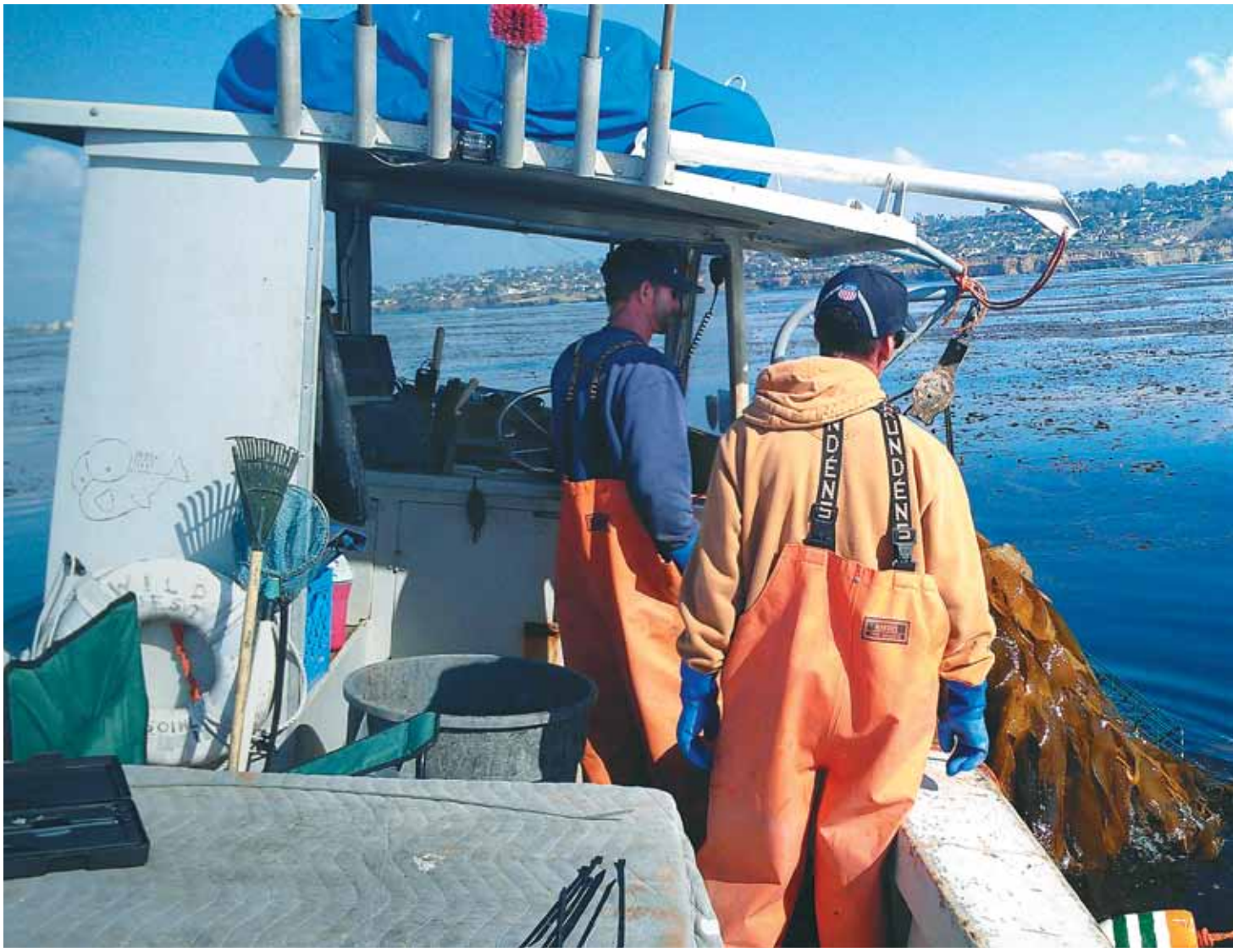


# Spiny science

## A day at sea collecting catch and data in the California spiny lobster fishery

By Victoria Minnich

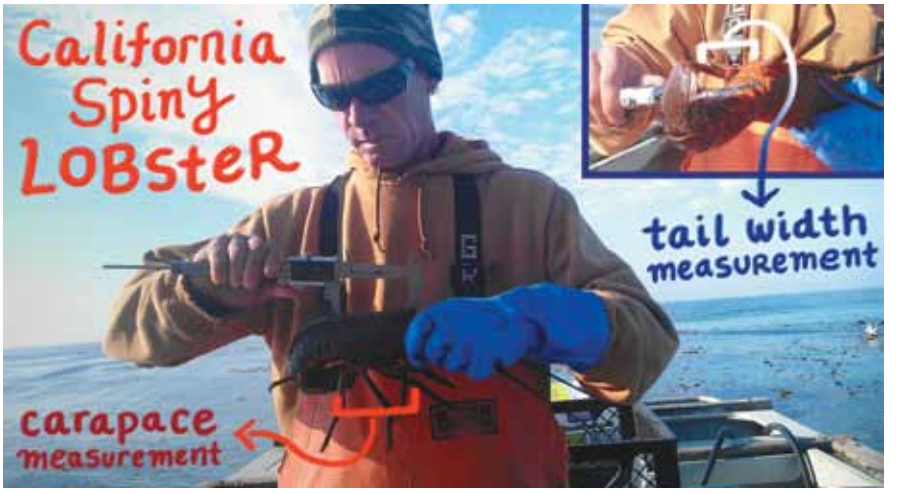
As a native San Diegan and 23-year multispecies commercial fisherman, John Law was a strong candidate for an inaugural fisheries-science program. With this fisherman, the experiment was getting honesty, consistency, keen observational and organizational skills, as well as a lack of fear of scientists, their esoteric jargon, incomplete computer models and obsession with quantifying everything.

Dr. Carolyn Culver, an outreach-oriented researcher at California Sea Grant, is one of the main scientists involved in this sampling-at-sea project that includes the nonprofit Collaborative Fisheries Research West and California's Ocean Protection Council. The aim is to tackle the mysteries of the lobster fishery with the potential of offering input to California's Department of Fish and Wildlife as it develops a fishery management plan for spiny lobster. They expect to review a draft in 2014 and adopt a plan the following year.

Law, 53, was willing to partake in this venture because the scientists who contacted him seemed concerned about the totality of the fishery — the health, viability, and coexistence of the spiny lobster and the fisherman, without sacrificing one creature for the other.

"The reason why I agreed to participate in this project is largely because of my past dealings with Carrie Culver in the south coast Marine Life Protection Act process," Law says. "She is one of the very few fisherman-friendly scientists I have interacted with, and I thought that the data collected in this project would be used to enhance fisheries as opposed to the data being used

Skipper John Law (left) and his nephew Rob Law haul spiny lobster traps and record catch data on the 25-foot Wild West out of San Diego.




Deckhand Rob Law measures the carapace lengths and tail widths of every lobster in select traps; data includes identifying sex, molting and reproductive stages.

VICTORIA MINNICH PHOTOS

to work against us."

For the task of lobster and data foraging on this sunny December day, Law recruited his nephew Rob Law, 42, a reliable, astute deckhand of few words yet telling actions, to help handle and measure the catch.

John Law warned his nephew while they were stocking the boat with fuel and salmon-head bait in the morning, "This is going to be a very painful pull… We'll be lucky if we get a dozen." A mid-December swell had drastically dropped water temperatures, signaling the "beginning of the end of the season," according to our skipper.

I was there, as an on-leave grad student with a science background, to help record the data and partially because I would do anything to spend time with a couple of soulful seafarers. I was honored to serve as the dry deckhand data pimp, meaning that I sat on a lawn chair crammed in between the measuring table and the ice chest.

As the 25-foot skiff Wild West rolled along gentle, protracted swells through the Point Loma Kelp Bed, I recorded numbers and labels on sheets that resembled Yahtzee scorecards as the fishermen called out the data.

As the team maneuvered from one trap string (or transect) to the next, I found myself aggregating information that represented geographic coordinates, trap numbers, lobster counts of legals and shorts (alive and dead) and a small potpourri of bycatch. For select traps, I marked down the number of male and female lobsters, their reproductive and molting states, carapace lengths, and tail widths.

John Law has 380 traps along the coast from Point La Jolla to Point Loma. They measure 36 x 28 x 14 inches with 2-by-4-inch mesh and a hatch that allows a majority of the shorts to escape. On a typical fishing day, he pulls 120 traps or more without a deckhand. The process of gathering this data forced us to be a little more conscious of the lobstering routine, as we were becoming attuned to a higher resolution of detail.

When I heard about this collaborative fishing-science project, in which the data harvesting was conveniently overlaid on the usual practices of lobster scavenging for only one day a month during a half-year lobster season, I was very excited. I had read about co-fisheries management dozens of times. In fact, I didn't understand why such a program did not exist a long time ago. After all, commercial fishermen are scientists in their own right: acquiring knowledge of ocean conditions and the resources they pursue is a requirement for survival in their profession.

One could tell just from skimming John Law's spreadsheets that the researchers were not focused on capturing an overview of a fisherman's workday, but were after a few particular details: general fishing locations, the number of legal and short lobsters, and the amount and diversity of bycatch. I also came to learn of a probing interest in developing an alternative legal size for the spiny lobster. The magic number is 82.55 millimeters, or 3.25 inches, as the minimum carapace length for a legal catch. But perhaps the tail width could be an alternate metric in cases of a deformed carapace or a missing head. In just a few measurements, Rob Law and I quickly realized there was a noticeable difference in tail widths between males and females, as John Law knew all along. "Males have big heads and small butts, and females have small heads and big butts," he quipped, "a trend that seems to transcend to other species."

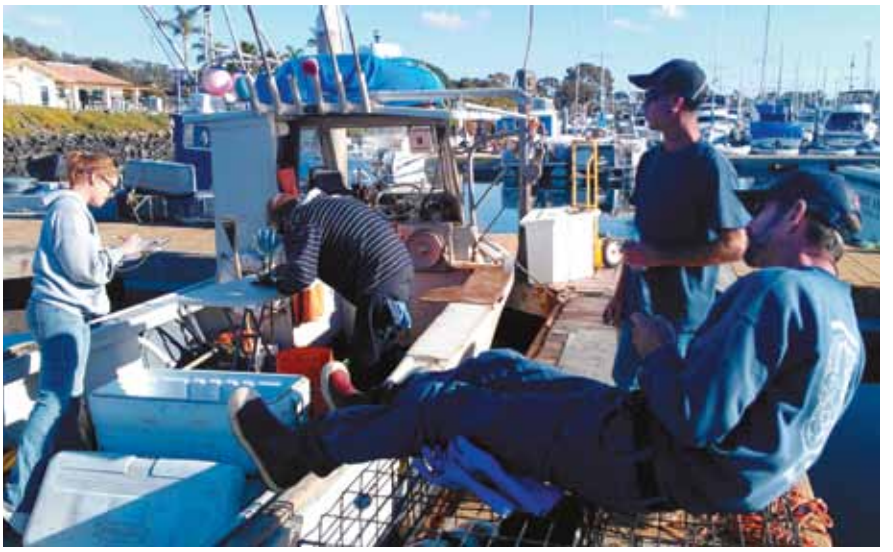
Yet overall, I remained a bit puzzled about the real motivations of conducting such a fisheries science project, because the methods were so liberal and infrequent. The few select harvesters, whose operations spanned Southern California — from San Diego to Santa Barbara — could go wherever and whenever they liked to collect their data, as long as it was once a month, four times in a season. Hence, the scientists placed close to no sampling boundaries to control for consistency across space and time, or overall marine conditions. Did the numbers we

gathered on one random day in a coastal region of San Diego represent the lobster fishery in San Diego or in Southern California as a whole? On a day-to-day, weekly or monthly basis? Seasonally?

Back in port, we sat around the Wild West on a hazy afternoon, waiting for a couple of scientists to show up and verify the data we had collected on our day of trapping California spiny lobsters in the San Diego coastal waters.

We had pulled a total of 87 traps and handled 488 lobsters; 472 were shorts, and 16 were legal.

At last, two dry-clothed and light-haired 20-somethings showed up to the Sportsmen's Seafood dock in Mission Bay with a portable table and a light bag of scientific-looking tools: waterproof spreadsheets, reports, clipboards, calipers. John Law instantly recognized the man as Keith Yaeger and welcomed him and his accomplice, Dana Schultz, onto the boat, so they could proceed in double-measuring the catch of the day. At first, the researchers stared into the ice chest with an awkward pause, seeming hesitant to handle the lobsters. John Law jumped in to provide a brief guide on how to hold and gauge the resource — how to avoid breaking antennas and appendages, as well as prevent the tail from flapping upon measurement with the calipers. Rob Law chimed in with a few tips and tricks.



**Scientists Dana Schultz (far left) and Keith Yaeger (center left) arrive to verify the data recorded at sea while Rob and John Law (right) offer lobster handling tips.**

I was able to slip Yaeger a few questions about this collaborative fisheries program. He first suggested that I speak with Carrie Culver. He also mentioned that the main point of this investigation was to gauge not just carapaces but whether fishermen could collect adequate data samples rather than having to accommodate academic experts, fisher-

ies observers or enforcement officers to gather the same data. In some cases, the scientists would be collecting data on separate boats.

I came to realize that this endeavor was not necessarily a marine science project, but seemed to serve as an exploratory social experiment in building trust between science, management and the fleet.

Yaeger further elaborated that the science team was also attempting to determine the ideal frequency of sampling days per month, so the sampling rate could better represent the fishery dynamic as a whole, and the data could eventually be used to directly inform management decisions within the spiny lobster fishery.

To think that this data could be applied toward fisheries management might easily sway harvesters' information recording patterns toward reporting certain material and not revealing other forms of evidence that could be used against them. Scientists themselves have been observed to skew, withhold or represent data in certain ways in order to fulfill their apparent or tacit agendas and to appease their funding sources. In addition, properties of the ocean can change quickly, meaning that lag time between data collection and shifts in marine management could lead to erroneous decision-making based on obsolete evidence. Even then, if an academic bothered to interview a veteran lobsterman like John Law, he would still admit to feeling mystified by the inner-workings of Neptune and the nature of all his fisheries.

In the midst of all the measurements, Yaeger pulled out a full-color analysis of John Law's previous lobster sampling day in October, the pages coated with tables, graphs, pie charts, histograms, number breakdowns, and so forth. I asked the skipper later, "So how does it feel to receive a sheet of paper that told you what you just did from someone who didn't do what you just did, as if they knew what you were just doing, and also assuming that you didn't really know what you just did?"

"No new info, nothing suspect here on my stats," he smiled while flipping through the summary report. "But once the data's pooled from all the regions around Southern California, I'm sure the numbers will be interesting. And I hope we get a say in their interpretation."

And despite all the possibilities and potential for wariness, doubt, distrust, and miscommunication, here we were, in the middle of two once-disparate worlds, converging on the Wild West. Even with a subtle hue of tense awkwardness, we were all chattering, measuring, learning from each other — conducting a dance of information exchange, perhaps with all of us holding hidden hopes that such an exercise of building trust across the cultures of fishing and science could lead to a common understanding of the spiny lobster fishery, and our overall manners of human conduct with the sea. NF

*With a lens of an Accidental Anthropologist Victoria Minnich dove into Southern California fisheries issues in 2007.*