



HMAP Data File (in process) 1: Gulf of Maine, Cod Catches,  
1861-1864

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## *Supporting Documentation*



Gaffing and cleaning cod on the deck of a handling schooner  
off the North American east coast, ca. mid nineteenth century



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### Summary

**Dataset Title:** Gulf of Maine, Cod Catches, 1861-1864

**HMAP Case Study:** Gulf of Maine

**Large Marine Ecosystem:** 7: Northeast U.S. Continental Shelf

**Subject:** Catches, vessels and fishermen in the Gulf of Maine, 1861-1864

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**Extent:** 373 records

**Keywords:** cod; History of Marine Animal Populations; Gulf of Maine; fishing journals; fishing logs

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### 1. Gulf of Maine Cod Project: Goals, Objectives & Approach

**Goals:** The Gulf of Maine Cod Project has three long-term goals:

- 1) to describe the synergistic history of humans and marine species (particularly Atlantic cod) in the Gulf of Maine (including Stellwagen Bank National Marine Sanctuary) and the Northwest Atlantic based on descriptive information from historic sources (1524-1930), documents recording the amount and geographic distribution of catch and fishing effort (1716-1930), and early scientific surveys (1870-1940);
- 2) to develop an arsenal of analytical tools well suited to historical data and validated by historical analysis and contextualization;
- 3) to create a protocol for the sustainable use of cultural as well as restored natural resources by incorporating a historic perspective into public policy, educational outreach and comprehensive management plans.

**Objectives:** in seeking to attain these goals, the following objectives will be met:

- 1) the recovery of catch data from New England fishing logs and corresponding industry documents written before 1900 in order to estimate the abundance, distribution, migratory patterns and average adult size of marine species, particularly Atlantic cod (*gadhus morua*), in the Gulf of Maine and the Northwest Atlantic before mechanization occurred and regular scientific sampling took place;
- 2) investigation of the historic interconnections between the fishing communities and marine ecosystems, including evidence and characteristics of localized overfishing and/or sustainable harvest, identification of fishing strategies and knowledge systems adapted to particular locales, the effects of changes in fish populations and marine ecosystems on human behavior, profitability and the economics of scale;
- 3) the creation of a historical ecology for the Gulf of Maine, starting with Stellwagen Bank National Marine Sanctuary, based on archaeological evidence from the earliest human settlements, fisheries records to World War II, and scientific surveys by the US Fish Commission, highlighting the importance of marine resources to the human communities from Cape Ann to Cape Cod;
- 4) the adaptation of modern analytical techniques, such as GIS mapping, fisheries stock assessment models, presence/absence analysis, and discrete choice modeling, to non-random statistical samples generated by the historical attrition of original sources;
- 5) the establishment of historical baselines for marine species as broad indicators of ecosystem health and regime state, correcting erroneous assumptions about productivity and abundance.

**Approach:** information derived from the following types of historical source is being entered into databases:

- a) codfishing logs and fisheries documents, 1852-1866;
- b) regional charts to 1940;



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- c) statistical summaries of collected data generated by the US Fish Commission and the Bureau of Fisheries, 1872-1944, and state fish commissions and census bureaus;
- d) scientific sampling surveys made by US Fish Commission vessels in the late 19<sup>th</sup>- and early 20<sup>th</sup>-centuries, as well as published scientific papers;
- e) qualitative sources such as diaries, memoirs, and oral histories.

This data file (in process) is derived from (a) codfishing logs and fisheries documents, 1861-1864.

## 2. Archival Sources: Historical Context & Appraisal

In 1792, the Congress of the United States voted an annual bounty to vessels catching only cod for over 120 days during the fishing season. Congress intended this bounty to offset the duty on imported salt used for preserving the catch. This subsidy injected capital into New England's oldest and most important commercial fishery during a precarious time of rebuilding after the Revolutionary War. In addition, statesmen like John Adams believed that the cod fishery, the most extensive deep-water fishery of the eighteenth century, provided a ready-made naval reserve vital to a fledgling nation with a long, vulnerable coastline and vigorous foreign trade. Each district customs collector paid yearly remittances out of the district's gross receipts to every boat or vessel enrolled and licensed for cod-fishing. The bounty was paid according to the measured tonnage of the vessel and not according to the amount of cod caught. Consequently, United States Customs Houses collected and preserved a host of detailed documents pertaining to the American cod fishery.

In 1852, a change in the law renewing the bounty required the captain of each vessel to submit that season's log to the Custom's Officer prior to receiving the bounty. Presumably, collecting the logs militated against fraud by proving that the vessel had spent the required number of days fishing exclusively for cod. Individual fishermen were paid a portion of the net proceeds of the season's catch, which was sold by weight in quintals (one quintal = 112lbs of dry fish). Most frequently, payment was apportioned according to the percentage of the total number of fish each man had caught. Occasionally, fishermen were paid on shares. Since, in both instances, the logs recorded the number of fish caught daily, and fishermen were paid at the end of the season according to the total number of fish they caught, the logs also served as a payroll record in which each crewmember had a vested interest.<sup>1</sup>

Westward expansion increasingly diluted the influence of New England fishermen in Congress. Salt beef and salt pork from the expanding economies of the midwestern and southwestern states began to compete with salt cod in urban marketplaces, but farmers received no bounty. Congressmen from the inland states were not sympathetic to the needs of the fisheries. However, ironclad Civil War monitors steaming to war ultimately doomed the cod bounty. The modern steam navy demanded training not available on fishing schooners. Since the fisheries

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<sup>1</sup>Lorenzo Sabine, *Report on the Principal Fisheries of the American Seas, Prepared for the Treasury Department of the United States* (Washington, 1853), 149-178. Sabine wrote his history and present state of the American fisheries in response to diplomatic negotiations between the United State and Great Britain over the fisheries. The report also coincided with the new cod bounty regulations in 1852, which are printed on pages 165-169. For a modern treatment of the bounty and its ramifications, see Wayne O'Leary, *Maine Sea Fisheries: The Rise and Fall of a Native Industry, 1830-1890* (Boston, 1996), ch. 2.



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were no longer the nursery of navies, there was no longer a strategic rationale in encouraging them. After the bounty lapsed in 1866, Customs Houses no longer collected logs, though licence, bond and enrollment records were maintained into the twentieth century.<sup>2</sup>

For the modern social historian, these logs provide a day-by-day account of life and work at sea during a time of profound technological, demographic and economic change. Many logs contain descriptions of weather, bottom conditions and other marine species that are of obvious utility to historians and marine ecologists. For scientists, the daily catch records provide detailed quantitative data possibly applicable to modern stock assessment models. These analytical models may partially reconstruct the marine ecosystem in which the cod played an important role. The unusual combination of numerical and descriptive data makes these manuscripts particularly attractive for multidisciplinary investigations.

### **Towns and Archives**

By the 1920s, New England Customs Offices were faced with a storage problem. Bulky nineteenth-century fisheries records appeared useless to a rapidly modernizing industry. After the inauguration of the National Archives, most of the surviving Customs records were sent there for storage, during which time some of the documents were microfilmed. In 2001, most New England Customs Records were moved from the National Archives and Records Administration Center in Washington DC to the Regional Archive in Waltham, Massachusetts. For the purposes of fisheries research, the largest and most comprehensive collection of cod fishery source material is to be found there, including the logs of the Salem/Beverly, Massachusetts, Customs District, the most extensive collection of any New England port. Most of the records of the Maine fishery, including large collections from the Frenchman's Bay and the Machias Customs Districts, are in Waltham as well.<sup>3</sup>

During the early part of the twentieth century, other collections were obtained by New England historical societies and libraries for the purpose of maritime and genealogical research. The James Duncan Phillips Library at the Peabody-Essex Museum holds the largest collection of historic documents on the New England cod fishery outside the National Archives in Waltham. Most of these came from the Newburyport, Massachusetts, Customs House. Ninety-three logs from the 1860s are preserved in the Marblehead Historical Society. The G. Blunt White Library at Mystic Seaport has a substantial collection of fisheries material from several New England ports, including towns in southern Maine from the Kennebec Customs District. The Penobscot Marine Museum in Searsport, Maine, has many documents from the Castine and Belfast Customs houses.<sup>4</sup>

Although the National Archives has a few customs records going back to 1789, some seventeenth- and eighteenth-century fisheries records are preserved in family papers and business accounts.<sup>5</sup> The Beverly Historical Society has an especially fine collection of eighteenth-century fisheries records.<sup>6</sup> Records in Baker Library at Harvard University from the poorly documented New Hampshire fishery include the business accounts of several merchant fishermen, including the Pepperrell family, who dominated the New Hampshire fishery in the late seventeenth and early eighteenth centuries.<sup>7</sup>

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<sup>2</sup>O'Leary, *Maine Sea Fisheries*, 53-57, 142-143, 157.

<sup>3</sup>For Salem/Beverly, NARA Waltham, RG36, RG41; EIC 25, 47-48, 113-118; for Frenchman's Bay, RG36; Machias, RG36.

<sup>4</sup>Variouly catalogued in their respective archives.

<sup>5</sup>Also in RG36, by customs district.

<sup>6</sup>Beverly Historical Society Collections, variously catalogued.

<sup>7</sup>Baker Library, MHAQ85, Mss 766, 1696-1852.



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Fishery records remain from twenty-nine of the thirty-three old customs districts, stretching from western Connecticut to northern Maine. Most of these records are incomplete, however. The forty-one fishing journals from the Kennebunk district have no corresponding documentation. The Barnstable Customs Records preserve hundreds of documents pertaining to that important Cape Cod fishery, but no fishing journals. Five customs districts provide most of the material extant: Salem/Beverly, Newburyport, and Marblehead in Massachusetts; and Frenchman's Bay and Machias in Maine (the Machias journals include nearly thirty from the Kennebec region, which belong properly with the records of the Bath Customs District). Even here, collateral records – in this case, license bonds – prove that only thirty-five percent of the Newburyport fishing journals have survived. Fires in Boston and Portland, Maine, claimed most of the Customs records of two important fishing fleets. Documents pertaining to other towns have simply been lost. The Portsmouth, New Hampshire, customs records, to which William G. Saltonstall referred in *Ports of Piscataqua* in 1941, are no longer to be found.<sup>8</sup>

### **Sources (Each source records information about a single vessel in a single season)**

*Fishing Journals* or *Logs* record the daily history of the voyage. There are 2,079 journals from seventeen customs districts noted to date, but we expect to discover more as we reach New England's smaller libraries and museums and canvas microfilm sources. However, only seven customs districts provide eighty-five percent of these logs.

The distribution of the fishing fleet among villages within the customs district can be obtained from the fishing journals as well as other sources. Fishing fleets from Cape Ann, Massachusetts, appear to have been concentrated in a dominant harbour within the district: most of the journals from the Salem/Beverly district are from vessels enrolled in Beverly (ninety-seven percent), while most of the Newburyport District's vessels sailed out of Newburyport (ninety-two percent). The concentration in Maine was different, however. Journals from the Frenchman's Bay fishery are spread out over twelve towns. The largest number, from Tremont, only represents twenty-six percent of the total. Machias journals seem to be even more broadly distributed, especially as they include thirty-four logs from six Kennebec ports that belong properly to Bath!<sup>9</sup>

Before 1852, most journals were kept on various kinds of simple, softbound notebooks of lined paper. Rarely, fishermen used ship's logs in quarto-sized, bound volumes. On commercially-printed logs, the pages were printed with a form for recording entries. On blank notebooks, captains often drew grids of rectangular blocks to confine daily records, and sometimes kept the fish count tallied separately under each man's initials at the back of the log or following each fare. After 1852, new legislation encouraged standardized forms for the fishing fleet. Two kinds of forms appeared. One, a long form, copied the format of the printed commercial log, but under each day's record added twelve spaces for the fishermen's catch, similar to the grid many captains were already drawing by themselves. Six of these daily grids fit on two facing pages. Events from the 120 days of fishing required for the bounty could thus be recorded on twenty pages. Journals from Cape Ann are usually in this format. Most long form journals chronicled a fishery in Canadian waters: the Bay of St. Lawrence, Labrador, the Scotian Shelf, the Grand Banks and fishing grounds in between. These logs, whether for one or more fares,<sup>10</sup> generally kept an exact navigational account of the voyages out and back, with less precise accounts of daily movements around the banks.

Another standardized form developed for the Maine fleet. Maine vessels frequently fished the fertile inshore grounds and made numerous short fares just a few days' sail from home. Ten or more fares were not uncommon. Journal entries for each day of this fishery were kept on one line

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<sup>8</sup>William J. Saltonstall, *Ports of the Piscataqua* (Cambridge, Mass., 1941), 197.

<sup>9</sup>Statistics are derived from the Gulf of Maine Cod Project, *Archival Survey of Sources* database, updated periodically.

<sup>10</sup>Each voyage constituted one fare. A fishing season was usually broken up into two or more fares.



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crossing two facing pages of a short form journal. More than thirty lines, each corresponding to a day, could fit on facing pages. Although there is room for observations, Maine journals tend to be terse. Generally, little navigational data and few descriptions are given, for the banks were often small areas within sight of shore.

Journals provide a day by day description of the fishery. The long forms generally record:

- \*Date and time of departure and return for each fare
- \*Courses *en route* to the fishing grounds with latitude and, occasionally, longitude
- \*Soundings approaching the banks or the land
- \*Wind direction and weather conditions on the grounds
- \*Name or location of the grounds
- \*Movement from anchorage to anchorage
- \*Names or initials of the crew fishing
- \*Catch per day for each fisherman
- \*Vessels spoken, their home ports, frequently their reported catch or quintal count, rounded to the nearest ten quintals or hundred fish

Frequently, the long forms record:

- \*Latitude and longitude on the banks by observation or dead reckoning
- \*Soundings
- \*Bottom conditions
- \*General observations

Sometimes, the long forms record:

- \*Bait or other species besides cod taken
- \*Fishing technology employed
- \*Observations about the fish or other natural phenomena

Short forms can have all of these data, but courses followed, offshore anchorages and vessels spoken are rare.

The fishing technology deployed is complicated to reconstruct. The period from 1852 to 1866 saw the introduction of dory handlining and tub trawling to New England fleets. During the transition from handlining over the rail of the vessel to tub trawling from dories, fishermen experimented with handlining and tub trawling from the ship's boat or other boats carried on deck. Generally fishermen on one vessel employed some or all of these methods during the same season and often during the same day, for new techniques were introduced tentatively.<sup>11</sup> The cryptic daily records usually contain little evidence of the fishing technology in use day by day. Sometimes, the descriptive phrase "sent out the boat," or "boats" is the only indication that fishermen were engaged away from the vessel. A few captains experimented with sending out one or more boats with handlines or trawl, comparing those results with handlining over the rail. By the 1860s, boats and trawls were mentioned much more frequently, with the exception of the short-lived Labrador fishery, which used both hooks and seines, as published sources show.<sup>12</sup>

From the daily catch data and the number of men fishing, it is possible to calculate catch per unit effort [CPUE] in terms of the number of fish landed per man per day for each fishing ground visited throughout the season. A graph of CPUE shows seasonal variation in the catch.

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<sup>11</sup>I am grateful to W. B. Leavenworth for this information.

<sup>12</sup>Henry McFarland, *Henry McFarland's Sixty Years in Concord and Elsewhere: Personal Reflections of Henry McFarland, 1831-1891* (Concord, NH, 1899). McFarland went on a pleasure cruise aboard a Newburyport vessel in the Labrador fishery and described the process in detail. See also J.W. Collins and D.E. Collins, *Report of the Operation of the United States Fish Commission schooner Grampus from March 15, 1887 to June 30, 1888*, Pamphlet 172 (Washington, 1891).





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Comparison of CPUE over several seasons can indicate changes in the efficiency of the fishery. Another measure of CPUE based on the measured tonnage of the vessel – the number of fish landed per vessel ton per day - can be derived if the tonnage of the vessel is known.<sup>13</sup>

Tonnage is seldom included in the fishing journals, but always recorded in licences, bonds and fishing agreements. By correlating the journals lacking a value for tonnage with a separate documentary source, this information can be recovered and the valuable metric calculated. Qualitative descriptions are the key to geographic location, date and year. Information about baitfish caught and other marine species offers a view of the composition of the marine ecosystem of these fishing grounds in the 1850s. Descriptive observations of natural phenomena like icebergs, dates of inshore ice breakup and formation, and spectacular storms reveal annual and seasonal variations in climate. Soundings and bottom conditions (recorded from the sounding lead) reveal much about the depth of water and character of the seabed where the cod were caught. Vessels spoken can be used to reconstruct the majority of the fleet fishing on specific grounds because vessels congregated where they saw others fishing. Fishermen regularly communicated with other vessels at sea. Information normally exchanged included the vessel name, home port, the number of fish caught. Occasionally, the captain's name and fleet gossip were recorded in the daily journal entry. Records of sightings took on greater importance when a vessel was lost at sea, for they provided the owners and families with the last known information about the ill-fated schooner and the men aboard.

The journals are occasionally embellished with portraits, sketches and doodles of subjects fishermen cared about - schooners at anchor or running before the wind, self-portraits, and doodled codfish.<sup>14</sup> Humour, conflict and tragedy were recorded in prose. In 1860, the *Laurel* of Beverly ventured frequently into a Canadian port for bait. Finally, the logkeeper observed that, on a picnic, he had “kissed some damn pretty girls.”<sup>15</sup> The *Magnolia* of Beverly weathered a ferocious storm on the Scotian Shelf in 1866. When the weather had moderated, the crew observed a number of schooners drifting in the vicinity with no men in sight. Boarding one, they discovered that the crew had been washed overboard and drowned. Returning days later to that spot, the captain noted laconically that while cleaning the catch they “took a man's foot out of a large cod.”<sup>16</sup>

**Fishing Agreements.** These are the contracts between the owners of a vessel and the captain and crew. Agreements were single, folio-sized sheets printed on both sides, recording vessel name and tonnage, home port, captain and managing owner or owners' agent in the paragraph heading the contract. This paragraph spelled out the legal obligations entered into by the captain and owners and the crew and the division of the profit. Each crewmember signed or made his mark. The residences or birthplaces of the fishermen were also required but not always recorded. These show demographic information about the geographic movement of fishermen, their personal ties, and level of literacy. At the end of the season and often at the end of each fare, the number of quintals

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<sup>13</sup>R. Hilborn and C.J. Walters, *Quantitative Fisheries Stock Assessment: Choice, Dynamics, and Uncertainty* (New York, 1992), ch. 5. For a practical application, see Michael F. Tilman and Jeffrey M. Breiwick, “Estimates of Stock Size for the Antarctic Sei Whale,” *Report of the International Whaling Commission*, Special Issue 1 (1977), 107-112.

<sup>14</sup>For instance, portraits of schooners illustrate the logs of the *Dorado* of Beverly, Massachusetts, 1854, RG36, Box 62F, 466a; the *Album* of Beverly, Massachusetts, 1859, RG36, Box 54, F453h; the *Conqueror* of Mt. Desert, Maine, 1860, RG36, Box 3, E104. The sketch on the *Homer* of Beverly, 1854, is of the captain, Isaac Ray, RG36, Box 70, 484c.

<sup>15</sup>Log of the *Laurel* of Beverly, 1860, RG36, Box 74F, 494j.

<sup>16</sup>Log of the *Magnolia* of Beverly, 1866, RG36, Box 76F, 497i.



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was recorded on the other side of the sheet, rarely with the number of fish caught. The quintal count was a necessary part of the contract because cod was sold by dried, salted weight. For some ports, agreements survive but not journals. Seasonal CPUE can be calculated in terms of weight of cod but not in respect of numbers of fish.

When the number of the fish caught can be obtained from the journal and the weight of the catch derived from the agreement, the average size of the fish caught by that vessel can be deduced for the season or for the individual fare. For vessels fishing exclusively on one fishing ground, the average weight of the fish caught there can be calculated, revealing changes in stock composition over time.

***Licenses, License Abstracts, License Bonds, Bonds, Oaths, Bounties Paid, Entrances and Clearances:*** These categories of documents provide the legal sanction necessary for a vessel to fish for cod and receive the bounty, and record its appearances in port. They list the name, tonnage, home port, owners and bondsman, owners' agent or ship's husband (the person legally responsible for the vessel's affairs on land). Some record where and when the vessel was built. Others break down the ownership into fractional shares and indicate patterns in capitalization and ownership.

Licenses, License Bonds, Bonds and Oaths comprise books of legal documents, many bound, with some folders of loose, single sheets. Licenses showed that the vessels had paid necessary fees, been measured for tonnage, certified seaworthy, and were outfitted to fish for cod or other species. License Bonds and Bonds identify those legally and financially responsible for the vessel, and an Oath (also printed on the journals and agreements) was required from each captain, who swore that he would comply with the law pertaining to the fishery and the bounty.

License Abstracts compile the licence information into ledger format. Since a vessel licenced for the cod fishery could pursue no other endeavour without first surrendering the cod licence, the surrendering and re-licencing of a vessel in different fisheries, coasting or foreign trade indicates the economic strategy of the owners and reflects the economic constraints of the fisheries and other markets.

Bounties paid, tonnage of the vessels, persons who received the bounties, and the amounts were recorded in a bookkeeping ledger. Ledgers, like licence abstracts and port entrances and clearances, record vessel activity in and out of the cod fishery for an entire year. Port entrance and clearance documents also show the number of men aboard, as well as the cargo, point of origin or destination. License abstracts, entrances and clearances and bound books of legal documents spread out over a number of years can facilitate reconstructing the number and sizes of vessels fishing out of one customs district. Because they list all vessels in the fishery for a given year, they reveal what fraction of the fishing journals survive and show how representative surviving journals are of the fleet as a whole.

### **Conclusion**

The customs records of New England ports preserve fisheries documents of considerable utility to ecologists and historians engaged in multidisciplinary pursuits. The data contained in these documents will facilitate the establishment of nineteenth-century baselines in fisheries population biology and the sociology of fishing communities, as well as the interdependence of the natural and human components of the fishery.



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### 3. Outputs

The data have been used to inform a number of analyses, including:

Rosenberg, A.A., Bolster, W.J., Alexander, K.E., Leavenworth, W.B., Cooper, A.B. and McKenzie, M.G. 2005. "The History of Ocean Resources: Modeling Cod Biomass Using Historical Records," *Frontiers in Ecology and the Environment*, 3(2), 84-90.

This paper estimated cod biomass for the Scotian Shelf in 1852 and showed that this once abundant fish species has declined by over 96%, and produced powerful comparisons between the 19th-century fishery and today's moribund counterpart. In 1999 Canadian fishers landed 7200 tonnes of cod on the southern Scotian Shelf and the Bay of Fundy during an augmented year extending from January 1, 1999, to March 31, 2000. The three month extension was required to adjust from a calendar year to a management year beginning April 1, 2000. However, Canadian vessels could not land the full TAC (Total Allowable Catch) of 7900t during those 15 months, falling short of the goal by 11%. The next year the TAC was set lower at 6000t. A century and a half earlier, 43 schooners out of Beverly, Massachusetts, caught almost 18,000,000 lbs of cod, or a little over 8,000 tonnes, as their logs recorded. Carrying on average seven men each, the schooners fished full time on the Scotian Shelf between March 28 and December 16, 1855. Although some experimentation with tub trawling had already begun, most Beverly fisherman still handlined 2-4 hooks over the schooner's rail, for a total of about 1204 hooks in the water. Each man caught 2900 cod that year averaging 19 lbs. each, on voyages of around 135 days throughout the 8.5 month season. This quick historical comparison between the entire Canadian mechanized fishing fleet and 43 Beverly schooners points to a profound change in productivity on the Scotian Shelf over the past 150 years.