

June 2004

Collaborations

A monthly report on collaborative research projects in the northwest Atlantic



Known simply as “Motif Number One” this fishermen’s shanty is possibly the most painted (and photographed) scene in New England. A few years back, Capt. Lee inherited the building’s upstairs office, which is traditionally reserved for the oldest fishermen—who is still fishing—in the harbor.

Being Bill Lee

Lately, when I haven’t been writing about fish, I’ve been writing about writing about fish. In particular, so not to confuse you, I was working on an essay about a little book, more known for its depiction on the big screen than its contribution to literature. Notwithstanding, *A River Runs Through It*, by Norman Maclean, is one of the language’s most beautifully written novels about fishing and, believe it or not, raises some weighty theological issues as relevant to fly-fishing for striped bass on the Merrimack River, as for trout in western Montana.

All of this is to say that I needed a picture of a striper to submit along with my piece on Maclean’s *River*. And it didn’t take me long in this business to learn that if you need a picture of a fish Capt. Bill Lee is the man to call.

He got back to me directly, mentioning something about hiding a camera inside a bass lure, to get a fish eye’s view of New England’s favorite summertime sport fish.

So I packed a raincoat, two peanut butter sandwiches, a notebook, digital camera, and headed to Rockport, Mass. Lee, a 56-year-old commercial fisherman, boat builder, camera builder, fishing gear technician, welder, photographer, avid bird watcher, and host to NOAA interns, has recently completed or is currently working on at least five collaborative

research projects.

When I climbed aboard Lee's fishing vessel, *Ocean Reporter*, he was inside the wheelhouse affixing a small underwater camera to the tail-end of an imitation mackerel.

When complete, he tossed the contraption over the side into Pigeon Cove and gave it some action with quick jigging motions as he retrieved the 50-foot cord attached to the camera. In about two seconds a 14 or 15-inch schoolie had come over to investigate the peculiar baitfish.

"Mike," Lee said. "I think this is going to work."

With Bill Lee, I have also learned, picking which of his collaborative research projects to write about can be challenge: There's the NOAA Study Fleet Project and essential habitat research currently underway. There's his work designing conservation-friendly fishing gear and the plan he and his wife, Sandy, drew up to study correlations between seabird behavior and commercial fisheries. There's also his low-impact shrimp beam trawl design as well as his innovative bycatch reduction techniques for use in biological sampling.

But what caught my attention this time was his hot-off-the-presses guide to building and using underwater video equipment.

The manual was written—complete with a glossary of terms for ease of reading—for fishermen and researchers interested in using low-cost, underwater video to film fishing equipment at work or just about any critter that swims underwater.

Lee writes, "New technology has made underwater video both available and affordable for fishermen and researchers. What used to take years of gear testing, can now be tested in days because of direct observation using advanced underwater video technology. With the right underwater camera equipment most marine life in the Gulf of Maine can be observed. This allows us to continue collecting the data necessary to maintain the Gulf of Maine fisheries. Most marine life will react to the cameras, lights, and tethers in some way, but this can be minimized if the right techniques and



photo by Bill Lee

Bill Lee (continued)

equipment are used.”

In the 25 or so pages that follow, Lee outlines the ins-and-outs of underwater photography, from light and lighting to taking snapshots of the hard-to-reach corners of the ocean with a remotely operated vehicle.

“What is available on the market today is just amazing,” Lee said. “For \$400 or \$500 you can buy a camera capable of producing high-quality images in almost perfect darkness.”

Additionally, with money from the \$67,000 NOAA-funded project, Lee outfitted nine fishing vessels from the Cape Ann region of Massachusetts with identical steel tubes, used to count and measure fish in research projects, as well as scales and a handful of other oceanographic gadgets.



The “Striper Cam”

“The idea was to create a study fleet of sorts—equipped with the same video and oceanographic equipment—to minimize the little variations that can sometimes skew data,” Lee said. “Today, the cost of underwater camera equipment is within the reach of even small fishing operations,” he added. “I want fishermen to know that learning how to use underwater cameras is within reach too.”

At the end of the month, Lee will present his manual at a government sponsored bycatch reduction meeting in Wakefield, Mass. To order a copy or to see what else Lee is up to, visit his website, www.cafi.info.

By the way, the frugal-minded Lee finished the video manual project ahead of time and under budget, so he sent about \$10,000 back to the government. “This is taxpayer money we’re playing with here, somebody has to be budget conscious,” he said.

Northern Shrimp Environmental Monitoring: Year Two

When I last sailed on the fishing vessel, *Susan and Caitlyn*, it was 12 degrees Fahrenheit and a winter storm had just dumped about eight inches of snow on her decks. Also, Craig Pendleton, owner and sometimes captain of the 54-foot dragger from Portland, and Mike Stinchfield, the captain Pendleton hired to operate his vessel most of the time, had just begun a research project investigating the links that seem to exist between water temperature—and other environmental conditions—with the abundance and movement of Northern shrimp (*Pandalus borealis*).

In May, when I returned to see how the second-year of the project was going, conditions were a bit more comfortable: 60 degrees and sunny, with a soft five to 10 knot breeze out of the southwest. No snow to speak of.

Notwithstanding the lack of cold and snow, “The Northern Shrimp Environmental Monitoring Program,” a \$320,000 pilot study funded by the Northeast Consortium, continues to collect and analyze data from scores of survey sites between the Portland and Pemaquid trenches, two undersea furrows off the mid-coast of Maine.

“We successfully carried out the first year of this pilot project through a close partnership of industry members, university scientists, state scientists and non-governmental support,” said Togue Brawn, a fisheries specialist assigned to the shrimp research at the GMRI. “We hope to continue the collaboration for several years to come in order to correlate deep bottom water temperatures as well as other environmental information with strength of shrimp stocks.”

Pendleton, who has been shrimping in the Gulf of Maine for much of his adult life added: “The first year of the project was more or less used to establish a reliable protocol for data collection in real-world conditions. Now, that we have ironed out some of the kinks (an important component to any applied research) the scientists and technicians can focus on crunching the numbers so we can get an initial impression of patterns and trends.”

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-Togue Brawn (GMRI)

Northern Shrimp (continued).

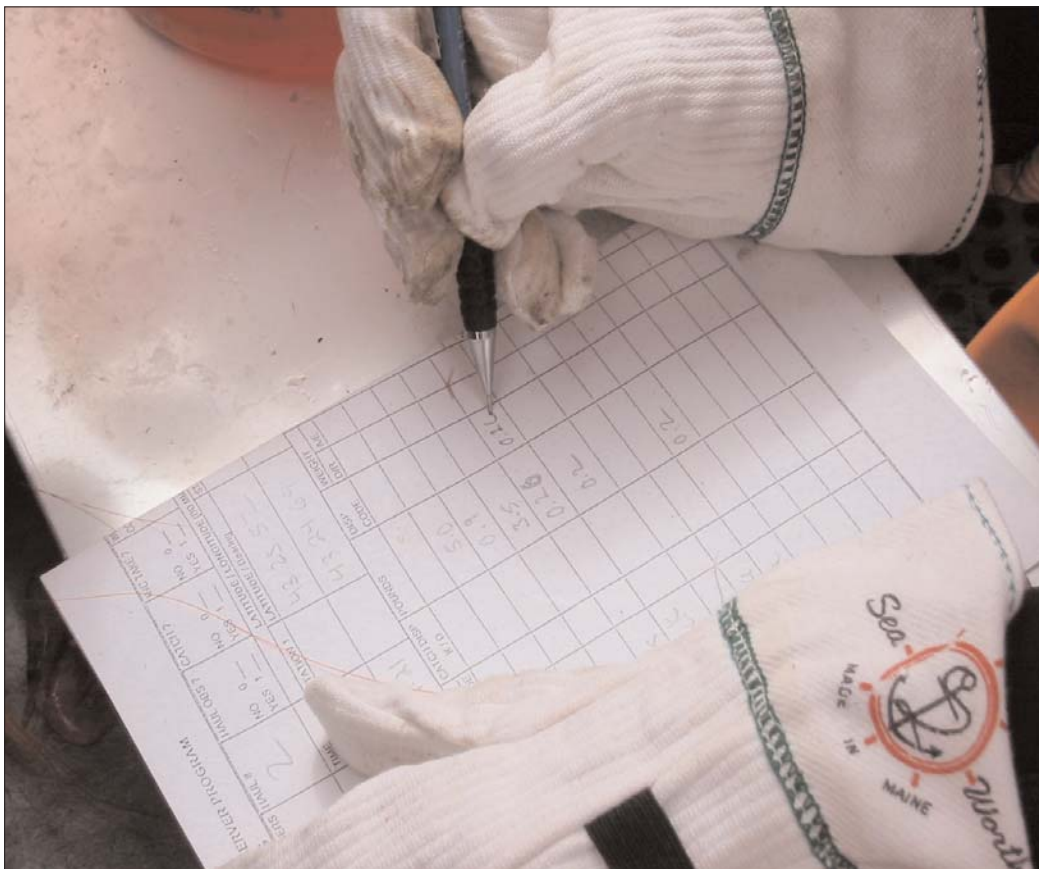
As a matter of fact, I have a copy of the preliminary analysis (of last year's data) here beside me. Most of the time journalists eschew the real "science-y" stuff from their stories, because it's full of jargon and, well, just boring.

However, since roughly half the readers of this publication are also regular disseminators of scientific tedium, and since roughly the other half are fishermen, who I know to be smart and tough enough to take it, some preliminary results from last year's data follow:

"Preliminary plots of the 2002-2003 (year one) data from Pemaquid and Portland transects study areas show little correlation between number of shrimp, depth and time of year. For the Pemaquid area, the winter (January 1-April 1) distribution is not much different than the previous fall (November 15-January 1). For the Portland area, there is a shift in the peak abundances over time from 50-100 m in the fall to less than 50 m in winter. This data will be examined more closely by removing all the deeper stations. The preliminary data are noisy, and the peaks are the result of a few high tows. Further analysis will be done to determine if some temporal and spatial smoothing are possible, but the abundances are highly variable and are all single data points without replication. This variable distribution agrees fully with the CPUE pattern in the commercial fishery from 2003 port sampling information and represents one of the signal patterns from the past, i.e. highly patchy distribution with little concerted movement towards shore. Continuing the environmental monitoring in year two will provide additional data points for further analysis and inter-annual comparisons."

Togue added: "The data is still in the early stages of analysis and much more information is needed to draw any scientifically-supported conclusions. Once that's done the hope is that managers can use the information to better manage the shrimp fishery, both for the sake of fish and the communities that depend on them."

For more information please visit, http://www.gma.org/research/shrimp_survey.asp



TOP: Northern shrimp (*Pandalus borealis*) carrying eggs. Female shrimp come inshore each winter to drop their eggs in the Gulf of Maine's nutrient rich coastal waters. Scientists, fishermen, and managers hope that a better understanding of the biological characteristics of the resource will help build a stronger fishery--for fish and fishermen.

BOTTOM: Brawn makes notes on landings and environmental conditions in the shrimp project's log. Currently, there is two years of landings and environmental data for scientists to mull over in search of trends and patterns.