.00	46.00	64.00	10.7	7.70	1872	Noank, CT	E. E. Saunders & Co.	Pensacola, FL
Haze	sch.	11115	56.26	53.45	74.10	19.30	7.00	1853	New York, NY	Warren Fish Co.	Pensacola, FL
Halcyon	sch.	95961	27.91	26.52	52.40	14.80	5.80	1888	Essex, MA	Warren Fish Co.	Pensacola, FL
Hope	sl.	11581	5.64	5.36	30.80	12.20	3.10	1866	Santa Rosa Co., FL	Warren Fish Co.	Pensacola, FL
Ida	sch.	100409	11.24	10.68	43.00	15.20	3.50	1886	Bayou, Boisdore, MS		Pensacola, FL
Irma	sch.	190435	6.67	6.46	39.20	12.20	3.50	1888	Wolf River, MS		Pensacola, FL
Isabelle	sch.	100028	35.04	33.29	55.90	18.90	6.80	1872	Noank, CT	Warren Fish Co.	Pensacola, FL
Josie May	sch.	76.399	47.83	45.44	67.70	19.70	7.00	1883	Bath, ME	E. E. Saunders & Co.	Pensacola, FL
Lottie S. Haskins	sch.	141056	58.00	55.00	70.50	20.40	8.50	1890	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
M. Muller	sch.	92161	33.46	31.79	46.70	17.00	6.80	1890	Pensacola, FL		Pensacola, FL
Mary E. Hoxie	sch.	17579	30.00	29.00	43.90	17.80	7.10	1868	Noank, CT		Pensacola, FL
Mary Louise	sch.	91341	9.00	8.00	36.00	13.00	3.90	1881	Pensacola, FL		Pensacola, FL
Mary L. Harty	sch.	90260	49.00	46.00	68.50	20.80	7.20	1871	Booth Bay, ME		Pensacola, FL
Nellie T. Campbell[2]	sch.	18656	67.58	64.70	70.30	20.50	7.50	1870	Bath, ME	E. E. Saunders & Co.	Pensacola, FL
Ospray	sch.	18836	31.00	29.00	52.00	17.30	6.70	1858	Boothbay, ME	E. E. Saunders & Co.	Pensacola, FL
Priscilla	sch.	156644	48.98	46.45	89.90	19.80	8.98	1893	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Silvia	sch.	116049	12.00	11.00	50.00	15.70	3.80	1871	Mobile, AL		Pensacola, FL
William Smith	sch.	26572	8.98	8.53	34.80	11.20	4.10	1864	Pensacola, FL		Pensacola, FL
Wm. H. Warren	sch,		31.00	29.00	56.90	18.20	6.30	1867	Harpswell, ME	Warren Fish Co.	Pensacola, FL

Source: Vessels cited in the *Pensacola Daily News* from 1 June 1899 to 20 December 1899 in reference to their fishing activity.

[1] Rebuilt and renamed *Isabelle*.

[2] Rebuilt and renamed *Henry P. Chapman* in 1899.

APPENDIX F: A LIST OF PENSACOLA VESSELS PUBLISHED IN FISHING MASTER'S ASSOCIATION, FISHERMAN OF THE ATLANTIC 1911, AND BELIEVED TO BE ENGAGED IN THE RED SNAPPER FISHERY

Appendix F: Pensacola Vessels Listed in Fishing Master's Association, *Fisherman of the Atlantic, 1911.*

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Albert Giger	sch.		56	53	72.4	19.8	8.00	1893	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Alcina	sch.	107447	79.00	66.00	83.60	23.00	9.40	1899	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Algoma	sch.		44	18	75	19.4	8.2	1905	Milton, FL	Warren Fish Co.	Pensacola, FL
Amy Wixen	sch.	105006	47.34	45.06	67.50	21.00	6.60	1870	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Angielena	sch.		40	40	62	18.4	7.6	1900	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Ariola	sch.	201479	50.00	20.00	73.30	20.00	8.20	1904	Milton, FL	Warren Fish Co.	Pensacola, FL
Athea Fraklin	sch.	1399	36.00	34.00	55.80	18.40	7.60	1867	Noank, CT	Warren Fish Co.	Pensacola, FL
Brilliant	sch.		12	9	37.7	14.0	4.1	1900	St. Andr' Bay, FL	J. W. Coode & Co.	Pensacola, FL
Caldwell H. Colt	sch.	126449	64.00	61.00	79.00	21.50	9.10	1887	Green Port, NY	Warren Fish Co.	Pensacola, FL
Carrie B. Welles	sch.	126794	41.00	39.00	66.20	18.70	7.80	1891	Boothbay, ME	E. E. Saunders & Co.	Pensacola, FL
Cavalier	sch.	126469	50.00	48.00	65.00	20.10	9.30	1887	Glenn Cove, NY	E. E. Saunders & Co.	Pensacola, FL
Caviare	sch.		62.00	59.00	74.30	20.70	8.70	1891	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Chicopee	sch.	206963	55.00	29.00	72.80	21.00	8.20	1909	Milton, FL	Warren Fish Co.	Pensacola, FL
Clara M. Littlefield	sch.	126825	63.00	30.00	71.80	20.50	9.00	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Clara P. Sewall	sch.	127020	52.00	50.00	75.80	19.60	8.00	1894	Gloucester, MA	Warren Fish Co.	Pensacola, FL
Clara R. Harwood	sch.	126727	58.90	55.95	71.00	20.40	8.50	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Dorothy	sch.	200613	70.67	44.45	79.00	21.30	8.60	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Emma Jane	sch.		42.00	40	67.5	20.1	6.5	1871	Gloucester, MA	Warren Fish Co.	Pensacola, FL
Favorite[1]	sch.	120912	45.78	44.45	68.90	19.20	8.80	1892	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Francis and Louisa	sch.		27.00	26	51.5	17.8	6.0	1874	Noank, CT	E. E. Saunders & Co.	Pensacola, FL
Gatlatea	ga. s.		12	5	41.7	12.7	4.6	1909	Pensacola, FL	J. J. Coe	Pensacola, FL
Halcyon	sch.	95961	27.91	26.52	52.40	14.80	5.80	1888	Essex, MA	Warren Fish Co.	Pensacola, FL
Henrietta G. Martain	sch.		52	32	70.0	20.0	7.5	1889	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Ida M. Silva	sch.		55.14	55.14	70.30	19.70	9.00	1903	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Isabelle	sch.	100028	35.04	33.29	55.90	18.90	6.80	1872	Noank, CT	Warren Fish Co.	Pensacola, FL
John M. Keen	sch.		64	33	78.8	20.0	8.6	1894	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Kwasind[2]	sch.	136011	65.00	62.00	78.50	21.90	9.00	1888	City Island, NY	E. E. Saunders & Co.	Pensacola, FL
Lettie G. Howard[3]	sch.	141261	59.00	56.00	74.60	21.00	8.40	1893	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Lottie S. Haskins	sch.	141056	58.00	55.00	70.50	20.40	8.50	1890	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Louis F. Harper	sch.		62.00	62.00	80.10	22.50	9.20	1887	Harkers Island, NC	E. E. Saunders & Co.	Pensacola, FL
Martha Lillian	sch.		22	15	50.0	15.4	4.0	1906	St. Andr' Bay, FL	Bay Fisheries Co.	Pensacola, FL
Mary L. Harty	sch.		49.0	46	68.5	20.8	7.2	1871	Boothbay, ME	Warren Fish Co.	Pensacola, FL

[1] Rebuilt and renamed *Isabelle*.
[2] Formerly the ga. s. *Elbridge T Gerry*
[3] Rebuilt in Bay Point Florida in 1923 and renamed the *Mystic C*.

Appendix F: Pensacola Vessels Listed in Fishing Master's Association, *Fisherman of the Atlantic, 1911* (concluded).

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Mineola	sch.	208298	55.00	27.00	70.00	20.80	8.40	1911	Milton, FL	Warren Fish Co.	Pensacola, FL
Osceola	sch.		50	27	71.6	19.8	8.1	1901	Milton, FL	Warren Fish Co.	Pensacola, FL
Priscilla	sch.	156644	48.98	46.45	69.90	19.8	8.98	1893	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Ruth A. Wells	sch.	200241	31.00	12.00	74.00	20.00	8.00	1903	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Sadie Cohran	sl.		7	6	30.7	11.6	3.0	1892	Point Wash'n, FL	E. E. Saunders & Co.	Pensacola, FL
Sea Em	ga. s.	13	11	34	34.0	14.4	4.5	1900	Handsboro, MS	E. E. Saunders & Co.	Pensacola, FL
Seaconnet[1]	sch.	117148	65.00	40.00	78.50	20.80	9.20	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Sheffeyld	sch.		64	61	73.8	20.6	8.7	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Silas Stearns	sch.	116797	41.00	39.00	67.50	19.80	7.00	1897	Milton, FL	Warren Fish Co.	Pensacola, FL
Two Boys	ga. s.		10	6	32.8	14.4	4.0	1901	East Bay, FL	D. Levy	Pensacola, FL
Wallace A McDonald	ga. s.		20	11	51.8	16.1	5.3	1909	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL

[1] Rebuilt and renamed *Carrie B. Welles* in 1929.

APPENDIX G: A LIST OF PENSACOLA VESSELS PUBLISHED IN FISHING MASTERS ASSOCIATION'S FISHERMEN OF THE ATLANTIC 1917, AND BELIEVED TO BE ENGAGED IN THE RED SNAPPER FISHERY

Appendix G: Pensacola Vessels listed in Fishing Masters Association's Fishermen of the Atlantic 1917, and believed to be engaged in the Red Snapper Fishery.

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner or Fitter	Homeport
Alcina	ga. s.	107447	79.00	66.00	83.60	23.00	9.40	1899	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Algoma	sch.		44	18	75	19.4	8.2	1905	Milton, FL	Warren Fish Co.	Pensacola, FL
Amy Wixen	sch.	105006	47.34	45.06	67.50	21.00	6.60	1870	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Angielena	sch.		40	40	62	18.4	7.6	1900	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Ariola	sch.	201479	50.00	20.00	73.30	20.00	8.20	1904	Milton, FL	Warren Fish Co.	Pensacola, FL
Barcelona	sch.	212780	77.00	41.00	82.10	21.30	9.50	1914	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Caldwell H. Colt	sch.	126449	64.00	61.00	79.00	21.50	9.10	1887	Green Port, NY	Warren Fish Co.	Pensacola, FL
Caviare	sch.	126781	62.89	59.83	74.30	20.07	8.70	1891	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Clara G. Silva	sch.		81.67	50.94	85.2	21.5	9.6	1906	Essex, MA	Warren Fish Co.	Pensacola, FL
Clara M. Littlefield	sch.	126825	63.00	30.00	71.80	20.50	9.00	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Clara R. Harwood	sch.	126727	58.90	55.95	71.00	20.40	8.50	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Culebra	ga. s.	209268	68.00	58.00	77.10	21.10	9.70	1911	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Emilia Enos	sch.	137651	97.53	66.59	89.00	23.90	9.50	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Favorite[1]	sch.	120912	45.78	44.45	68.90	19.20	8.80	1892	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Fish Halk	sch.	121251	90.00	60.00	86.20	24.40	10.20	1902	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Flora J. Sears[2]	sch.	290804	77.99	46.00	81.40	21.50	9.40	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Francis V. Sylvia	sch.	201610	95.00	64.00	85.00	21.70	10.20	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Henry P. Williams	ga. s.		73	53	85.9	21.5	10.00	1912	Chelsea, MA	Warren Fish Co.	Pensacola, FL
Hope	sch.	202752	72.55	54.00	84.40	21.60	9.80	1905	Woolwitch, ME ?	Warren Fish Co.	Pensacola, FL
Ida M. Silva	sch.		55.14	55.14	70.30	19.70	9.00	1903	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Ida S. Brooks	sch.	100740	72.00	47.00	80.00	21.60	8.60	1901	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Kwasind[3]	sch.	136011	65.00	62.00	78.50	21.90	9.00	1888	City Island, NY	E. E. Saunders & Co.	Pensacola, FL
Lettie G. Howard[4]	sch.	141261	59.00	56.00	74.60	21.00	8.40	1893	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Lottie S. Haskins	sch.	141056	58.00	55.00	70.50	20.40	8.50	1890	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Louis F. Harper	sch.		62.00	62.00	80.10	22.50	9.20	1887	Harkers Island, NC	E. E. Saunders & Co.	Pensacola, FL
Mary A. Gleason	sch.	92918	65.10	65.10	78.40	21.30	8.00	1889	Essex, MA	Falk Fish Co.	Pensacola, FL
Mary B. Greer	sch.	204983	79.00	49.00	85.20	21.40	9.10	1908	Essex, MA	Warren Fish Co.	Pensacola, FL
Mary E. Cooney	sch.		88.00	57.00	85.00	22.60	10.20	1903	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mary L. Harty	sch.		49	46	68.5	20.8	7.2	1871	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Maud F. Silva	sch.	200862	86.00	77.00	85.00	22.00	10.20	1904	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL

[1] Rebuilt and renamed *Isabelle*.
[2] Rebuilt and renamed *Thomas E. Welles* in 1925.
[3] Formerly the ga. s. *Elbridge T Gerry*
[4] Rebuilt in Bay Point Florida in 1923 and renamed the *Mystic C.*

Appendix G: Pensacola Vessels listed in Fishing Masters Association's Fishermen of the Atlantic 1917, and believed to be engaged in the Red Snapper Fishery (concluded).

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Mineola	sch.	208298	55.00	27.00	70.00	20.80	8.40	1910	Milton, FL	Warren Fish Co.	Pensacola, FL
Osceola	sch.		50	27	71.6	19.8	8.1	1901	Milton, FL	Warren Fish Co.	Pensacola, FL
Rena A. Percy	sch.		77.00	39.00	76.50	21.60	9.40	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Ruth A. Wells	sch.	200241	31.00	12.00	74.00	20.00	8.00	1903	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Sadie Cohran[1]	ga. s.		7	6	30.7	11.6	3.0	1892	Point Wash'n, FL	E. E. Saunders & Co.	Pensacola, FL
Sea Em	ga. s.	13	11	34	34.0	14.4	4.5	1900	Handsboro, MS	E. E. Saunders & Co.	Pensacola, FL
Seaconnet[2]	sch.	117148	65.00	40.00	78.50	20.80	9.20	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Seminole	sch.	211728	71.00	64.00	80.00	21.10	9.10	1913	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Sheffeyld	sch.		64	61	73.8	20.6	8.7	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Silas Stearns	sch.	116797	41.00	39.00	67.50	19.80	7.00	1897	Milton, FL	Warren Fish Co.	Pensacola, FL
Tecumseh	*ga. s.*		41	41	65.8	18.8	8.8	1899	Essex, MA	Falk Fish Co.	Pensacola, FL
Two Boys	ga. s.		10	6	32.8	14.4	4.	1901	1901	Falk Fish Co.	Pensacola, FL
Virginia[3]	k. sch.		106.90	73.00	102.20	23.00	10.20	1909	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Wallace A McDonald	ga. s.		20	11	51.8	16.1	5.3	1909	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Washakie[4]	sch.	205794	78.00	47.00	89.00	21.20	10.00	1908	Chelsea, MA	Warren Fish Co.	Pensacola, FL
William Hays	ga. s.	210537	69.00	61.00	76.40	21.20	9.60	1912	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Yakima	sch.	27688	108.50	71.10	96.60	24.50	10.40	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL

[1] Formerly the sloop *Sadie Cohran*.
[2] Rebuilt and renamed *Carrie B. Welles* in 1929.
[3] Rebuilt and renamed the *Buccaneer* in 1925.
[4] Renamed *John Francis Taylor*.

APPENDIX H: A LIST OF PENSACOLA VESSELS PUBLISHED IN THE FISHERMAN'S UNION OF AMERICA, LIST OF FISHING VESSELS 1921, AND BELIEVED TO BE ENGAGED IN THE RED SNAPPER FISHERY

Appendix H: Pensacola Vessels listed in the *Fisherman's Union of America, List of Fishing Vessels* 1921 and believed to be engaged in the Red Snapper Fishery.

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Alcina	sch.	107447	79.00	66.00	83.60	23.00	9.40	1899	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Algoma	sch.		44.00	18.00	75.00	19.40	8.20	1905	Milton, FL	Warren Fish Co.	Pensacola, FL
Amy Wixen	sch.	105006	47.34	45.06	67.50	21.00	6.60	1870	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Angielena	sch.		40.00	40.00	62.00	18.40	7.60	1900	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Ariola	sch.	201479	50.00	20.00	73.30	20.00	8.20	1904	Milton, FL	Warren Fish Co.	Pensacola, FL
Barcelona	sch.	212780	77.00	41.00	82.10	21.30	9.50	1914	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Cavalier	sch.	126469	50.00	48.00	65.00	20.10	9.30	1887	Glenn Cove, NY	E. E. Saunders & Co.	Pensacola, FL
Clara G. Silva	sch.		81.67	50.94	85.2	21.50	9.60	1906	Essex, MA	Warren Fish Co.	Pensacola, FL
Clara M. Littlefield	sch.	126825	63.00	30.00	71.80	20.50	9.00	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Clara R. Harwood	sch.	126727	58.90	55.95	71.00	20.40	8.50	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Culebra	sch.	209268	68.00	58.00	77.10	21.10	9.70	1911	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Dorothy	sch.	200613	70.67	44.45	79.00	21.30	8.60	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Emilia Enos	sch.	137651	97.53	66.59	89.00	23.90	9.50	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Emma Jane	sch.		42.00	40.00	67.5	20.10	6.50	1871	Gloucester, MA	Warren Fish Co.	Pensacola, FL
Favorite[1]	sch.	120912	45.78	44.45	68.90	19.20	8.80	1892	East Booth Bay, ME	E. E. Saunders & Co.	Pensacola, FL
Fish Halk	sch.	121251	90.00	60.00	86.20	24.40	10.20	1902	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Flora J. Sears[2]	sch.	290804	77.99	46.00	81.40	21.50	9.40	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Francis V. Sylvia	sch.	201610	95.00	64.00	85.00	21.70	10.20	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Gatlatea	ga. s.		12.00	5.00	41.7.00	12.70	4.60	1909	Pensacola, FL	J. J. Coe	Pensacola, FL
Halcyon	sch.	95961	27.91	26.52	52.40	14.80	5.80	1888	Essex, MA	Warren Fish Co.	Pensacola, FL
Hope	sch.	202752	72.55	54.00	84.40	21.60	9.80	1905	Woolwitch, ME ?	Warren Fish Co.	Pensacola, FL
Ida M. Silva	sch.		55.14	55.14	70.30	19.70	9.00	1903	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Ida S. Brooks	sch.	100740	72.00	47.00	80.00	21.60	8.60	1901	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
John M. Keen	sch.		64.00	33.00	78.8	20.00	8.60	1894	Essex, MA	E. E. Saunders & Co.	
Kwasind[3]	sch.	136011	65.00	62.00	78.50	21.90	9.00	1888	City Island, NY	E. E. Saunders & Co.	Pensacola, FL
Lettie G. Howard[4]	sch.	141261	59.00	56.00	74.60	21.00	8.40	1893	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Lottie S. Haskins	sch.	141056	58.00	55.00	70.50	20.40	8.50	1890	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Louis F. Harper	sch.		62.00	62.00	80.10	22.50	9.20	1887	Harkers Island, NC	E. E. Saunders & Co.	Pensacola, FL
Mary A. Gleason	sch.	92918	65.10	65.10	78.40	21.30	8.00	1889	Essex, MA	Falk Fish Co.	Pensacola, FL
Mary B. Greer	sch.	204983	79.00	49.00	85.20	21.40	9.10	1908	Essex, MA	Warren Fish Co.	Pensacola, FL

[1] Rebuilt and renamed *Isabelle*.
[2] Rebuilt and renamed *Thomas E. Welles* in 1925.
[3] Formerly the ga. s. *Elbridge T Gerry*
[4] Rebuilt in Bay Point Florida in 1923 and renamed the *Mystic C*.

Appendix H: Pensacola Vessels listed in the *Fisherman's Union of America, List of Fishing Vessels* 1921 and believed to be engaged in the Red Snapper Fishery (concluded).

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Mary E. Cooney	sch.		88.00	57.00	85.00	22.60	10.20	1903	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mary L. Harty	sch.		49.00	46.00	68.50	20.80	7.20	1871	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Maud F. Silva	sch.	200862	86.00	77.00	85.00	22.00	10.20	1904	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mineola	sch.	208298	55.00	27.00	70.00	20.80	8.40	1910	Milton, FL	Warren Fish Co.	Pensacola, FL
Osceola	sch.		50.00	27.00	71.60	19.80	8.10	1901	Milton, FL	Warren Fish Co.	Pensacola, FL
Rena A. Percy	ga. s.		77.00	39.00	76.50	21.60	9.40	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Ruth A. Wells	sch.	200241	31.00	12.00	74.00	20.00	8.00	1903	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Sadie Cohran[1]	ga. s.		7.00	6.00	30.70	11.60	3.00	1892	Point Wash'n, FL	E. E. Saunders & Co.	Pensacola, FL
Sea Em	ga. s.		13.00	11.00	34.00	14.40	4.50	1900	Handsboro, MS	E. E. Saunders & Co.	Pensacola, FL
Seaconnet[2]	sch.	117148	65.00	40.00	78.50	20.80	9.20	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Seminole	sch.	211728	71.00	64.00	80.00	21.10	9.10	1913	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Sheffeyld	sch.		64.00	61.00	73.80	20.60	8.7	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Silas Stearns	sch.	116797	41.00	39.00	67.50	19.80	7.00	1897	Milton, FL	Warren Fish Co.	Pensacola, FL
Tecumseh	*ga. s.*		41.00	41.00	65.80	18.80	8.80	1899	Essex, MA	Falk Fish Co.	Pensacola, FL
Two Boys	ga. s.		10.00	6.00	32.80	14.40	4.00	1901	1901	Falk Fish Co.	Pensacola, FL
Virginia[3]	k. sch.		106.90	73.00	102.20	23.00	10.20	1909	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Wallace A McDonald	ga. s.		20	11.00	51.80	16.10	5.30	1909	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Washakie[4]	sch.	205794	78.00	47.00	89.00	21.20	10.00	1908	Chelsea, MA	Warren Fish Co.	Pensacola, FL
William Hays	ga. s.	210537	69.00	61.00	76.40	21.20	9.60	1912	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Yakima	sch.	27688	108.50	71.10	96.60	24.50	10.40	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL

1 Formerly the sloop *Sadie Cohran*.
2 Rebuilt and renamed *Carrie B. Welles* in 1929.
3 Rebuilt and renamed the *Buccaneer* in 1925.
4 Renamed *John Francis Taylor*.

APPENDIX I: A LIST OF PENSACOLA VESSELS LISTED IN FISHING MASTER'S ASSOCIATION, FISHERMAN OF THE ATLANTIC 1925, AND BELIEVED TO BE ENGAGED IN THE RED SNAPPER FISHERY

Appendix I: A List of Pensacola Vessels Listed in Fishing Master's Association, *Fisherman of the Atlantic, 1925.*

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
A. F. Warren	ga s.	223989	103.00	127.00	68.80	22.90	11.30	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Alcina	sch.	107447	79.00	66.00	83.60	23.00	9.40	1899	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Amy Wixen	sch.	105006	47.34	45.06	67.50	21.00	6.60	1870	Boothbay, ME	Warren Fish Co.	Pensacola, FL
Ariola	sch.	201479	50.00	20.00	73.30	20.00	8.20	1904	Milton, FL	Warren Fish Co.	Pensacola, FL
Audrey	ga. s.	223270	28.00	14.00	47.10	16.00	7.00	1923	Pensacola, FL	Bayou Fish Co.	Pensacola, FL
Barbara	ga. s.	224287	16.00	12.00	40.20	12.70	6.10	1924	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
Barcelona	sch.	212780	77.00	41.00	82.10	21.30	9.50	1914	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Billy	ga. s.	224272	16.00	12.00	41.40	12.70	6.10	1924	Bay Point, FL	E. E. Saunders & Co.	Pensacola, FL
Cavalier	sch.	126469	50.00	48.00	65.00	20.10	9.30	1887	Glenn Cove, NY	E. E. Saunders & Co.	Pensacola, FL
Clara M. Littlefield	sch.	126825	63.00	30.00	71.80	20.50	9.00	1891	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Culebra	sch.	209268	68.00	58.00	77.10	21.10	9.70	1911	Pensacola, FL	Warren Fish Co.	Pensacola, FL
E. W. Fowler	ga. s.	224341	59.00	53.00	74.20	20.60	9.10	1924	Pensacola, FL	E. E. Saunders & Co.	Pensacola, FL
EESCO	sch.	215012	64.00	33.00	78.10	20.00	8.60	1917	Milton, FL	E. E. Saunders & Co.	Pensacola, FL
Edith Silveria	ga. s.	204724	86.00	53.00	83.00	24.40	10.30	1907	Essex, MA	Warren Fish Co.	Pensacola, FL
Emilia Enos	sch.	137651	97.53	66.59	89.00	23.90	9.50	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Fish Halk	sch.	121251	90.00	60.00	86.20	24.40	10.20	1902	Quincy, MA	E. E. Saunders & Co.	Pensacola, FL
Flora J. Sears[1]	sch.	290804	77.99	46.00	81.40	21.50	9.40	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Francis V. Sylvia	sch.	201610	95.00	64.00	85.00	21.70	10.20	1904	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Henry P. Williams	ga. s.		73.00	53.00	85.90	21.50	10.00	1912	Chelsea, MA	Warren Fish Co.	Pensacola, FL
Hope	sch.	202752	72.55	54.00	84.40	21.60	9.80	1905	Woolwitch, ME ?	Warren Fish Co.	Pensacola, FL
Louis F. Harper	sch.		62.00	62.00	80.10	22.50	9.20	1887	Harkers Island, NC	E. E. Saunders & Co.	Pensacola, FL
Mary B. Greer	sch.	204983	79.00	49.00	85.20	21.40	9.10	1908	Essex, MA	Warren Fish Co.	Pensacola, FL
Mary E. Cooney	sch.		88.00	57.00	85.00	22.60	10.20	1903	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mary Jane	ga. s.		29.00	14.00	47.10	16.60	7.00	1924	Pensacola, FL	Bayon Fish Co.	Pensacola, FL
Maud F. Silva	sch.	200862	86.00	77.00	85.00	22.00	10.20	1904	Gloucester, MA	E. E. Saunders & Co.	Pensacola, FL
Mineola	sch.	208298	55.00	27.00	70.00	20.80	8.40	1910	Milton, FL	Warren Fish Co.	Pensacola, FL
Mystic C.[2]	sch.	141261	59.00	56.00	74.60	21.00	8.40	1893	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Osceola	sch.		50.00	27.00	71.60	19.80	8.10	1901	Milton, FL	Warren Fish Co.	Pensacola, FL
Patty	ga. s.	223364	28.00	14.00	47.10	16.00	7.00	1923	Pensacola, FL	Bayon Fish Co.	Pensacola, FL
Rena A. Percy	ga. s.		77.00	39.00	76.50	21.60	9.40	1924	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Ruth	ga. s.		92.00	49.00	85.40	22.10	10.80	1912	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Seaconnet[3]	sch.	117148	65.00	40.00	78.50	20.80	9.20	1902	Essex, MA	E. E. Saunders & Co.	Pensacola, FL

[1] Rebuilt and renamed *Thomas E. Welles* in 1925.
[2] The former *Lettie G. Howard*, rebuilt in Bay Point Florida in 1923.
[3] Rebuilt and renamed *Carrie B. Welles* in 1929.

Appendix I: A List of Pensacola Vessels Listed in Fishing Master's Association, *Fisherman of the Atlantic, 1925.*

Vessel Name	Rig	Offical #	Gross	Net	Length	Breadth	Depth	Yr. Built	Place Built	Owner	Homeport
Seminole	sch.	211728	71.00	64.00	80.00	21.10	9.10	1913	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Silas Stearns	sch.	116797	41.00	39.00	67.50	19.80	7.00	1897	Milton, FL	Warren Fish Co.	Pensacola, FL
Success	ga. s.		18.00	14.00	40.00	13.40	4.60	1917	Apalachicola, FL	E. E. Saunders & Co.	Pensacola, FL
Virginia[1]	k. sch.		106.90	73.00	102.20	23.00	10.20	1909	Essex, MA	E. E. Saunders & Co.	Pensacola, FL
Washakie[2]	ga. s.	205794	78.00	47.00	89.00	21.20	10.00	1908	Chelsea, MA	Warren Fish Co.	Pensacola, FL
William Hays	sch.	210537	69.00	61.00	76.40	21.20	9.60	1912	Pensacola, FL	Warren Fish Co.	Pensacola, FL
Wm. V. McDonald	ga. s.	223987	59.00	48.00	81.50	20.80	8.50	1924	Bay Point, FL	E. E. Saunders & Co.	Pensacola, FL

[1] Rebuilt and renamed the *Buccaneer* in 1925.
[2] Renamed *John Francis Taylor*.