

Collaborations

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



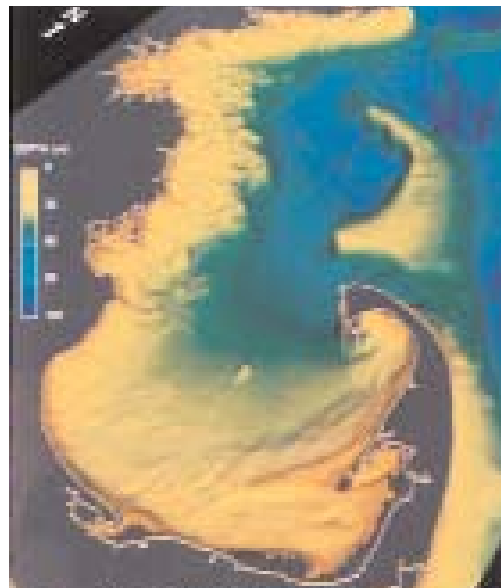
Food Web Analysis on Stellwagen

While most of the fish pulled from the waters of Massachusetts Bay eventually make their way to a dinner table somewhere, this fall a handful of cod and other groundfish netted on Stellwagen Bank ended up inside a gleaming white laboratory on the Boston University campus.

The specimens were captured by a team of scientists and fishermen studying the undersea food chain near the 19-mile long sand and gravel plateau located between Cape Cod and Cape Ann.

For the past six years, trawling has been prohibited within 840-square-miles of the Gerry E. Studds Stellwagen Bank National Marine Sanctuary. The fringes of this fertile plateau, however, overlap the western Gulf of Maine fishery, where trawl nets regularly crisscross the bottom.

Dr. Les Kaufman, a marine biologist and the primary investigator on the study, said the interface between protected and exploited habitat at Stellwagen offered a unique opportunity to measure the impact of trawling.



Above: a cod swims on the sand and gravel bottom that typifies Stellwagen Bank's habitat.

Below: The 19-mile long plateau located between Cape Cod and Cape Ann was once part of the "hook" of Cape Cod, which was deposited by glaciers during the Ice Age.

(Photos Courtesy USGS)

Message From The Editor:

Usually, I craft these stories by beginning with a visit to a fisherman—preferably on a boat—who is working on a research project. Then I follow up with the scientist involved. However, since “collaboration” implies a co-equal partnership, this time around I decided to begin at a laboratory. As you’ll read, my visit revealed to me the role collaborative research can play as the government begins the transition to ecosystem-based fisheries management.

The topic is a complex one, however, and exceeds the scope of a typical *Collaborations* story.

Notwithstanding, ecosystem-based management is a timely subject and deserves our attention (if you don’t believe me check out the U.S. Oceans Commission report or Bill Hogarth’s latest letter to the industry in *National Fisherman*). Therefore, this issue will begin a series about the ways in which collaborative research and new technologies are helping to shape the way fisheries are managed in the 21st Century.

In some ways collaborative research has already started the background work necessary for a change of this scale, in the partnerships formed between industry and scientific institutions over the past decade.

The next step, of course, will be the collection of more and different kinds of data, which was the point raised in the note from the aforementioned scientist. As I understand it, ecosystem-based fisheries management, a subset of ecosystem-based management, seeks to make almost real-time adjustments to fishing rules based on the environmental conditions present, what is collectively known as oceanography.

If, for example, there was a spawning season where wind, weather, water, and tide were especially conducive to a strong year-class of cod, then fisheries managers theoretically could adjust harvest limits to reflect the increased abundance. The alternative would of course also be true.

As both fishermen and scientists know, however, these aren’t the only variables that contribute to the survival of fish larvae. The growth of civilization along the coast has a dramatic effect on the health of ocean ecosystems and if new management is to create sustainable fisheries it will have to address *all* impacts on fish stocks. The best way we could hope to capture all the information needed to do this well is to increase the amount of data collected, and scientists and scientific gadgetry alone are ill-equipped to do the job. So the addition of a fleet of vessels collecting data is more important than ever before.

But it’s more than having new eyes and ears on the water, as I’ve so often been told by scientists and fishermen alike. First, fishermen have a unique knowledge of the ocean and can bring scientists up to speed on important ecological concepts in a short period of time. Second, fishermen can get to places in their boats that are difficult to reach in large, cumbersome research vessels; also, they’re a lot cheaper to operate.

All of these factors work in favor of detailed information about the marine environment that is demanded by effective ecosystem-based management, which after all is something many fishermen have advocated for long before the Ocean Commission gathered to discuss the future of fisheries management.

Good Fishing,

Michael Crocker
Editor, Collaborations
E: mike@namanet.org
T: 207-284-5374



Collaborations:

A monthly update of collaborative research projects in the northwest Atlantic Ocean. Published each month by the Northwest Atlantic Marine Alliance with generous funding provided by the Northeast Consortium.

December 2004

Written and designed by Michael Crocker, communications director, **Northwest Atlantic Marine Alliance**.

© copyright 2002

All editorial submissions and 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

Heather Deese

Science Director

Michael Crocker

Communications Director

Jen Levin

Director of Operations

“People often forget that fishing isn’t the only human activity that impacts the oceans, it’s just the easiest for the government to manage.”
-Dr. Les Kaufman

“People often forget that fishing isn’t the only human activity that impacts the oceans, it’s just the easiest for the government to manage,” said Kaufman.

He added that the impact of commercial fishing on marine life might be insignificant compared to that of millions of people living along our coastlines.

“Development in wetlands, industrial and agricultural pollution are just some of the activities on land that affect life in the sea. Fishermen have been saying this for years, but the only way to find out with scientific certainty is to monitor the health of marine protected areas such as Stellwagen Bank.”

It so happened that Captain Paul Vitale, who operates the 50-foot trawler, *Angela and Rose*, out of Gloucester, was one of the fishermen who had been thinking along the same lines.

He said he has watched the ecology in the western Gulf of Maine change dramatically in the years since closures restricted fishing there. Without trawling eliminated as the cause, he knew something else was going on.

“In the past few years, I have noticed very few mackerel, herring and other feed fish, but an incredible increase in the number of skates and dogfish. This has not at all been good for the cod and haddock stocks in my opinion.”

After a couple of failed attempts at getting a research proposal funded, Vitale joined forces with Kaufman, who had been conducting a food web analysis with fishermen at the Channel Islands National Marine Sanctuary in California.

“Les provided the kind of knowledge needed to get a proposal funded,” said Vitale.

The team, which includes Elizabeth Soule, a graduate student at Boston University, and Jason Link, a government food web specialist, was given special permission (and a \$250,000 grant) from the National Marine Fisheries Service to tow a net and jig on both sides of the sanctuary’s boundary last summer.

“The main objective is to take tissue samples and stomach samples from fish caught in exploited and protected habitat to see if their position in the food web has been altered by six years of mobile gear exclusion in the western Gulf of Maine closure,” said Kaufman.

Catch rates were also compared and some of the specimens were later examined using a sophisticated tool, known as a stable isotope spectrometer.

The instrument works by measuring “heavy” nitrogen isotopes that accumulate in predators as they feed on sand eels, herring, and other species below them on the food chain, Kaufman explained. Therefore, the higher a fish is on the chain the greater amount of heavy nitrogen in their flesh.

“Great care must be taken to ensure that the analysis is conducted at appropriate spatial and temporal (space and time) scales and are as complete as possible,” he said. “When done properly, important information can be learned

about the ecosystem.”

The initial results seem to show that cod inside the sanctuary occupy a higher position on the food chain than the same size cod from areas where trawling occurs, Kaufman said. “The findings are interesting, but at this point we can’t say what they mean. What’s much more important for now is that we have demonstrated that the technology is reliable”

As we will see, such new technology and collaborations have set the stage for a radical transition in fisheries management recommended last year by the U.S. Oceans Commission.

Next issue we will continue the story by examining how cooperative research partnerships are helping to gather the new kinds of data needed as management begins to transition to ecosystem-based management.



Paul Vitale empties the codend of a trawl net after a tow on last summer.

NMFS
Bulletin:



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

December 17, 2004

Dear Commercial Lobster Trap/Pot and Gillnet Fishermen:

This letter is to inform you that the National Marine Fisheries Service (NOAA Fisheries) has established a DAM zone with required gear modifications for lobster trap/pot and anchored gillnet fishing gear. The required gear modifications for lobster trap/pot and anchored gillnet gear will be effective for 15 days, in an area east of Portland, Maine, totaling approximately 1,889 square nautical miles (nm^2) (6,479.1 km^2). In addition, NOAA Fisheries requires that no additional gear be set in the DAM zone during the restricted period unless that gear has been modified accordingly. This action is being taken to respond to reported aggregations of endangered North Atlantic right whales (right whales).

The regulations implementing the Atlantic Large Whale Take Reduction Plan (ALWTRP) provide NOAA Fisheries the authority to temporarily restrict the use of lobster trap/pot and anchored gillnet fishing gear on an expedited basis to protect right whales through its Dynamic Area Management (DAM) program.

A DAM zone is triggered by a single reliable report from a qualified individual of three or more right whales within an area (75 nm^2) such that right whale density is equal to or greater than 0.04 right whales per nm^2 . On December 6, 2004, NOAA Fisheries received a report of 7 right whales in the proximity of $43^\circ 22.3' \text{ N}$ latitude and $68^\circ 01.1' \text{ W}$ longitude. This position lies east of Portland, Maine. NOAA Fisheries determined that these sightings were reliable reports submitted by qualified individuals that meet the DAM zone trigger.

Therefore, NOAA Fisheries is announcing required gear modifications for the DAM zone. **Effective 0001 hours December 22, 2004, through 2400 hours January 5, 2005**, anchored gillnet and lobster trap/pot gear in the DAM zone must comply with the required gear modifications. The required gear modifications and the coordinates for the DAM zone are found in the enclosure to this letter. **Special note for gillnet fisherman: A portion of this DAM zone overlaps the Harbor Porpoise Take Reduction Plan's Offshore Closure Area. This DAM action does not supersede the Harbor Porpoise Take Reduction Plan regulations found at 50 CFR 229.33. During this closure, sink gillnet gear is prohibited from this portion of the DAM zone unless pingers are used in accordance with the provisions of § 229.33(d).** To obtain the DAM regulations in their entirety, please call 978-281-9328 x6505. In addition, these regulations are available by accessing the ALWTRP web page (<http://www.nero.nmfs.gov/whaletrp/>). If you have any questions regarding these regulations, please call 978-281-9328 x6505.

Sincerely,

Patricia A. Kurkul
Regional Administrator

Enclosure





UNIVERSITY of NEW HAMPSHIRE

University of New Hampshire Marine Science Graduate Fellowships

The Marine Program at the University of New Hampshire is pleased to announce the availability of several Graduate Fellowships in the marine sciences. This program supports approximately 22 concurrent fellowships at the MS/PhD levels, 8 of which will be available beginning in the summer of 2005.

This program seeks to attract highly talented MS and PhD students into our marine programs who will focus their graduate research in the program areas and centers of excellence in marine science that have developed at UNH over the past decade.

Fellowships this year are available through the following centers and cooperative institutes:

Center for Coastal Ocean Mapping (C-COM)

<http://ccom.unh.edu/> (1 Available)

Cooperative Institute for Coastal and Environmental Technology (CICEET) http://ciceet.unh.edu/index_flash.html (2 Available)

Cooperative Institute for New England Mariculture and Fisheries (CINEMar)

<http://cinemar.unh.edu/> (1 Available)

Northeast Consortium

<http://northeastconsortium.org/index.html> (1 Available)

UNH Center for Excellence in Coastal Ocean Observation and Analysis (COOA)

<http://www.cooa.unh.edu/> (1 Available)

UNH/NOAA Joint Hydrographic Center (JHC)

<http://ccom.unh.edu> (1 Available)

Center for Large Pelagics Research

<http://www.marine.unh.edu/instituteslargepel.html> (1 Available)

The disciplinary breadth of these program/center areas will permit support for students with interests ranging from fisheries management and mariculture to coastal mapping technology and application, estuarine ecosystem health, coastal ocean observing and beyond. Prospective students are encouraged to explore these programs and contact appropriate faculty (see <http://marine.unh.edu>) for additional information.

Successful applicants will be provided up to 3 months of summer stipend preceding their first year (to allow them to get a jump start on their thesis research) and two (MS) or three (PhD) years of stipend and tuition support (assuming adequate progress). UNH graduate stipends are currently ~\$22,100 (MS) to \$23,600 (PhD) per 12 months and tuition for students supported on fellowships and/or research grants is ~\$9,000. To be eligible for a fellowship, a student must: (1) apply and be - 1 - admitted to a MS or PhD program at UNH; (2) be accepted by an advisor who has sufficient research funding to support their equipment, supply and travel needs during their program; and (3) be prepared to carry out their thesis research in one of the program areas through which the funding will be provided (See Above).

Complete Fellowship Applications must include the following: (1) a completed Marine Science Graduate Fellowship Application Cover Sheet; (2) a concise (1 page) statement of research interests; (3) a copy of undergraduate and graduate (if applicable) transcripts; (4) two letters of recommendation; and (5) a letter of support from your prospective UNH advisor. A full information packet may be found on the UNH Marine Program web site (<http://marine.unh.edu>).

All materials should be sent to the address below postmarked no later than 1 February 2005. Awards will be announced beginning 21 February, 2005. For additional information, please contact the UNH Marine Program at marine.information@unh.edu or 603-862-2987.

Marine Science Graduate Fellowships
Marine Program Office
University of New Hampshire
Jere A. Chase Ocean Engineering Laboratory
24 Colovos Road
Durham, NH 03824.

The University System of New Hampshire reaffirms its policy of administering educational programs and related supporting services and benefits in a manner that does not discriminate because of a student's or prospective student's race, color, religion, gender, age, national origin, sexual orientation, veteran's status, physical or mental disability, or other characteristic that cannot be lawfully the basis for provision of such programs or services. Further, each institution within the University System will continue to encourage the application of minority and other protected groups, and establish organizational structures and procedures that will provide equal treatment and equal access to the facilities and educational benefits of each institution to all students, as required by law. The institutions within the University System have all filed Title IX Assurance Statements and have been found in compliance by the Office of Civil Rights, U.S. Department of Education.

Northeast Consortium Planning Letter Extension

Required planning letters for 2005 RFP are now due in April.

The Northeast Consortium (NEC) has announced that it will extend its deadline for 2005 required planning letters from February 22 to April 6.

“The extension reflects requests from both fishermen and scientists alike that they be given more time to sit down together and really put together a strong proposal,” said Laurinda Sousa Smith, NEC Program Coordinator.

Correspondance regarding planning letters should be directed to:

Laurinda Sousa Smith
Northeast Consortium
Morse Hall, Room 142
Durham, NH 03824
Tel: (603) 862-0136 (main office number)
Fax: (603) 862-7006
email: laurinda.smith@unh.edu

To aid with the submission of proposals the following information represents a summary of the NEC guidelines. Those submitting reports should consult www.northeast-consortium.org or call the number listed above for precise information.

• Letters should explain the central concept and the plan of work in sufficient detail to be understandable to a reader knowledgeable about fisheries research, oceanography, and management. Letters can be up to 5 pages in length, excluding budget documentation. Do not send letters of support, attachments or other materials. For more information, see the Guidelines for Preparation of Cooperative Research Planning at www.northeastconsortium.org.

• Planning Letters are evaluated based the importance of the idea and its relevance to the Northeast Consortium’s objectives, as well as the technical approach and likelihood of success. The top projects will be asked to develop the idea further in the form of a Full Proposal.

To encourage proposals, but not to restrict the range of potential topics, the Consortium provides a brief summary of topic areas that meet funding criteria. (Descriptions of cooperative research projects funded in previous years are also available on the website):

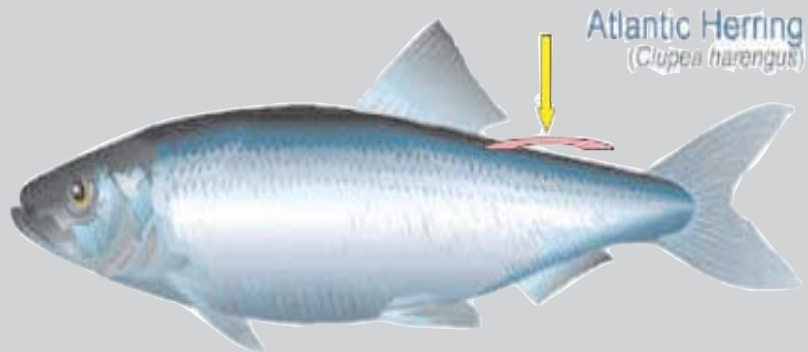
Topic areas:

- Selective gear research and development. Cooperative research leading to the development of selective fishing gear that enhance gear selectivity, target healthy stocks, reduce bycatch, reduce or eliminate technical barriers to trade, minimize harvest losses, and improve fishing practices. Gear evaluation in closed areas should have a well-justified and specific rationale for conducting the research in the area proposed. The research and rationale should be consistent with reason for closure.
- Evaluation of closed areas. Studies of environmental conditions, bio-diversity, oceanographic processes, and fisheries recruitment; development and use of less invasive or non-fishing approaches for evaluation of closed areas; consideration of the historical character of these regions; use of commercial fishermen’s knowledge to formulate hypotheses, design and implement field studies; analysis of the impacts of area closures on landscape and biota. Proposals that involved study in closed areas should have a well-justified and specific rationale for research in the area proposed. The research and rational should be consistent with reason for closure.
- Fish habitats. Inclusion of industry-based information for essential fish habitat designations; improved accuracy and reliability of the underlying information.



- Commercial harvest and species sampling. Alternative approaches to analysis of species’ distribution and abundance; evaluation of effects of oceanographic patterns and processes; analysis of life history features, behavior, and dispersal.
- Oceanographic and meteorological monitoring. Better information on weather, sea-state, and oceanographic and fishing conditions in the coastal waters of the US; synoptic coverage of large regions, use of satellite telemetry; use of commercial fishing vessels as platforms for ocean monitoring, modeling, and prediction.
- Socioeconomic impacts. Better understanding of the effects on the fishing industry and fishing communities from fisheries, coastal and ocean management decisions; analysis of the impacts of cooperative research.
- Outreach and education. Approaches to enhance knowledge sharing among fishermen, scientists, and managers; increased awareness of cooperative research among K-12 students and the general public. Projects should focus on cooperative research generally, not on Northeast Consortium activities in specific. The Northeast Consortium aims to fund projects that are conducted in a responsible manner, in order to minimize any negative environmental impacts, and be consistent with accepted ethical research practices (e.g., use of animals and human subjects in research).

Wanted



(The older version of the spaghetti tag is yellow; the newer version is pink. Please return both types of tags.)

ATLANTIC HERRING RESEARCH TAGS

\$1,000 AND \$500 U.S.

REWARDS

PLEASE SEND TAG, DATE, LOCATION OF CAPTURE, NAME AND ADDRESS TO:

DMR HERRING TAGGING PROJECT
PO BOX 8, W. BOOTHBAY HBR, ME 04575

* - THREE LOTTERIES WILL BE DRAWN ANNUALLY (1-\$1000 AND 2-\$500). THE LOTTERIES ARE NOT FUNDED OR AWARDED BY THE DEPARTMENT OF MARINE RESOURCES



200 Main Street, Suite A
Saco, Maine 04072-1507

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