

Spring 2010

Charting a new course

New England Fishery Management Council





Fisheries in New England are at a crossroads

The New England Fishery Management Council develops rules for both large and small-scale commercial and recreational fisheries that operate between 3 and 200 miles off the region's 6,100 mile coastline. Its management authority extends to fishing grounds in the Gulf of Maine, Georges Bank and southern New England and overlaps with the Mid-Atlantic Council for some species. Major ports include Portland, ME, Gloucester and New Bedford, MA, and Point Judith, RI.

The Council has nine fishery management plans in effect: Northeast Multispecies or Groundfish, with 20 stocks; Small Mesh Multispecies, which includes two whiting stocks and three stocks of hake; as well as plans for Atlantic sea scallops, Atlantic herring, deep-sea red crab, the Northeast skate complex and Atlantic salmon.

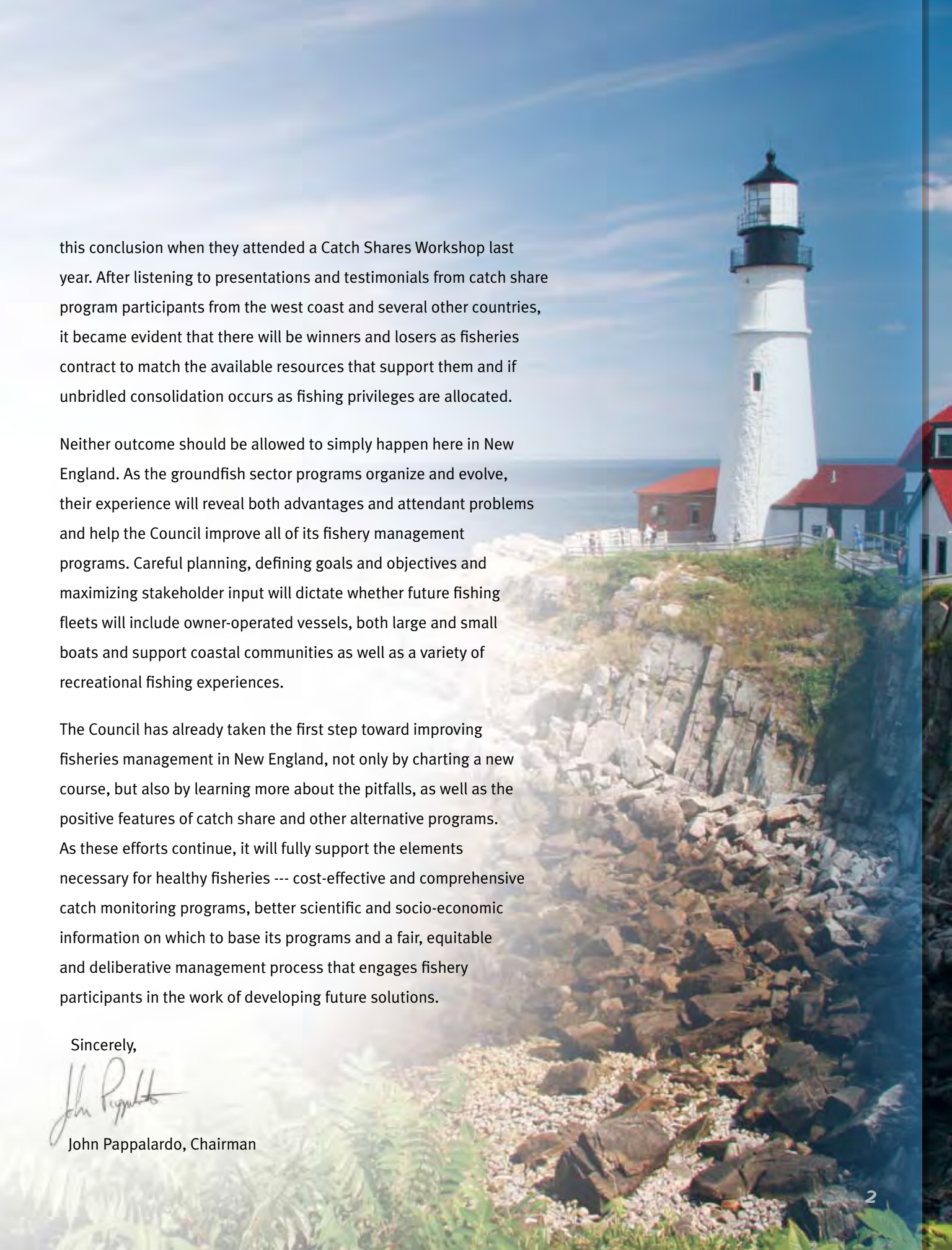
Two plans are prepared jointly with the Mid-Atlantic Council, monkfish and spiny dogfish.

Following years of ratcheting down the already limited number of days-at-sea available to harvest groundfish, fish stocks such as Georges Bank cod and some flounders are still at relatively low levels of abundance and fishermen are struggling economically even as some fish populations rebuild.

As a remedy, the New England Fishery Management Council expanded an existing program that gives fishermen a more direct role in making decisions about when, where and how to fish. In late 2009, after more than two years of development, the Council overwhelmingly approved the formation of 17 new voluntary fishing cooperatives called "sectors", a type of catch share program that allocates fishing privileges, usually in the form of a defined amount of fish or quota, to individuals, groups or communities. The first two sectors were established by the Council in 2005.

Fishermen who do not choose to team up in a sector have the option to fish in a "common pool" under strict catch rules and reduced days-at-sea. Whether individuals fish as part of a sector or not, the catch of many fish stocks will be set at low levels in the near future. Thirteen of the 20 stocks in the groundfish complex are still overfished and sectors, while hopefully creating efficiencies during lean times, will not create more fish. Despite this reality for the near term, if the new strategy works, these same stocks of fish should produce nearly triple the current catches when fully rebuilt. An ability to harvest the more abundant species of groundfish also will be critical.

Optimism about the success of the sector management program has not blurred the reality that neither sectors nor any form of catch shares will instantly resolve the problems facing the groundfish industry and fishery managers alike. Many Council members reached

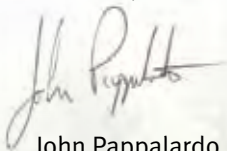


this conclusion when they attended a Catch Shares Workshop last year. After listening to presentations and testimonials from catch share program participants from the west coast and several other countries, it became evident that there will be winners and losers as fisheries contract to match the available resources that support them and if unbridled consolidation occurs as fishing privileges are allocated.

Neither outcome should be allowed to simply happen here in New England. As the groundfish sector programs organize and evolve, their experience will reveal both advantages and attendant problems and help the Council improve all of its fishery management programs. Careful planning, defining goals and objectives and maximizing stakeholder input will dictate whether future fishing fleets will include owner-operated vessels, both large and small boats and support coastal communities as well as a variety of recreational fishing experiences.

The Council has already taken the first step toward improving fisheries management in New England, not only by charting a new course, but also by learning more about the pitfalls, as well as the positive features of catch share and other alternative programs. As these efforts continue, it will fully support the elements necessary for healthy fisheries --- cost-effective and comprehensive catch monitoring programs, better scientific and socio-economic information on which to base its programs and a fair, equitable and deliberative management process that engages fishery participants in the work of developing future solutions.

Sincerely,



John Pappalardo, Chairman

Resource Conservation and Management Systems

Sectors

Fine-Tuning a Good Idea

In 2009, following two years of extensive public meetings, hearings, and outreach efforts, the Council dramatically expanded the use of “sectors” as a strategy to manage the east coast groundfish fishery. Nineteen sectors, including two that were adopted by the Council nearly five years ago, will be in place this spring. Similar to harvesting cooperatives, total sector membership is likely to include about 700 groundfish permit holders, or about half of those actively participating in the fishery at present.



To ensure that groundfish stocks continue to rebuild while allowing each sector to develop its own unique set of rules, the Council allocated a percentage of the total

allowable groundfish catch to each group, based on the amount of catch history each sector member brings to the group. Sector operations plans are required to contain details about the internal allocation of fish among members, method of fishing, areas to be fished and methods for catch monitoring programs.

With greater accountability, sectors will enjoy more flexibility. Members will be exempt from a number of existing groundfish rules including the days-at-sea program, limits on the amount of catch allowed per trip and may fish in a number of areas that are now seasonally closed to fishing. Fishermen who do not choose to participate in a sector must join the “common pool”. This program will continue to operate under limited days-at-sea.

The new program will improve a group’s ability to respond to market conditions and safety concerns, and help fishermen abandon the wasteful practice of discarding fish overboard. Better planning also should eliminate the “race to fish”, a situation which often results in a temporary glut of product in the market and low prices to vessels.

Groundfish Facts

Georges Bank haddock and Gulf of Maine haddock are rebuilt and are being harvested at sustainable levels.

Gulf of Maine cod is no longer overfished and is at a stock size that has not been seen in 30 years.

Acadian redfish is very close to or fully rebuilt, although that determination awaits confirmation by a stock assessment.

While they are not fully rebuilt, increases in many of the stocks in the groundfish complex are being observed for the first time in nearly a decade.



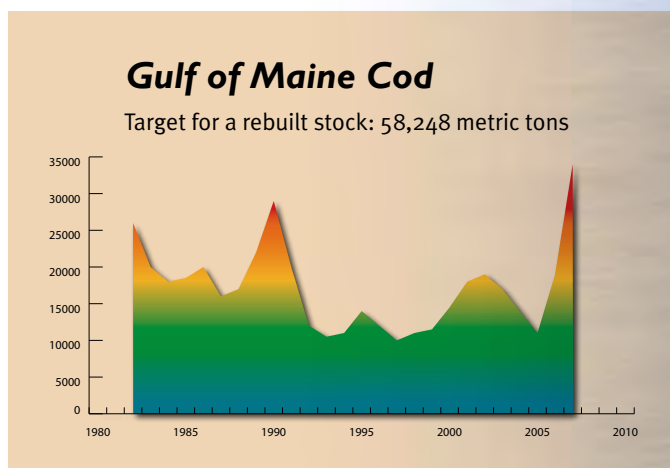
TOP PHOTO: Courtesy of Northeast Cooperative Research Program, NMFS. BOTTOM PHOTO: Courtesy of Andrew Applegate, NEFMC.

Most affected parties agree that a sweeping change, such as the recent adoption of sectors in the New England groundfish fishery, is the first step in a process that will require many adjustments. There remains the necessity to remedy unintended consequences and inequities, and to incorporate better information and greater efficiencies as the program evolves and reaches its potential.

Groundfish Days-at-Sea and Stock Status

While the use of limited days-at-sea has not allowed some fishermen the flexibility to remain economically viable, those who fished under very restrictive harvesting days achieved measureable progress toward rebuilding the region's groundfish stocks. Many stocks are still overfished, but the results to date are noteworthy:

Gulf of ME cod stock size measured using spawning stock biomass, or the weight of sexually mature fish, 1982-2009



- 1997 — 9,856 metric tons (the low point)
- 2007 — 33,877 metric tons (the highest since 1982)
- 2008 — 45,979 metric tons (projected catch)
- 2009 — 55,305 metric tons (projected catch)



PHOTOS: Courtesy of
A,B,C: Captain Tim Tower, FIV Bunny Clark
D: Dan LeBlanc, Chelmsford, MA



PHOTO: Courtesy of Peter K. Prybot

Monkfish *Catch Shares in the Future?*

Managed jointly with the Mid-Atlantic Fishery Management Council since 1999, the monkfish resource off the Atlantic coast was identified as a rebuilt stock in 2007 based on a peer review of a new analytic model. These results, reported by the Data Poor Stocks Working



Group two years ago in Woods Hole, MA, were viewed as very good news by managers, although the findings will continue to be treated with caution by scientists and Council members alike.

Why be so precautionary if the stock is rebuilt?

According to the most recent stock assessment summary, scientific reservations about the monkfish assessment stem from:

Uncertainties concerning under-reported landings and unknown discards during the 1980s.

An incomplete understanding about biological parameters such as age, growth, and longevity, as well as natural mortality and stock structure.

The use of a different but more recent times series of monkfish catch and landings.

The relatively recent development of the model itself.

Scientists and fishermen have teamed up to conduct cooperative monkfish surveys in 2001, 2004 and 2009, providing important information that has improved the east coast monkfish assessments.

Managed with input controls such as days-at-sea and gear restrictions for a decade, the Council has listed the development of a catch share program, in the form of either Individual Fishing Quotas or sectors, as a management priority for the near future.

One of nature's truly unattractive creatures, east coast monkfish tails, cheeks, and livers generate landings that are worth about \$40 million annually. The tails produce firm white meat that has become very popular in the U.S. Europeans sauté, roast, or serve the cheeks in sauces or fish stews, and the livers are exported to Japan for sushi.

Atlantic Sea Scallops *Profile of a well-managed fishery*

Ten years ago, the New England Council adopted an innovative program to control levels of scallop fishing on Georges Bank and in areas off the Mid-Atlantic coast from New York to North Carolina. Through an innovative program of access into specific areas on a rotational basis, three on Georges Bank and four in the Mid-Atlantic region, scallop vessels fish in a manner similar to the crop rotation system used in agriculture.

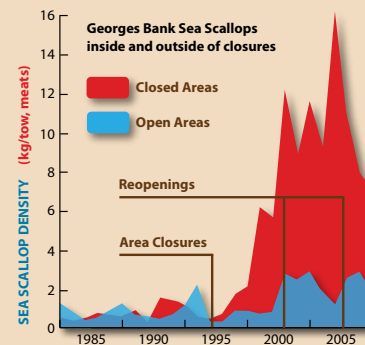
To rebuild the stock from the low levels experienced in the previous decade and to ensure the continuation of a productive and sustainable fishery over the long-term, the Council sets annual allocations for each vessel by specifying the number of scallop trips allowed in the areas. In the case of the 2008-2009 rules, each of the roughly 330 full-time boats received five area trips of 18,000 pounds each. “Open area” days-at-sea, time available to fish for scallops outside of the access areas, are also defined each year.

Among the tools contributing to the success of the fishery are: 1.) the high levels of observer coverage funded by NOAA Fisheries, and in 2009, the scallop fishermen themselves; and 2.) a collaborative approach toward scallop assessments based on annual surveys conducted by NOAA’s Northeast Fisheries Science Center, the Department of Fisheries and Oceanography at the UMass Dartmouth School for Marine Science and Technology and the Virginia Institute of Marine Science.

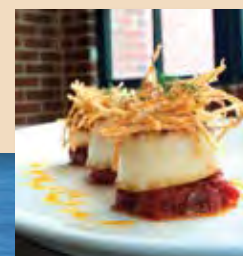
Scallop General Category Vessels Capping Effort through Individual Fishing Quotas

The Individual Fishing Quota (IFQ) program approved by the Council in 2007 for the general category segment of the scallop fleet was a significant departure from its general approach to management.

Adopted as a means to reduce the risk of overfishing and control harvesting capacity, the Council’s IFQ rules require participants to meet qualification criteria in order to receive a permit. The rules further specify that five percent of the expected total allowable scallop catch annually will be allocated to the general category fleet. Each vessel will receive an individual allocation in pounds of scallops based on the boat’s scallop catch history. By the end of 2009, the general category fleet is expected to catch about five million pounds of sea scallops worth an estimated \$35 million.



Using NOAA’s scallop surveys, the Northeast Fisheries Science Center has documented the effects of management measures such as the closure and reopening of scallop access areas.



NE Scallop Facts

Over the last five years, the landings of sea scallops have been estimated at over 50 million pounds, surpassing all historic levels.

In 2008, the fishery overall produced 53 million pounds of scallops for consumers and generated almost \$370 million in revenues for vessels as well as additional benefits to ports along the eastern seaboard.

Sea scallops are not overfished and have largely been the reason why New Bedford, MA, has been ranked the number one port in the nation in terms of the dollar value of fish landings for the last eight years.



Atlantic Herring A Conservative Approach in the Face of Scientific Uncertainty

The Atlantic herring stock complex functions as important prey for many other commercially and recreationally harvested fish as well as seabirds, whales, dolphins and seals in the Gulf of Maine ecosystem. Herring serves as a primary source of bait for New England’s lucrative lobster fishery and supports a frozen fish market abroad where it is sold for human consumption. The stock has not been overfished since the Council initiated its management program in 1999.



The Council’s “hard TAC” management approach is grounded in circumstances that occurred decades ago. As documented in scientific research

journals, the fishery collapsed when heavy foreign fishing decimated the stock during the 1960s and 1970s, followed by a significant contraction of its geographic range. The result was a decline so dramatic that between 1978 and 1985, virtually no adult or larval herring were detected on Georges Bank east of the Great South Channel in NOAA’s autumn research surveys. The exception was a single midwater trawl set in June 1984 which collected 200 juvenile fish.

In a November 2009 decision, the Council endorsed maintaining its conservative approach as it set the 2010-2012 TAC, based on advice from its Scientific and Statistical Committee. In the face of several years of conflicting stock assessments, the Council reduced the herring catch for each of the next three years.

The Scientific Committee recommendation was based on the level of uncertainty concerning the actual size of the herring stock complex, a projected decline in stock size over the next several years because of poor recruitment, and a concern that recent heavy fishing in some areas of the Gulf of Maine could be depleting the inshore spawning stock components — groupings of mature fish that produce enormous quantities of eggs.

Herring Management Challenges for the Near Future:

Encourage the timely development of improved assessment models and work toward completion and implementation of an effective catch monitoring program.

Address bycatch in the fishery and continue to acknowledge the important role of herring in the ecosystem, including accounting for this effect when setting catch levels.



TOP PHOTO: Courtesy of Peter K. Prybot
BOTTOM PHOTO: Courtesy of Alan Lovewell, NEFMC

New Emphasis on Scientific Review

Setting ABCs for Data Rich and Data Poor Stocks

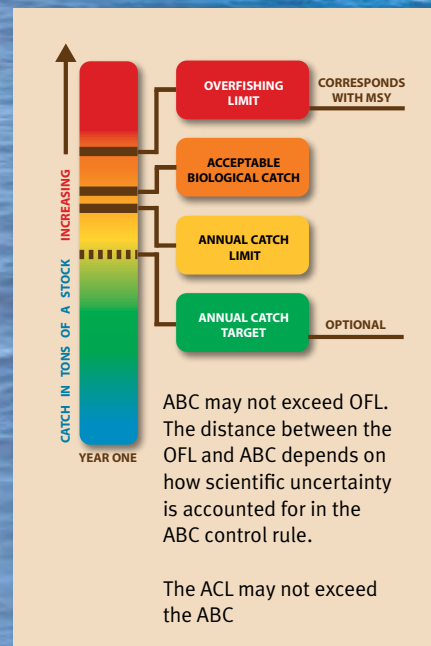
When the Magnuson-Stevens Fishery Conservation and Management Act (referred to as the MSRA) was reauthorized in 2007, Congress approved amendments that tightened up the mandate to address overfishing. As revised, fishery management plans are now required to establish mechanisms for specifying annual catch limits at levels that prevent overfishing and include measures to ensure accountability for overages.

Further, the MSRA states that annual catch limits may not exceed the scientific recommendations for Acceptable Biological Catch (ABC) set by each regional fishery management councils' Scientific and Statistical Committee (SSC).

The SSCs are also charged with providing the Councils with ongoing scientific advice for fishery management decisions, preventing overfishing, maximum sustainable yield and achieving rebuilding targets, as well as reports on stock status and health, bycatch, habitat status, the social and economic impacts of management measures and sustainability of fishing practices.

In the three years since the reauthorization, the New England Council's SSC has focused its attention on the development of ABCs for nearly all of the Council's managed species. And while this task will be complete by 2010 for fisheries that are subject to overfishing, and by 2011 for all others, the work of the SSC will continue. Follow-on tasks include a need to review the status of ABC control rules, commence work with the Council about how to address risk and uncertainty in each fishery management plan, and incorporate any new information and/or methods in order to refine the current ABCs.

The SSC has and will continue to provide input into the terms of reference for periodic stock assessments that are used as part of its ABC-setting process. The SSC also will have representation at regional peer reviews for Council-managed stocks.



SSC Work Products

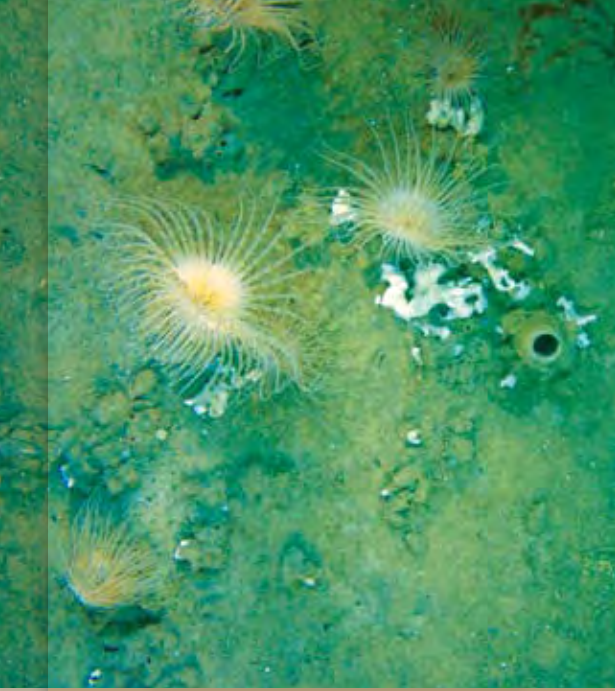
Interim ABCs based on proxies for data-moderate and data-poor stocks – monkfish, skates, red crab and herring.

ABC control rules for scallops and the groundfish stock complex.

Evaluation of a model designed to assess adverse effects of fishing on essential fish habitat and develop alternatives to minimize those effects to the extent practicable.



Dr. Steve Cadrin, SSC Chairman and Council member Dr. David Pierce



Essential Fish Habitat

Balancing protection with fishing opportunities

Beginning in June 2007, the Council began the process of updating its original 1997 essential fish habitat (EFH) designations for species managed through NEFMC fishery management plans. The Habitat Committee and Plan Development Team-led effort constitutes a major review of issues related to EFH, defined as “those waters and substrate necessary to fish spawning, feeding, breeding and growth to maturity” (Magnuson Stevens Act).

The HAPC designations included in Phase I of the amendment are especially noteworthy given that they identify areas known to be important to species which are in need of additional levels of protection from adverse impacts, if and when it becomes necessary. In recognition of the importance of seamount habitats, two large offshore underwater mountains were identified as HAPCs, along with a number of steep-walled canyons and inter-canyon areas located off southern New England and the Mid-Atlantic region.

Although relatively little fishing occurs in several of the canyons and on the seamounts, they were selected because of the unique biological communities found there --- for example, deep-water corals, sponges and sea fans --- and because many of these complex structures are vulnerable to disturbance.

New HAPCs were also designated in areas in the Gulf of Maine, including the current Western Gulf of Maine and Cashes Ledge Habitat Closed Areas and the inshore areas (from 0-20 meters deep) from Maine south to the Rhode Island/Connecticut border for juvenile cod. The Council also took action to designate a 4,500 square nautical mile swath of ocean located east and south of Cape Cod and Nantucket that encompasses a fishing hot spot known as the Great South Channel.

State-of-the-art Science

“SASI increases the utility of habitat science to fishery managers via the translation of susceptibility and recovery information into quantitative modifiers of swept area. It is currently being used in New England to inform both the design of fishery management alternatives to meet MSRA requirements, and the anticipated impacts of these alternatives.”

— Michelle Bachman, Council staff



PHOTOS: Courtesy of SMAST, UMASS Dartmouth

The HAPC designation alone does not limit fishing or restrict other activities that could have a negative impact on the productivity of fish stocks. If they are determined to be necessary, consideration of measures to minimize the impacts of fishing on essential fish habitat within any of the HAPCs or portions of the areas will be done on a case-by-case basis, depending on the sensitivity of the habitat as well as the level and nature of the activities.

Using new tools to assess and minimize impacts

The Magnuson Stevens Fishery Conservation and Management Act requires fishery management plans to minimize to the extent practicable the adverse effects of fishing on fish habitats. To meet this requirement, fishery managers would ideally be able to quantify these effects and visualize their distributions across space and time.

The second and final phase of the NEFMC’s habitat review includes such an analytical approach, the Swept Area Seabed Impact (SASI) model, a tool that will enable managers to better understand:



PHOTO: Courtesy of Peter K. Prybot

- 1. The nature of fishing gear impacts on benthic habitats;**
- 2. The spatial distribution of benthic habitat vulnerability to particular fishing gears; and**
- 3. The spatial and temporal distribution of realized adverse effects from fishing activities on benthic habitats.**



Atlantic Wolffish

New Council rules now prohibit the retention of Atlantic wolffish in both commercial and recreational fisheries operating off New England and, if caught, require their live release.

Designated as a “species of concern” for several years, the Council reacted in June 2009 by adding wolffish to the list of fish already subject to regulations in the Northeast Multispecies or Groundfish Fishery Management Plan.

Meanwhile, in response to a petition for Endangered Species Act listing, the NMFS sponsored a comprehensive review of both the biological status of wolffish and associated threats. Based on the report issued by scientists in late fall, the agency determined that wolffish numbers, while low, do not reach the threshold of a species at risk of extinction, either now or in the foreseeable future.

PHOTO: Courtesy of ME Dept. of Marine of Resources



Collaborations for Better Management

Research Set-aside Programs Answering Pressing Questions

Outstanding problems often give rise to unique solutions in the world of fisheries conservation and management. In New England, the Council, fishermen and researchers alike sought a mechanism to better integrate research initiatives with management efforts and to incorporate the fishing community in that process.



Research set-asides (RSAs) provided an answer. Defined levels of catch are subtracted from the total allowable catches taken in the sea scallop, herring

and monkfish fisheries and are reserved on an annual basis to support cooperative research.

Through a grants-like process, successful principal investigators receive awards in the form the reserved scallops or fish. Their sale generates the actual funds that pay for the research.

RSA initiatives have included tagging and life history studies, university-led independent resource surveys and gear modifications that have reduced unwanted bycatch and also lowered the risks of encounters with sea turtles in the scallop fishery.

Additionally, NOAA's Cooperative Research Partner's Program has supported regional industry-based resource surveys and tagging programs for groundfish stocks, socio-economic projects, habitat studies, gear research to investigate species separation, and education and outreach efforts, as well as pilot study fleets and the development of electronic logbooks.

Collectively, these projects have involved roughly 560 fishermen and scientists and involved some 20 industry organizations as well as the Council's state fishery management partners.

Cooperative research has made important contributions for almost a decade.

**Coordination of an Atlantic coast cod tagging program –
Gulf of Maine Research Institute**

**Industry-based survey for inshore groundfish in the Gulf of Maine,
ME Dept. of Marine Resources**

**Industry-based survey to determine Atlantic cod distribution –
MA Division of Marine Fisheries**

Industry-based survey to determine southern New England yellowtail flounder distribution – RI Dept. of Environmental Management

The Ruhle trawl - RI Fishermen and RI Sea Grant



TOP PHOTO: Courtesy of Laura Skrobe, URI Fisheries Center.
BOTTOM PHOTO: Courtesy of David Beutel, RI Sea Grant.

COD POSTER: Courtesy of Shelly Tallack , Gulf of Maine Research Institute

Plan Development Teams (PDTs)

Technical Support for Enhanced Decision-Making

As the Council’s policy states, Plan Development Teams provide an expanded pool of expertise for the purpose of conducting analyses and providing information to the Council. Meeting at the request of the Council’s species oversight committees, PDTs help ensure that NEFMC management actions meet scientific, legal and technical requirements for review and approval. To accomplish these tasks, the teams evaluate management proposals, develop management options to meet plan objectives, and provide guidance on a variety of scientific, technical or implementation issues.

In the PDT process, the teams use a collaborative approach to address technical questions and seek to build a consensus among members when providing advice. While PDT chairs are designated by the Council’s Executive Director and are members of the NEFMC’s technical staff, the groups themselves have diverse memberships. Positions are filled by staff from the National Marine Fisheries Service’s Regional Office in Gloucester, MA, and its Northeast Science Center in Woods Hole, MA, fishery experts from the regional state marine fisheries agencies, the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. PDTs also include staff from academic and research institutions such as UMass Dartmouth School for Marine Science and Technology, the University of New Hampshire, the Gulf of Maine Marine Research Institution and the Virginia Institute of Marine Science.

The economists, statisticians, population dynamics experts, ecologists, anthropologists, sociologists, marine biologists and other scientists who work on the PDTs provide the analyses on which the Council’s decisions are based. The NEFMC is grateful to its PDT membership for their hard work and invaluable contributions to the Council process.



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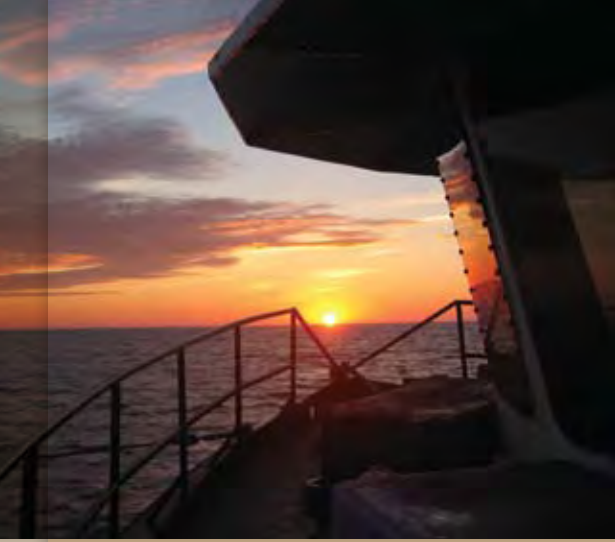


B



C

A: Monhegan Island Light, Monhegan Island, ME
B: Portland Head Light, Cape Elizabeth, ME
C: Lisa Ann II, Newburyport, MA



United States and Canada Agreement Through a “Resource Sharing Understanding”

Several groundfish stocks on Georges Bank are transboundary and, to be effectively managed, require coordination between the United States and Canada. Since the international maritime boundary between the two countries was drawn in 1984, both nations have worked closely to promote sustainability, collaborate on stock assessments and other types of research and enforce conservation measures.

That cooperation was formalized when the Transboundary Management Guidance Committee (TMGC) was established in 2000. Developed as an advisory process, the TMGC addresses how catches of the transboundary stocks of Eastern Georges Bank cod and haddock, and Georges Bank yellowtail flounder should be allocated to each country within a defined geographic region. Council members, the National Marine Fisheries Service (NMFS) and Canadian officials who serve on the TMGC negotiate the allocations of these stocks annually based on the historic proportions of fishery landings caught by U.S. and Canadian fishermen, and resource distribution. Specific terms set forth in what is essentially an agreement, guide the process. If the Council disagrees with the TMGC’s recommendations, they are referred back to the TMGC for further refinement.

Although there is legislation pending in Congress to redefine provisions in the Magnuson-Stevens Act to give the U.S. greater flexibility during allocation-setting, the agreement is nonetheless a noteworthy accomplishment as these important stocks rebuild. An improved process can only benefit fishermen who have participated in the harvesting program. The TMGC partners will continue to craft compromises, in the form of agreed-upon allocations, that ensure adherence to an effective conservation program and long-term benefits to both nations.

The final agreed-upon charge to the TMGC:

Develop a process for implementation of TMGC recommendations.

Recommend F-based harvesting strategies that are consistent with U.S. and Canadian objectives.

Provide guidance on principles and options for determining a U.S./Canadian resource sharing strategy.

Make recommendations for actual U.S. and Canadian harvest levels.

Make other recommendations that are mutually beneficial to U.S. and Canadian fisheries.



TOP PHOTO: Courtesy of Laura Skrobe, URI Fisheries Center
BOTTOM PHOTO: Courtesy of Jessica Melgey, SMAST,
UMASS Dartmouth and NEFMC

Safety-at-Sea Industry Meets the Challenge

The sinking of the scallop vessel Northern Edge in December 2004 and subsequent tragedies off the New England and Mid-Atlantic coasts have given rise to a new emphasis on how to make fishing safer. The Council applauds the many outstanding and continued activities of all fishermen who have participated in training programs, as well as the individuals and organizations who lead what has become a coast-wide culture of industry attention to safety at sea.

For its part, the Council is acutely aware of how its actions may affect fishing vessel safety and emphasizes its commitment to fully address its responsibilities in accordance with all of the National Standards contained in the Magnuson-Stevens Fishery Conservation and Management Act, including National Standard 10: **Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.**



A



B



C

PHOTOS: Courtesy of

A: U.S. Coast Guard - Anne Beaudreau, NEFMC

B: Safety Drill - National Fisherman Magazine

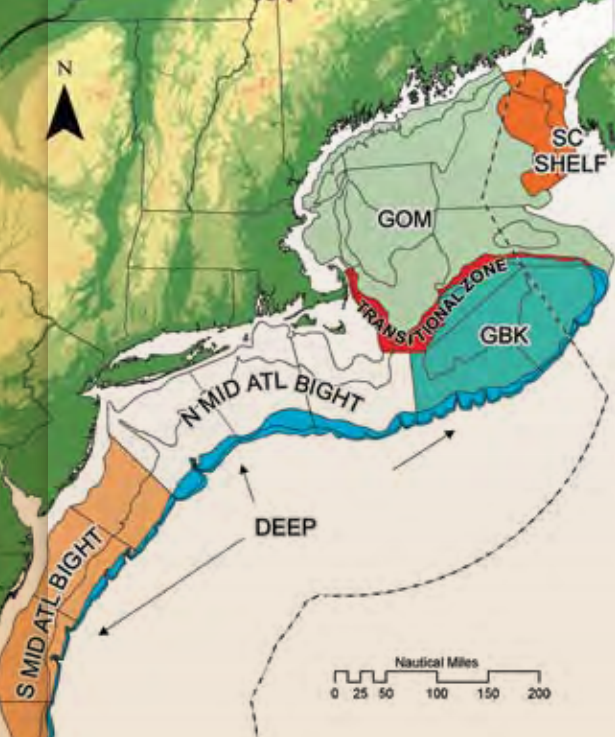
C: New Bedford Lightship - Andrew Applegate, NEFMC



As a tribute of respect to enterprising whalers, sons of New Bedford who imperiled their lives or perished in encounters with monsters of the deep, this tablet is placed here by the children of New Bedford.

August 1, 1930





“Both fishermen and researchers recognize that there are a number of areas where fish consistently occur together. Recognizable communities are found in the Gulf of Maine, Scotian Shelf, Georges Bank, the Northern Mid-Atlantic Bight, Southern Mid-Atlantic Bight, on the edge of the continental shelf, and in the transition zone between the Gulf of Maine and Georges Bank. Finer subdivisions can be identified within each region, but the broad-scale patterns provide important insights into fish community structure.”

Ecology of the Northeast

Continental Shelf: Michael Fogarty and Wendy Gabriel NMFS, NEFSC;
Map: Chad Keith, NMFS, NEFSC.



Council Membership 2009 – 2010

Council

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