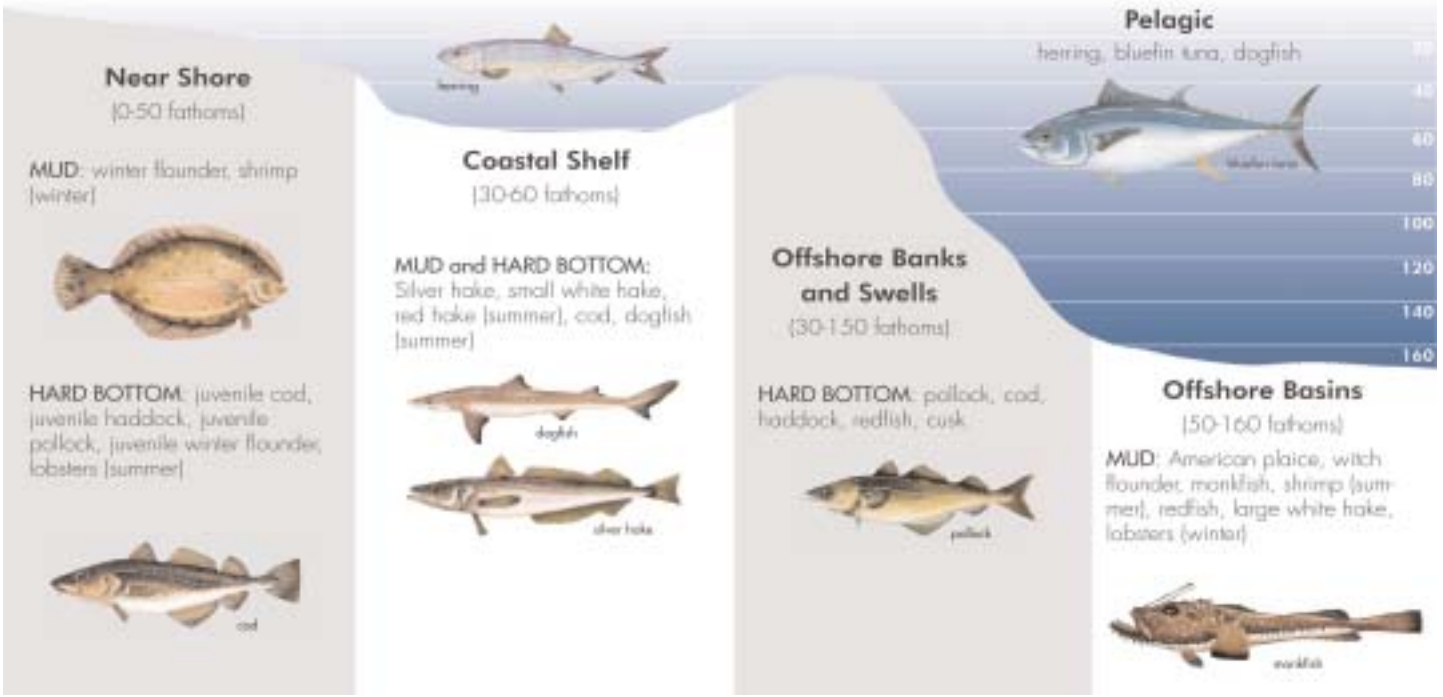
August 2006

Collaborations

A report on collaborative research projects in the northwest Atlantic Ocean.



Depth distribution of commercially valuable species in the Gulf of Maine. Developed by Adrian Jordaan, Curt Rice, Craig Pendleton, Neal Pettigrew, Sally Sherman, Steve Train, and Dan Schick. Fish images courtesy of the Maine Department of Marine Resources Recreational Fisheries Program and the Maine Outdoor Heritage Fund, and NOAA. Concept by Heather Deese. Graphics by Ethan Nedeau.

A Picture is Worth a Thousand Words: Innovative project combines the expertise of scientists and fishermen to develop images of Gulf of Maine ecology

A couple years ago, over 200 academic scientists and policy experts signed a consensus statement on marine ecosystem-based management. The letter highlights current scientific understanding of marine ecosystems, explains how this knowledge requires a new management approach, and provides a definition for what the scientific community envisions when it recommends "ecosystem-based management" for the oceans.

"Ecosystem-based management (EBM) is an integrated approach to management that considers the entire ecosystem, including humans," according to the statement. "The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors."

In terms of commercial fishing, the case for EBM is especially attractive because it reflects the relative abundance of species that are in competition.

For instance, the EBM approach tells us that it is biologically impossible to simultaneously have optimal populations of cod and haddock because the success of one species is reflected in the relative failure of the other to compete for the

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Project Specs:

Funded by: GoMoos; COAA, FY2005

Budget: $ 23,000

Project Scientists: Heather Deese (NAMA) with numerous researchers from UNH, BU, Umaine, USM, Maine DMR

Industry partner: NAMA and eight commercial fishermen

Contact: jen@namanet.org

www.namanet.org

Message From the Editor: Collaborative Research Addresses Limitations in Large-Scale Fisheries Management Institutions

Critics of collaborative research are correct when they point out that some studies can fall short of the parameters for data collection set by federal law. However, the majority of these shortcomings involve meeting the five-year minimum duration required before data can be integrated into management, and a lack of standardization in the industry-based research vessels.

The cost of fixing these short-term problems is substantially outweighed by the benefits of integrating collaborative research into fisheries management decisions.

In 2005, 200 academic scientists signed a statement calling for ecosystem-based management (EBM) of our ocean resources. In terms of commercial fisheries, EBM entails a shift from single-species management toward a consideration of how numerous species interact with each other within the marine environment. The National Marine Fisheries Service has affirmed its commitement to EBM approaches to governing resources.

In short, EBM is here to stay, but the problem is, to do it well demands that we drastically increase the amount of data collected. In an era of shrinking not expanding budgets, what are we to do?

Enter collaborative research. So we are faced with this two-tier problem: we need data on the finer-scale attributes of the ocean to manage it well, and we have equal or effectively less money to go get it.

Before we can start to get serious about effective ocean management, our society (and government) has to decide how important taking care of the sea around us is. If the answer is "very important," then working with the fishing industry to gather information about complex ocean ecosytems offers two cost-effective advantages.

First, fishermen are our best source of fine-scale information about marine resources. They are out there every day and their livelihoods depend on an acute knowledge of the abundance and distribution of fish.

Scientists can rapidly get up to speed on the central questions facing fisheries by working with fishermen. We have already seen this happen in tagging studies, conservation gear innovations, and with species like shrimp that are dramatically impacted by subtle changes in the environment.

Second, we can follow the example used by other areas of government, and especially in business management: decentralization to include decision-making at the local level.

The current mechanism used by the government to collect data is predicated on the old single-species management concept. As we shift to ecosystem thinking, we'll also need to shift how we collect data. The only practical way to do this is to enhance participation by the fishing fleet. Working in cooperation with traditional research platforms the industry-based fleet can cover a far greater area than government vessels alone--at a fraction of the costs.

Though the initial transaction costs required to bring the fleet up to code with scientific standards is significant, ultimately we'll be getting more data for less money.

But, as with other areas of research, before the government makes a commitment to the effort, citizens at large need consider preserving our ocean resources a priority.

It is the job of the entire collaborative research community to educate people what is at stake if we don't.

Good Fishing,

Mike Crocker, Editor
mike@namanet.org
t: 207.284.5374
c: 207.590.9618

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Written and designed by Michael Crocker, communications director,

Northwest Atlantic Marine Alliance

All comments should be sent to Michael Crocker, Northwest Atlantic Marine Alliance, 200 Main Street, Saco, ME 04072

Telephone: 207-284-5374
Fax: 207-284-1355
Email: mike@namanet.org

NAMA Staff:

Craig Pendleton
Coordinating Director

Jen Levin
Director of Operations

Michael Crocker
Communications Director

Here, as elsewhere, collaborative research offers an important solution: By working with fishermen, scientists can rapidly learn and collect data about species' locations, interactions, and abundance.

ecosystem mapping continued from front page

same resources, a reality that is not integrated into the current management approach.

Immediately, then, the government's single species management strategy is problematic.

But that is not to say the EBM is without its own issues. The biggest probably is the demands it puts on data gathering: Managing at such a fine-scale requires that we collect substantially more information than under the current, single-species management regime.

Here, as elsewhere, collaborative research offers an important solution: By working with fishermen, scientists can rapidly learn and collect data about species' locations, interactions, and abundance.

Last year, NAMA teamed up with scientists at UNH and GoMOOS in a project that shows the critical role collaborative research can play in ecosystem-based approaches to fisheries management.

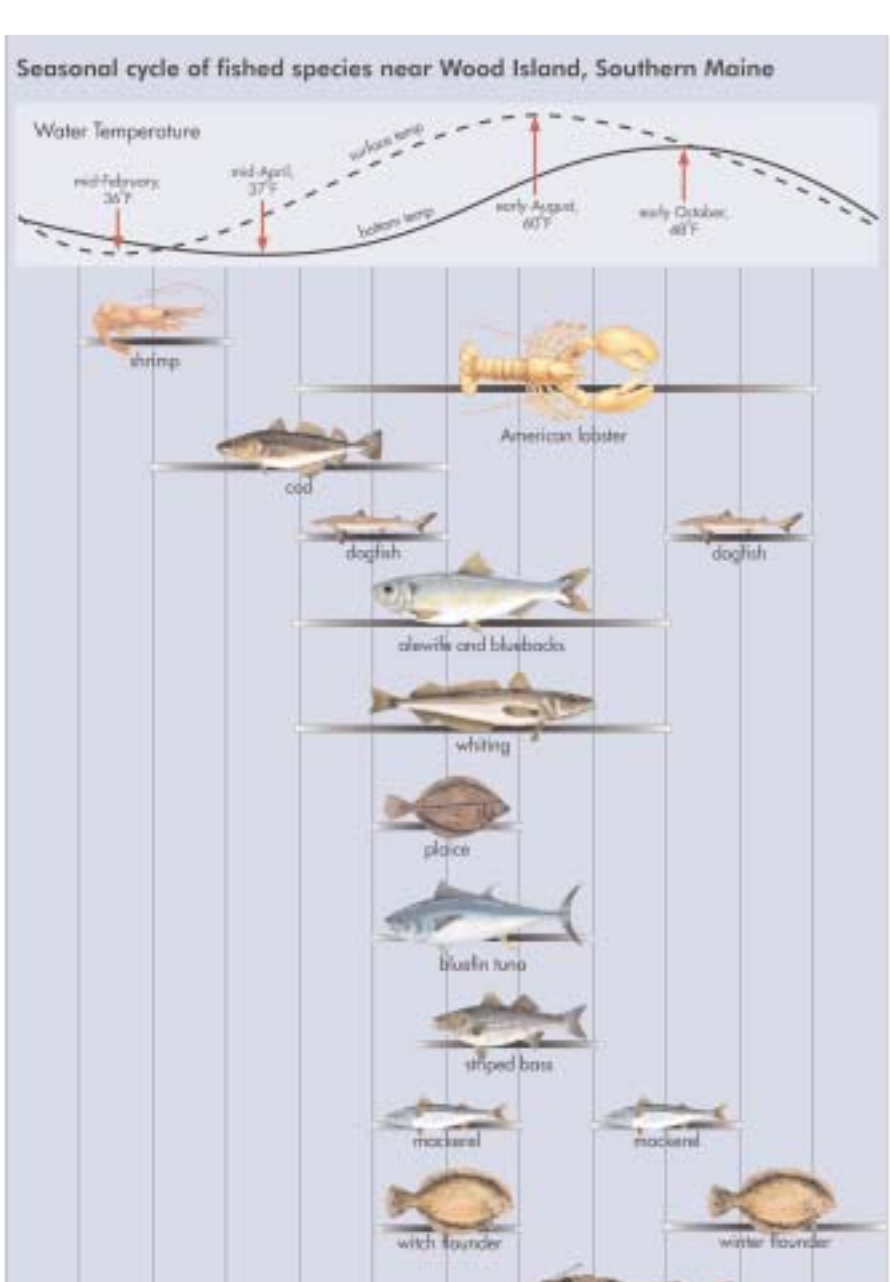
Participants included active commercial fishermen and scientists from a variety of academic disciplines. The discussions occurred at day-long meetings around 15 different species topics (Lobster, shrimp and 13 finfish species).

The products of these meetings were recorded and compiled to create what may be the first set of images that include fishermen's and scientists' understandings of ecological relationships in the Gulf of Maine.

"Putting all of this information and knowledge together is critically important. We may never be able to nail down predictions on a month-to-month or year-to-year basis, but we may pinpoint indicators to help us determine positive or negative trends to help managers prepare," said Lew Inze, a biologist at the University of Southern Maine.

Later the information was translated into a set of images, maps, and diagrams that highlight the linkages across the species and the environment.

In a departure from much previous work, the group discussions expanded the conceptualization of the ecosystem beyond large predators—like whales and tuna; commercially valuable fish, such as cod, haddock, and flounder; crustaceans such as lobster and shrimp, as well as their prey, species like herring, copepods, and plankton—to include the role that humans play in the food

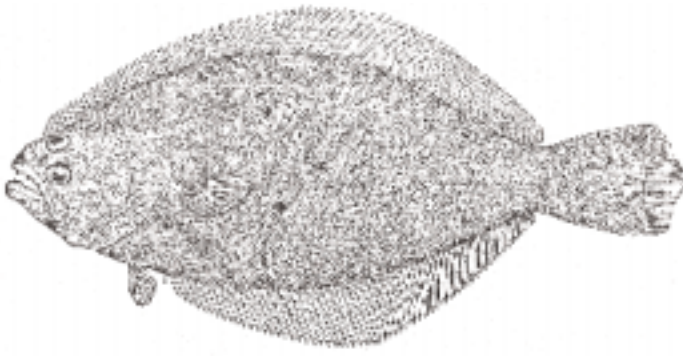


Developed by Heather Deese, Adrian Jordaan, Curt Rice, Craig Pendleton, Neal Pettigrew, Sally Sherman, Steve Train, and Dan Schick. Fish images courtesy of the Maine Department of Marine Resources Recreational Fisheries Program and the Maine Outdoor Heritage Fund, and NOAA. Concept by Tom Shyka and Heather Deese. Graphics by Ethan Nedeau.

(continued page 5)

A Page From Bigelow: Collaborations is running information about a new species every month from *Fishes of the Gulf of Maine* (1953), a classic work of naturalism that is as valuable today as it was 50 years ago. The online version is available at the Gulf of Maine Resaerch Institute's website: www.gmri.org

Summer flounder Paralichthys dentatus (Linnaeus) 1766



FLOUNDER; FLUKE; PLAICEFISH
Figure 134.—Summer flounder (Paralichthys dentatus), Maryland. From Jordan and Evermann. Drawing by A. H. Baldwin.

Description—The summer flounder is left-handed; that is, it lies on the bottom on its right side, with its eyes on its left-hand side, and its abdomen is on its left edge as it rests on the bottom, which differentiates it at a glance from the American dab (p. 259). It is large-mouthed, like the sand flounder, which is similarly left-handed (p. 290); but its two ventral fins are alike and each of them is separated from the long anal fin by a considerable space, whereas the upper left-hand ventral fin of the sand flounder is continuous with the anal fin. The only Gulf of Maine flatfish with which the summer flounder shares its left-handedness, large mouth, and symmetrical ventral fins, is its close relative, the four-spotted flounder (p. 270), but the color pattern of the latter is distinctive (p. 270) and it has fewer fin rays.

Color—It has long been known that flatfishes are generally dark on a dark bottom and pale on a pale one. Perhaps the summer flounder is the most variable in color of all our local species and the one which adapts its pattern the most closely to that of the ground on which it lies. It is white below and of some shade of brown, gray, or drab above, like most flatfishes. But it can assume a wide range of tints, from nearly white on white sand through various hues of gray, blue, green, [page 268] orange, pink, and brown to almost black.

Size—Summer flounders ordinarily grow to a maximum weight of 15 pounds or so, and to a length of 3 feet, or a little more, though one of about 30 pounds has been reported as taken off Fishers Island about 1915.[5] The largest of which we find definite record weighed 26 pounds. The largest on record, taken in sport fishing, was 37 inches long, weighing 20 pounds, caught at Oak Beach, N. Y., September 7, 1948, by F. H. Kessel, but the average size of the fish caught is only 2 to 5 pounds. The relation of length to weight is about as follows:[6]

Habits—Many fluke come close inshore during the warm half of the year, when they are caught regularly both along open coasts and in bays and harbors, the smaller sizes often from docks and bridges, and some even run up into fresh water rivers. But the great majority of the population, especially of the larger ones, lie farther offshore even at that season, in depths of 8 to 10 fathoms and deeper, at least in the northern part of the fluke's geographic range, as illustrated by the fact that nearly 40 times as many (by weight) are landed in New Jersey and in New York by otter trawlers as from the many pound nets operating there.[7] And all of those that do come close inshore from Chesapeake Bay northward move offshore again at some time during the autumn, presumably to escape winter chilling.

The earliest landings from offshore of which we have heard for southern New England have been on October 6th, when some were brought in to Woods Hole from northwest of Nantucket Lightship, from 25 fathoms, and on the 16th of that same month, when the dragger Eugene H landed 6,000 pounds, taken west of Nantucket Lightship in about 25 fathoms. Corresponding to this, only a few are seen near Woods Hole after the middle of October, or after the last week of November near New York. And very few reappear near New York before the first week in May, or before about the 10th of May near Woods Hole. Fluke spend most of their lives on bottom, or close to it, as other flatfishes do. During their stay in shoal water they prefer sandy bottom, or mud, where they are often seen. And it takes one only an instant to bury itself to the eyes in the sand. Fluke often lurk in eel grass, or among the piling of docks; but they are swift swimmers when disturbed. This is a predaceous fish, like the halibut, feeding largely on smaller fish of various sorts, on squids, crabs, shrimps, and other crustaceans; on small shelled mollusks; on worms, and on sand dollars. It is very fierce and active in pursuit of prey, often following schools of small fish right up to the surface, to jump clear of the water in its dashes, actions very different from those of the sluggish dab and winter flounder.

Range--Continental waters of the eastern United States, from Maine to South Carolina, possibly to Florida,[12] chiefly south of Cape Cod.

Occurrence in the Gulf of Maine—This is the most important flatfish commercially to the west and south of Rhode Island, and the one most sought after by sportsmen there. It is also plentiful offshore eastward to Nantucket Shoals and to the western part of the so-called South Channel, whence about 531,000 pounds were landed in 1947 (most recent year for which information is at hand). Trawlers also pick up a few on the southwest part of Georges Bank (about 6,000 pounds in 1947), as well as a fish here and there on other parts of the bank.[13] But there is no reason to suppose that fluke ever stray eastward and northward as far as Brown's Bank, or to outer Nova Scotian waters. The fluke is so rare a straggler north of Cape Cod Bay that there is only one definite record for Casco Bay (specimens collected in 1873). We may add that we have never seen or heard of one caught in the inner part of Massachusetts Bay, and that it is unknown in the Bay of Fundy.

Importance—This is one of the best of our flatfishes on the table, usually bringing a higher price than any other except the halibut; in 1947 it sold for 15 cents on the average in New Bedford, the halibut about 21 cents. And the landings of fluke from within the limits of the Gulf of Maine, totaling about 543,000 pounds (mostly from near Nantucket Shoals) were worth about $90,000 to fishermen that year. This is also the gamest of our flatfishes, biting freely on almost any bait, even taking artificial lures at times, while large ones put up a strong resistance when hooked. It is too bad that the fluke is not so common north of Cape Cod as it is to the south.

ecosystem mapping
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chain.

"While much research has focused on individual characteristics or parts of the system, very little has been done to connect the pieces to form a picture of the whole," said Heather Deese who coordinated the project for NAMA.

"This effort brought researchers studying various aspects of the Gulf of Maine together to compare information and discuss relationships. Critically, these discussions included commercial fishermen who offer a lifetime of observations and expertise from their intimate interactions with the oceans and its bounty," writes the report.

The colorful images reflect the dynamic nature of the marine environment as well as the synergy shared by its fishermen and scientists.

"The multi-disciplinary approach to ocean studies is the way to go. It's done on a cooperative basis and this is the model I want to move forward. This is a way I've wanted to see things done—with a number of disciplines sitting down together having these discussions. This project shows the power of bringing these different specialties together with fishermen," said Dave Goethel, a commercial fishermen from New Hampshire who participated in the workshops.

Deese said the illustrations break new ground in research by visually showing the relationships between numerous aspects of the ecosystem and variablility over time and space.

"Fishermen and scientists have merged their expert knowledge about the Gulf of Maine to create a better understanding of fish, habitat, species interactions, and spatial and temporal dynamics. The resulting diagrams, charts and text enable more sophisticated ecosystem-based decision-making and motivate relevant scientific work," Deese added.

Copies of the report are available from NAMA. Call Jen Levin at 207-284-5374.

Ecological notes of interest

- Seasonal changes in bottom temperature are thought to trigger adult female movement inshore for spawning

- The commercial fishery targets adult females while they are inshore to release eggs (In winter and early spring). Vessels drag with 2 inch mesh and a Nordmore Grate to reduce bycatch.

- Northern shrimp are at the southern end of their range in the Gulf of Maine.

- Interannual changes in bottom temperature, salinity and nutrients might affect overall abundance and distributions of shrimp within the Gulf of Maine.

credits

Content developed by Adrian Jordaan, Curt Rice, Craig Pendleton, Sally Sherman, Steve Train, and Dan Schick. Shrimp image from www.hafra.is. Concept by Heather Deese. Graphic by Ethan Nadeau.

Haddock Migration in New England Waters: Analysis of Movements Between Stocks and Closed Areas

After the first year of tagging, researchers working with Cape Cod Commercial Hook Fishermen's Association (CCCHFA) released preliminary findings from an ongoing haddock study in the Gulf of Maine and Georges Bank.

"With the populations of cod, flounder, and other staple species in the region down, folks are looking to haddock to pick up the slack," said Tom Rudolph who is coordinating the effort for CCCHFA. "But haddock movement has not been studied since the 1950s; in particular, information about the relationship between the Georges Bank and Gulf of Maine stocks is sparse. This study was designed to fill in the gaps."

The CCCHFA teamed up with the Gulf of Maine Research Institute and the Northeast Fisheries Science Center in the two-year project last year. Over a dozen hook vessels from Cape Cod, Gloucester, Portsmouth, and Portland are involved in dedicated and non-dedicated tagging trips.

The tagging addresses outstanding questions about the movement of haddock across management boundaries, as well as relative movement rates across closed areas.

The purpose is to help managers assess rebuilding efforts and set fishing limits that reflect the actual abundance of haddock.

To enhance the level of returns, the project employed an innovative incentive program using customized lottery scratch tickets. The tickets, worth up to $100, were awarded for returned tags, and to help publicize the effort.

Rudolph said that the number of returns was less than he had hoped, making it difficult to draw broad conclusions. Nevertheless, the research has led to imprtant insights thus far:

-Haddock migrate from US waters on eastern Georges Bank to Canadian waters.

-Some haddock migrate long distances across stock boundaries; one fish tagged on western Georges Bank swam over 188 nautical miles to the northern Gulf of Maine; another tagged in Closed Area I swam over 110 nm to the Western Gulf of Maine Closed Area.

-Some haddock migrate from the Georges Bank stock area to the Gulf of Maine stock area.

-Several haddock tagged inside Closed Area I crossed the boundary indicating that there is some spill-over from this closed area.

The project's interim report was released in July and is available at www.northeastconsortium.org

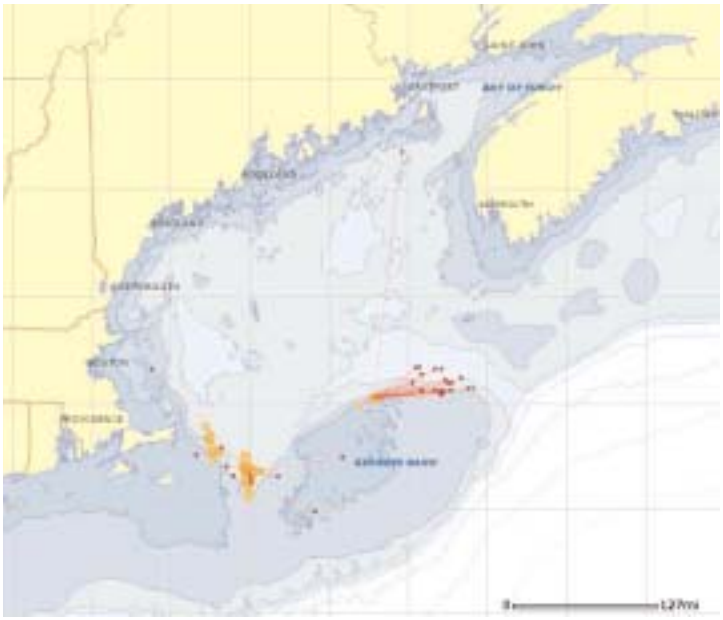

Figure 1

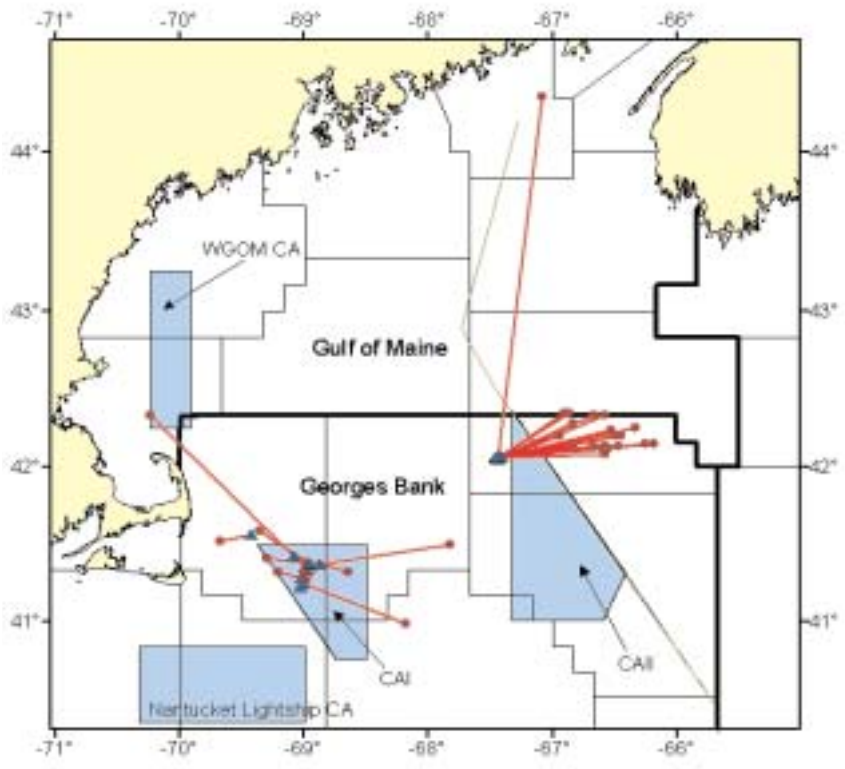

Figure 2

Figure 1. Haddock tagging project recaptured fish (n=30) as of 19-Jan-2006 as plotted from GMRI website. Yellow squares show deployment locations of tagged haddock. Red circles show recapture locations and red lines show the minimum distance between deployment and recapture.

Figure 2. Plot of release and recapture locations of haddock tagged during the Northeast Consortium Cooperative Haddock Tagging Project reported through 19-Jan-2006 in relation to Georges Bank and Gulf of Maine haddock stock boundary (solid green line) to the west of the Hague line (light orange line).

NMFS Releases are available at:

www.nero.noaa.gov

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

July 26, 2006

SMALL ENTITY COMPLIANCE GUIDE

Dear Permit Holder:

This letter is to inform you that the National Marine Fisheries Service (NOAA Fisheries Service) has adjusted the 2006 Winter II commercial scup quota and possession limit.

The unused 2006 Winter I commercial scup quota is:	1,827,598 lb
The current 2006 Winter II commercial scup quota is:	1,901,983 lb
The revised 2006 Winter II commercial scup quota is:	**3,729,581 lb**

The 2006 Winter II possession limit has been increased to **6,500 lb per trip**, consistent with the rollover specifications established in the final rule to implement the 2006 summer flounder, scup, and black sea bass quotas (70 FR 77060, December 29, 2005), in order to provide an appropriate opportunity for fishing vessels to obtain the increased Winter II quota. Note: In cases where state possession limits for scup differ from the Federal possession limit, federally permitted vessels are required to abide by the more restrictive state or Federal measure.

This action complies with Framework Adjustment 3 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, which established a process to allow the rollover of unused commercial scup quota from the Winter I period to the Winter II period. The initial 2006 Winter I scup quota was 5,382,589 lb.

You may also receive permit holder letters, including closure notices, by e-mail by clicking on "Permit Holder Letters" on our website at http://www.nero.noaa.gov; or via fax by providing a fax number through a written request to the above address, or by faxing your request to 978-281-9135. This small entity compliance guide complies with Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996.

Sincerely,

for Patricia A. Kurkul
Regional Administrator

NORTHWEST ATLANTIC MARINE ALLIANCE
200 Main Street, Suite A
Saco, Maine 04072-1507

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