



# Littlefield helps to build plankton database

SEABROOK, NH – While it's easy to see why fishermen would have a role to play in gear research, it might be harder to make the connection between oceanographic monitoring and cooperative research.

After all, fishermen work with gear on the water and have an innate understanding of which net designs will work and which won't. But what could they contribute to a biological oceanographic project?

George Littlefield Jr. and a number of other New Hampshire fishermen will tell you, "Quite a bit."

The owner-operator of the 47' Seabrook-based Lady Regena, Littlefield has fished in the Gulf of Maine for more than 20 years. In 2001, Jeff Runge of the University of New Hampshire PULSE Project asked him to participate in the pilot-scale ocean monitoring project funded by the Northeast Consortium (see story below).

"At that time, Jeff needed assistance with the development and testing of a mobile winch design and needed a commercial fisherman to participate," Littlefield said.

After getting the specifics, Littlefield agreed to sign on and "the ball started rolling."

The purpose of the hoist would be to lower and raise containers used to collect water samples. The hoist had to be portable so it could be moved among the vessels participating in the project, and it had to be small enough not to interfere

## PULSE: Cooperative monitoring of Gulf of Maine ecosystem

DURHAM, NH - Whether natural, man-made, or a bit of both, shifts in the Gulf of Maine marine ecosystem have the potential to trigger changes that can affect everything along the food chain from phytoplankton right up to herring and juvenile cod.

That's why scientists are working with commercial fishermen on the "PULSE" of the Gulf of Maine. The project was started in 2001 by Jeff Runge, a research professor at the University of New Hampshire's Ocean Process Analysis Lab, with funding through a cooperative research grant awarded by the Northeast Consortium.

Each week, fishermen and scientists sample zooplankton, phytoplankton, hydrography, and nutrients at four fixed nearshore and offshore stations off the coast of New Hampshire.

The goal is to record a long-term history of seasonal changes in plankton organisms. This kind of data should eventually help fishery managers predict how many fish the ecosystem is capable of supporting.

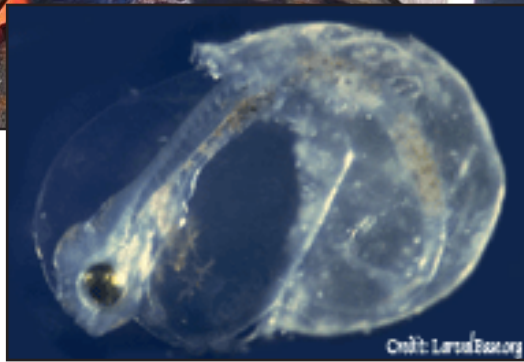
For more information on PULSE, visit the project's web site at <www.pulse.unh.edu>. ■



"PULSE of the Gulf of Maine" project photos

Above, George Littlefield Jr., owner-operator of the Lady Regena, participates in PULSE project monitoring.

At right, Atlantic cod larva in the act of hatching. The PULSE project samples for plankton, a term used for any living thing that resides in the water column and is at the mercy of the currents and tides. Ichthyoplankton is fish eggs and larvae in various stages of development.



Credit: Larval Ecology

with normal fishing operations.

Together, Littlefield and Runge fabricated and tested a diesel-driven hoist design and, as often happens in cooperative research, it soon became apparent that the design needed some work.

Rebecca Jones, a research scientist working with Runge, recalled the joys of being aboard the Lady Regena in the winter trying to fire up a pull-start diesel engine with no warming plugs.

"In hindsight, it's a funny story but at the time I was ready to throw it overboard," she laughed.

Needless to say, an electric-start gas engine drives the winch system now.

### Protocols

As part of the PULSE project, researchers offer workshops to introduce fishermen to oceanographic sampling protocols and zooplankton identification.

"I enjoyed learning how to sample zooplankton and identify them under a microscope," Littlefield said. "It is

important to understand where and when food sources appear and disappear."

A total of 10 fishing vessels have participated in the PULSE project to date (see box below).

### A fishing family

George Littlefield's family has been part of the Seabrook fishing community for several generations. Littlefield's father, George Sr., was an inshore lobsterman and his uncle owned a party boat that Littlefield started working on as soon as "I could stand."

In the late 1970s, that uncle, Don Littlefield, sold the charter boat business, which is now Eastman Fishing Parties, and purchased a lobster pound that he still operates today.

After graduating from high school in

1975, Littlefield left the fishing industry to travel out West and eventually wound up in Virginia raising greyhounds.

In 1985, he left the dog business, returned to Seabrook to be with his ailing

father, and began working for Eastman as a deck hand on party boat charters and as a crewman on a gillnetter.

He learned the ins and outs of trawling while working for David Goethel aboard the Ellen Diane. After about a year, Eastman offered Littlefield a job running a dragger, which he did for 10 years until purchasing the Lady Regena from a Gloucester fisherman. He has been dragging ever since.

### Cooperative research

With such positive cooperative research experiences, Littlefield has looked for additional opportunities over the years, including visits to the Memorial University Marine Institute's flume tank in Newfoundland.

The largest of its kind in the world, the flume tank allows fishermen and gear researchers to see innovative fishing gear designs in action and to use what they see to improve fisheries conservation technologies.

"I found it amazing to see how little changes to net design would impact the fishing capacity of the gear," Littlefield said.

Littlefield's experience with cooperative research has left him with the strong feeling that the fishing industry offers scientists a critical current and historical information base.

Working with Pingguo He, a fisheries scientist at the University of New Hampshire, he collaborated on a trawl design for the shrimp fishery that would minimize bottom impact. This partnership was important for determining net and door size, as well as ground gear and cable configurations. It was Littlefield's job to use his experience to run the warp to keep the doors off the bottom while adjusting the net weight to keep the gear fishing.

Littlefield urged other fishermen to pursue cooperative research.

"Many fishermen are skeptical about fisheries science," he said. "I was, and after participating and seeing how research is done and what it has to offer, I've changed my mind."

He also offered a bit of advice for scientists interested in engaging in research partnerships.

"Be upfront with what your goals are and what you expect from the fisherman and his vessel," Littlefield said.

Ken La Valley

Ken La Valley is an extension specialist with University of New Hampshire (UNH) Cooperative Extension/New Hampshire Sea Grant who is working to connect commercial fishermen interested in cooperative research with scientists who want to work with fishermen.

He encourages anyone with ideas to get in touch. La Valley can be reached at: UNH Cooperative Extension, 219 Nesmith Hall, 131 Main St., Durham, NH 03824; phone (603) 862-4343; or e-mail <ken.lavalley@unh.edu>.

## PULSE project industry participants

Dennis Robillard  
Peter Kendall  
Alan Vangile  
George Littlefield  
Jeremy Davis

Julie Ann II  
Kelly Rose  
Special K  
Lady Regena  
Karen Lynn I and  
Chutzpah  
Rhiannon Rae  
Lynn Allison  
Marion Mae  
Kris N Kev

Bud Fernandez  
Lee Stevens  
Craig Maverikis  
Erik Anderson

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142 Morse Hall, 39 College Road, Durham, NH 03824

Tel: (603) 862-0136 • Fax: (603) 862-7006

www.northeastconsortium.org

