July 2006

Collaborations

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

Design and Test of a High Opening Raised Footrope Trawl for Haddock and Pollack for the Inshore Gulf of Maine

The reason it's been so difficult to restore New England's commercial groundfishery without completely bankrupting New England's commercial fishermen can be summarized in five sentences: (1) More than a dozen species comprise the fishery and inhabit the same layer of water near the ocean floor. (2) Some of these stocks are abundant; some are not. (3) Most fishermen rely on trawl gear, a wide-mouthed net towed along the bottom. (4) Trawl nets have difficulty distinguishing between plentiful and scarce species and often catch both. (5) The Sustainable Fisheries Act requires managers to protect fish that are most at risk for overfishing—meaning, even if the majority of stocks are up, if just one stock is down, fishing regulations must be tightened.

To give this hypothetical some context, consider the recent increase in the region's haddock and pollock populations. Despite robust stocks in the Gulf of Maine and Georges Bank managers have been forced to implement drastic restrictions to protect cod, which continue to struggle.

continued on page 4

Project Specs:

Funded by: the Northeast Consortium, FY2004

Budget: $154,766

Project Scientists: Pinnguo He, UNH; Paul Winger (Fisheries and Marine Institute)

Industry partner: Vincent Balzano, F/V *North Star*, Portland, Maine; Tim Eddy F/V *Persistence*

Contact: pingguo.he@unh.edu

Report: www.northeastconsortium.org

MESSAGE FROM THE EDITOR

If you ask fishermen why they do what they do, despite the physical and financial risks, overwhelming regulations, and time away from friends and family, you get the same answers over and over again.

They usually involve concepts that aren't typically linked to work in the modern context—notions of tradition, pride, nature, beauty, and especially freedom. Can you imagine an investment banker describing his motivation for work as beauty, nature, or freedom?

Such associations in the fishery obviously speak to the unique qualities of the job. Fishing is one of the few natural resource-based industries left in our economy. Fishermen spend days far from the sight of land, surrounded by arguably the last real wilderness on the planet. Many are also independent operators, though that is changing, they are still less removed from the products of their labor than most workers in our economy. In my opinion, these characteristics alone—real work that literally ties fishermen to a natural resource we all rely on—is reason enough to devote resources toward protecting the fishing way-of-life.

But this is a publication about collaborative research and so soon I'll somehow need to tie my ruminations to said research. I'll start with the notion of freedom, partly because it comes up so much in conversations with fishermen and partly because it seems funny to me that members of one of the most highly regulated industries in the country so often associate their work with freedom.

Of course freedom, like love, family, and community, is one of those words that is so overused it has practically lost its original meaning.

As a baseline definition, then, I'm going to suggest the following: Freedom equals access to meaningful decisions. The reason I think fishermen still associate freedom with their job in the face of overwhelming interference from government and special interest groups is that when fisherman is out at sea the important decisions are up to him: Where to set out, how long to tow, whether brushing his net up against a ledge is worth the risk, when to seek shelter or ride out a storm.

There is something about the human psyche that wants access to these kinds of decisions, and when they are taken away from us it hurts.

It took me a while to get here, but an important argument for collaborative research is that it gives fishermen some of those meaningful decisions back again. The guys involved are asking important scientific questions about their resource. They are helping to design gear that allows them to get into areas where they were prohibited before. In short, they are part of the process.

Fishing has changed irrevocably. We'll never see open access again. Meetings and paperwork are here to stay. But there are opportunities to exercise the freedom of participation in this new fishery, and collaborative research might be the best way.

Good Fishing,

Mike Crocker
Editor, Collaborations
mike@namanet.org
207-284-5374

Collaborations:

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

Published by the Northwest Atlantic Marine Alliance with funding provided by the Northeast Consortium.

July 2006

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

American pollock Pollachius virens (Linnaeus) 1758

POLLOCK; BOSTON BLUEFISH; COALFISH (IN GREAT BRITAIN); GREEN COD (IN GREAT BRITAIN)

Figure 98.—American pollock (Pollachius virens), Eastport, Maine. From Goode. Drawing by H. L. Todd.

Description

The American pollock[99] has a deep, plump body (about four and one-fourth times as long as it is deep) tapering to a pointed nose and to a slender caudal peduncle. Its mouth is of moderate size. Its projecting lower jaw (giving it an undershot facial aspect); its forked, sharp-cornered tail, small ventral fins, small chin barbel (as a rule the latter is lacking altogether in large fish), and its beautiful olive green color, are ready field marks when it is caught with cod and haddock. Its first dorsal fin (13 or 14 rays), originating slightly behind the pectoral, is triangular, and is a little the highest of the three dorsals. The second dorsal, also triangular, is the longest of the [page 214] three (21 or 22 rays) and is separated by a considerable space from the third dorsal fin (19 or 20 rays) which is more rhomboid in outline. The second anal fin (20 or 21 rays) corresponds in shape and size to the third dorsal, under which it stands, but the first anal (24 to 28 rays) is considerably longer than the second dorsal though similar to the latter in shape. The ventral fins are a little in front of the pectorals, and are only about half as long as the latter. The pectorals are set high on the sides, and are longer than the first dorsal, but shorter than the second dorsal; they have rounded lower corners and bluntly pointed tips. The caudal fin is noticeably forked, with angular corners, unless it is spread to its widest when its margin becomes nearly straight.

Color

Pollock are always of a greenish hue, usually deep rich olive green or brownish green above, paling to yellowish or to smoky gray on the sides below the lateral line, and to silvery gray on the belly. The lateral line is white or very pale gray, contrasting strongly with the dark sides. The dorsal, caudal, pectoral, and anal fins are olive, the latter pale at the base. The ventral fins are white with a reddish tinge. Young fish are darker than large ones, and many of them are more tinged with yellow on their sides.

Size

Pollock reach a maximum length of about 3? feet and a weight of about 35 pounds. But fish of this size are exceptional, few growing larger than 40 inches or 30 pounds, with about 2 to 3 feet and 4 to 15 pounds as the average for adults. The proportion of length to weight was as follows among fat fish measured by Welsh off Boon Island on April 22 to 25, 1913: Large pollock, however, of a given length vary widely in weight; for example, we have found 40-inch fish to weigh from 25 to 35 pounds; 35-inch fish, from 14 pounds to 21 pounds.

Habits

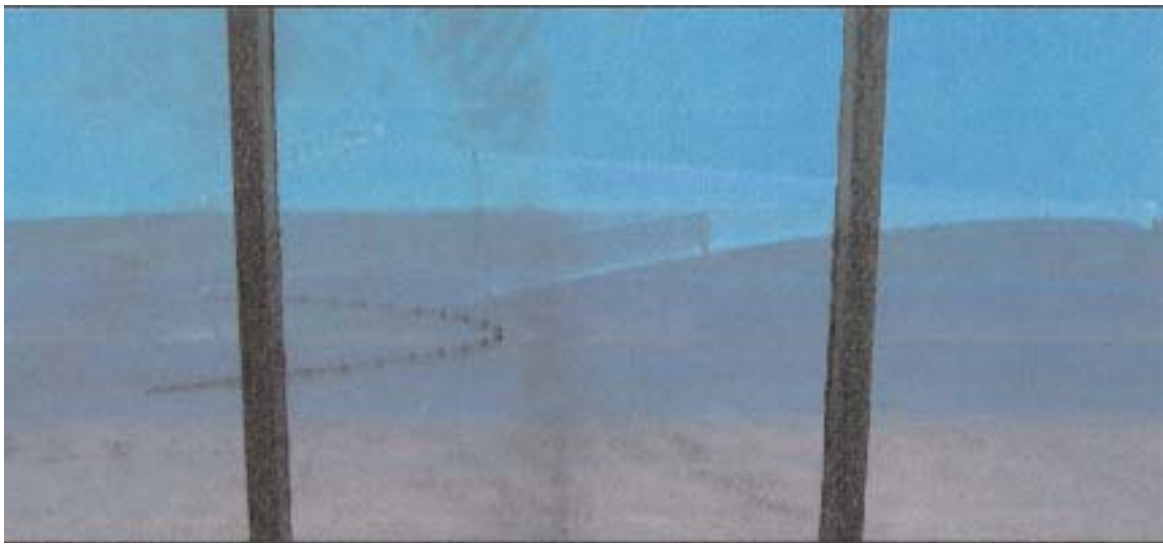
The pollock is an active fish, living at any level between bottom and surface according to the food supply and on the season, often schooling, and sometimes gathering in bodies so large that it is on record that a purse seiner once took 60,000 fish from one school at a single set. In our Gulf their depth range is from the surface down to 100 fathoms at least,[1] while they may descend somewhat deeper in the deepest troughs. And it is the local presence or absence of prey that governs the movements of the larger pollock. Pollock feed chiefly on small fish, and on pelagic crustaceans; among the latter most often on the large pelagic shrimp-like euphausiids. It is commonplace that pollock destroy great quantities of small herring, launce, young cod, young haddock, young hake, silver hake, and other small fish in the Gulf of Maine just as they do on the other side of the Atlantic. Pollock chasing schools of herring are a familiar sight;[2] pollock of 1 to 1? pounds commonly run up estuaries in pursuit of smelt in autumn; and newly hatched haddock or other [page 215] larvae that are liberated in harbors from the hatcheries are always in danger of being snapped up by the young pollock that are plentiful in such situations. When a pollock only 9 inches long is capable of eating 77 herring up to 2? inches long at one meal,[3] "ravenous" is only mildly descriptive. However, pollock so seldom strand in pursuit of prey that we have never seen one on the beach though schools often come close in and are caught in the traps.

In the Gulf of Maine, pollock depend perhaps as much on pelagic shrimps as on fish. At Eastport, for example, where these shrimps (genera Meganyctiphanes and Thysanoessa) are very abundant all summer, Kendall[4] reports pollock of all sizes not only fattening on them but so evidently preferring them to young herring that he did not find a single "sardine" in a pollock stomach, though these were plentiful enough at the time. He adds that "if at any time the crustaceans disappeared from a place the large pollock disappeared also." And pollock, breaking the surface in pursuit of shrimp are familiar sights there, as we can bear witness with many others. Similarly, Welsh found large pollock in schools feeding on the surface on shrimp (Thysanoessa raschii) off the Isles of Shoals and off Boon Island in April 1913, remarking in his field notes for the 25th that "in the last few days pollock have begun to appear in small schools of 400 to 500 fish with the appearance of large schools of feed (shrimp, 'all eyes'), the feed (shrimp) breaking water trying to get away from the pollock which are after them." He described the fish themselves as "rising and sinking at intervals; when at the surface swimming like porpoises, leaping up and over with open mouths, the feed being in dense streaks 6 inches to 1 foot down."

These feeding fish were "very sluggish and tame on this feed and easily taken in the purse seines." All were "stuffed to capacity" with shrimps, and only a few contained herring. Large pollock take morsels as small as copepods. Willey[5] for example, speaks of a fish caught near Campobello Island which contained proportionately as many of these as of euphausiid shrimps, and it is probable that the little pollock depend chiefly on copepods.

But since the purpose of natural resource management is not only to protect fish, but to provide an opportunity for people to make a living catching them, abolishing a fundamental component of the industry seems a bit drastic and naïve.

Raised footrope trawl (continued from front page)



A scale model trawl was used extensively to test the net's performance before sea trials began in 2005.

Some polemics have suggested that trawl gear be banned altogether, to eliminate the incidental mortality of non-targeted species (what is known as bycatch).

But since the purpose of natural resource management is not only to protect fish, but to provide an opportunity for people to make a living catching them, abolishing a fundamental component of the industry seems a bit drastic and naïve. (As an analogy, imagine the uproar if all cars were banned to cut down on greenhouse gas emissions.)

Here as elsewhere, technological innovations have offered a sort of middle road to explore.

Indeed, in some southern water shrimp fisheries, excluder devices have almost entirely eliminated bycatch of threatened turtles.

Of course distinguishing a turtle from a shrimp is quite a different than sorting a haddock from a cod—which are about the same size, eat basically the same food, and live in the same habitat. But, despite these similarities, they do not swim alike.

In the early 1980s, researchers from Scotland shot underwater video that revealed distinct behavior of cod, whiting, and haddock when approached by a trawl net. Haddock tend to swim above the net in order to escape and cod tend to swim below it. Whiting swim in between.

This finding led engineers to collaborate with fishermen on a net design that exploited this difference in swimming behavior. Various prototypes have been developed for a handful of species in New England's fishery.

The development of the "B" days-at-sea concept in 2003 underscored the need for an effective separator trawl for the haddock fishery. So-called B-days were established to allow fishermen to target abundant species such as haddock and pollock while allowing scarce species like cod to recover.

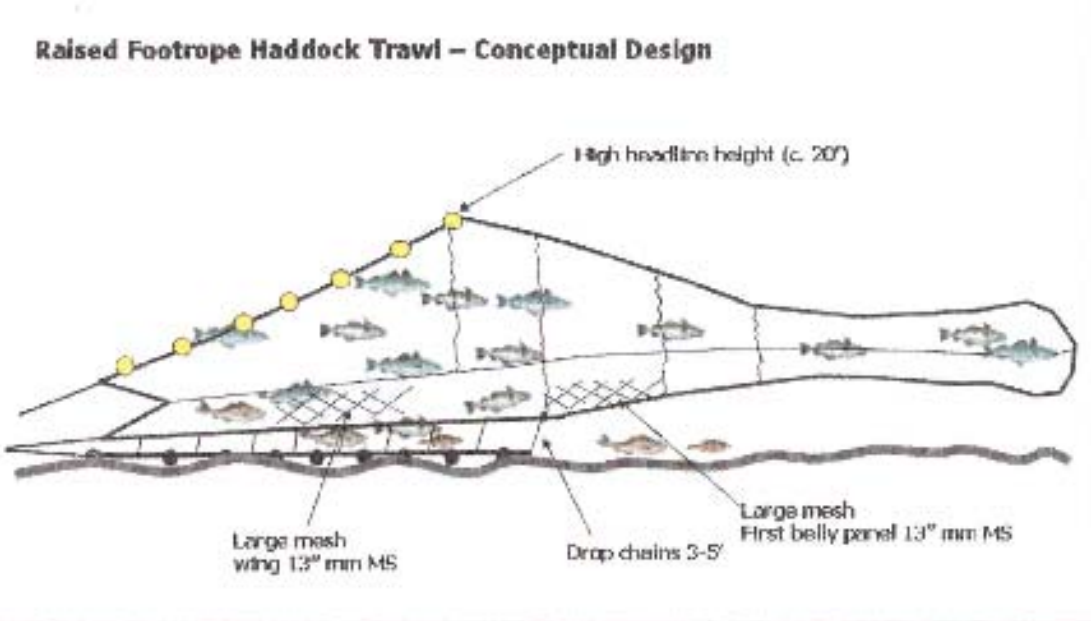
The idea is that B-days in combination with effective conservation gear could sustain the fleet economically while troubled stocks rebuild.

Last year, Dr. Pingguo He of the University of New Hampshire teamed up with Maine fishermen Vincent Balzano and Tim Eddy to build a trawl suitable for targeting haddock and pollaock in the inshore sector.

Balzano's vessel *North Star*, a 45-foot trawler was utilized for the sea trials with Eddy's vessel *Persistence*, also a 42-footer fishing alongside with control gear. It is important to develop selective gear for this habitat because inshore vessels are limited in the distances they can travel to reach plentiful

Capt. Vincent Balzano makes an adjustment to the model net's twine on the deck of the flume tank at Memorial University in Newfoundland. (Images: Pingguo He)

Conceptual drawing of trawl net with long drop chains which allow flounders and cod to escape beneath. The length of the drop chains will be a major factor in the efficay of the gear. Recent seperator tarwl tests in Scotland indicated good seperation of haddock to the upper part of the trawl using 31-inch panels above the sweep. The length of the drop chains will be set between three and five feet above the seafloor. NMFS recently set a rule requiring haddock seperators similar to the one here in the US/Canada shared area. (Images courtsesy of Pinnguo He.)



stocks, and especially feeling the burden of regulations. Cod also heavily utilize the inshore area to feed and spawn.

"The key feature of the new trawl will be high headline opening which may be assisted by the use of kites and raised footrope with long drop chains to provide opening for cod and bottom dwelling species. The substantial increases in haddock and pollack biomass in Gulf of Maine, and much slower increase in cod stocks provide basis for use of such trawls in the multi-species fishery to reduce fishing pressure of cod," said Dr. He.

The initial design was completed in collaboration with industry partners, and flume tank tests were conducted at Memorial University in Newfoundland. The gear was adjusted based on the results and field trials began off Portland in June.

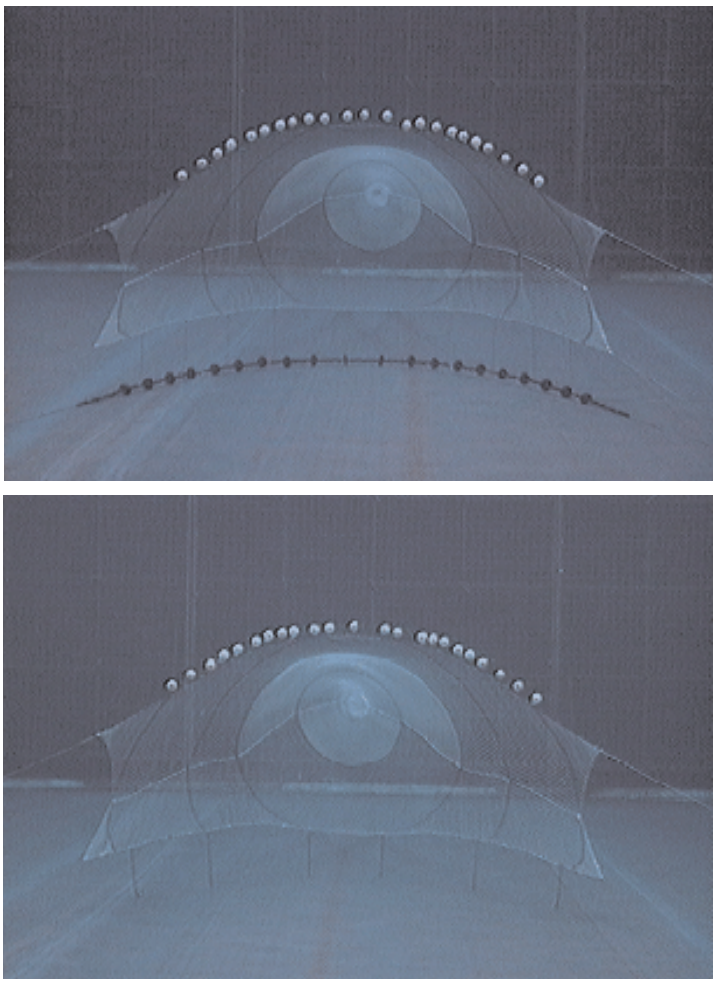
"Like any gear we'll need to make further refinements, but some of the catch rates in the early trials were as good as I've seen in ten years," said Balzano.

The primary innovation of the net design is the use of long drop chains (3 to 5 feet above the seafloor) between the fishing line and the sweep (raised footrope), creating a space for cod, flounders and other low-swimming animals to escape.

The trawl also incorporates large meshes in the wings and belly to reduce drag of the net and allow the same vessel to tow a high opening trawl. Kites were added near the wing-ends and headline to help expand mesh.

A similar approach has been used successfully in th other multispevise fisheries. In Newfoundland's shrimp fishery, drop chains are raised as much as three feet to reduce bycatch of groundfish. In New England's whiting fishery, variations on the concept have been experimented with to reduce the capture of flounder. And long drop chains were also applied to the squid fishery. This study will add to the body of gear reasearch that could prove to be essential in protecting at-risk fish as well as at-risk fishermen.

An annual progress report is posted at www.northeastconsortium.org.



Seperator trawl models with and without drop chains inside the flume tank. Tank trials were key to get down costly seas time while determining the optimal length for the drop chains and other fine-scale tuning that costs time and money at sea.

Massachusetts Lobstermen Volunteer to Enhance Knowledge of the Resource

Data will contribute to ventless trap studies being conducted throughout the Gulf of Maine

In a recent review of the Atlantic States Marine Fisheries Commission (ASMFC) stock assessment, one of the strongest recommendations supported what many lobstermen have been saying for years: data quality needs to be upgraded significantly and collaborative ventless trap studies are key to this process.

Historically, sampling data from fishermen has not been used to estimate the relative abundance of lobster because of biases associated with the way lobstermen fish. That is, they put their traps where and when lobsters are around. A logical move if you're trying to catch lobsters, but to be scientifically rigorous, the ocean must be surveyed at random times and locations. (Imagine a census of Maine's population that was conducted by counting visitors to L.L. Bean on Labor Day Weekend. If you extrapolated that number across the whole state its population would seem greater than it is indeed.)

But neither would it be accurate to estimate Maine's population by counting hikers on Mt. Katahdin in January. Thus there is a discord between the way fishermen fish and the way scientists count fish. When fishermen's livelihoods are impacted negatively by this discordance things can get controversial.

To address the disagreement—and more importantly to get better data—a series of studies, involving dozens of lobstermen, have been funded by the ASMFC and Northeast Consortium using ventless traps in the Gulf of Maine.

Participants use the same standardized trap in accordance with a strict scientific protocol for time and placement. The experimental trap retains all the lobsters it catches, and many in areas that stock assessment trawls can't reach, greatly enhancing knowledge of the region's lobster population.

Building on this research, members of the Massachusetts Lobstermen's Association (MLA) voluntarily created their own ventless trap survey in 2004.

"We wanted to give lobstermen an opportunity to enhance the quality of data that affects their livelihoods," said Dave Casoni, who is managing the project for the MLA.

A special fine calibrated guage is given to participants to measure the carapice of short lobsters captured in the ventless trap. Photo from GOMLF.

Unlike the other collaborative projects these lobstermen fish the standard ventless trap provided just as they do their normal strings, and record data in a logbook to be housed at the Gulf of Maine Lobster Foundation.

"Our study provides another small piece of data to the larger surveys going on. With lobster the more information you have the better," he said.

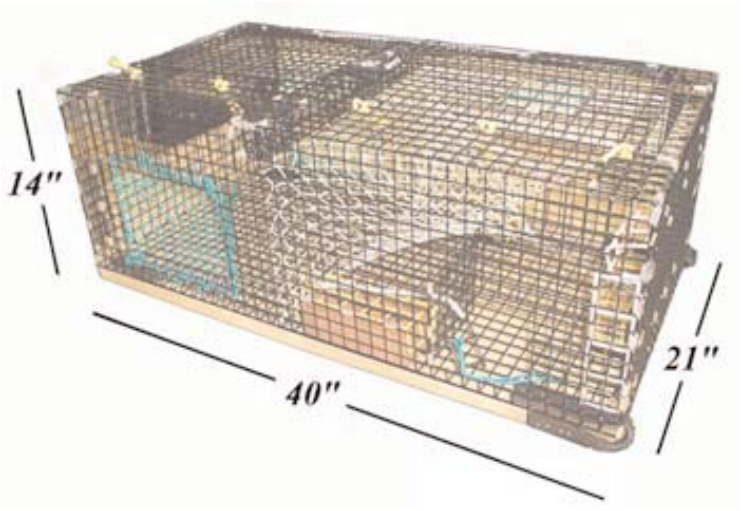
About a dozen lobstermen have been involved in the volunteer project.

"We obviously need more information over a longer period of time before our efforts are considered for management. But just as important as the data that comes from the project is the sense of stewardship our members demonstrate for their own resource," said Casoni.

Like other time series experiments, five years of data is required before it is implemented into management policy decisions.

Casoni said that state scientists have complimented their efforts and will look for ways to use the new data after when the five -year minimum requirement has been reached.

For more information or to participate, contact Dave Casoni at the MLA by phone: 781-545-6984 or visit www.lobstermen.com



The standard ventless trap is constructed of 1-inch mesh and fitted with cement runners. Each site selected (for the larger regionwide studies) have six traps. Photo from GOMLF.

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

June 14, 2006

Small Entity Compliance Guide

Dear Limited Access Northeast (NE) Multispecies Permit Holder:

This letter is to inform you that the National Marine Fisheries Service (NOAA Fisheries Service) is requiring all NE multispecies days-at-sea (DAS) vessels fishing with trawl gear in the Eastern U.S./Canada Area to use a haddock separator trawl, effective June 19, 2006.

Because a haddock separator trawl is now required when fishing in the Eastern U.S./Canada Area, trawl vessels must comply with the following possession limits (all other possession limits not listed remain the same):

- **All regulated flatfish species (gray sole, plaice, etc.) combined:** 500 lb/trip
- **Skates (all species):** 500 lb/trip
- **Monkfish:**
  - Northern Fishery Management Area: 500 lb/trip (whole weight)
  - Southern Fishery Management Area: 500 lb/trip (whole weight), or 50 lb/DAS (tail weight), whichever is less
- **Lobsters:** Possession of lobsters is prohibited

NOAA Fisheries Service is authorized to make changes to the gear requirements for the U.S./Canada Management Area to prevent over- or under-harvesting the total allowable catch (TAC) allocations specified for the U.S./Canada Management Area. Based upon Vessel Monitoring System reports and other available information, the current catch rate of GB cod will likely result in the harvest of the GB cod TAC before the end of the 2006 fishing year (May 1, 2006 - April 30, 2007). Once this TAC is achieved, the Regional Administrator is required to close the Eastern U.S./Canada Area for the remainder of the fishing year. Therefore, this action is necessary to slow the catch rate of GB cod.

GB cod landings will continue to be closely monitored. Should 100 percent of the TAC allocation for GB cod be projected to be harvested, the Eastern U.S./Canada Area will be closed. The rate of harvest of the GB cod TAC in the U.S./Canada Management Area is updated weekly on the internet at http://www.nero.noaa.gov.

This small entity compliance guide complies with section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996.

This notice is authorized by the Administrator of the National Marine Fisheries Service, Northeast Region.

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

NON-PROFIT ORG.
U.S. POSTAGE
PAID
SACO, MAINE 04072
PERMIT NO.1004