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Corbett, Michael ~ Oral History Interview

Joshua Wrigley

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Voices from the Fisheries
166 Water Street
Woods Hole, MA 02543

Interview with Michael Corbett by Joshua Wrigley

Summary Sheet and Transcript

Interviewee

Corbett, Michael

Interviewer

Wrigley, Joshua

Date

September 9, 2016

Place

Falmouth, Massachusetts

ID Number

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Biographical Note

Mike Corbett was born in 1940 in Quincy, Massachusetts, and studied engineering at Northeastern University in Boston. He worked as a draftsman as a Northeastern co-op student for Murray and Tregurtha in Quincy, and after graduation worked in industry at General Electric, before moving to Gloucester and working as an ocean engineer for the U.S. Bureau of Commercial Fisheries. He spent 29 years working in Exploratory Fisheries before moving to the private sector again.

Scope and Content Note

Interview contains discussions of: exploratory fisheries, Helgoland Project, Stellwagen Bank, *Delaware I*, *Delaware II*, *Albatross*, channel fever, offshore lobster fishery, creation of wire lobster pots, shrimp fishery,

Mike Corbett gives a detailed account of his early years with the U.S. Bureau of Commercial Fisheries and his work with the offshore lobster fishery and the Helgoland Project.

Indexed Names

Clancy, Tom

Grandin, Temple

Junger, Sebastian

Knott, Jim
McRae, Ernie
Musce, Billy
Newall, Cliff
Prybot, Peter
Rose, Frank
Rose, Frank, Jr. (aka “Young Frankie”)
Smith, Keith
Smolowitz, Ron
Suomala, Jack
Sutton, Derek
Twohig, Pat

Transcript

Joshua Wrigley (JW): This interview is being conducted as part of the Voices from the Science Centers project funded by the Northeast Fisheries Science Center. It’s also a part of the Voices from the Fisheries project that is supported by National Marine Fisheries Service Office of Science and Technology. I’m Josh Wrigley, Project Manager of Voices from the Fisheries, and today I’m speaking with Mike Corbett, at 15 Carlson Lane, where the Social Sciences Branch of the NMFSC is located. The time right now is 9:22 in the morning. Today’s interview is going to range over a number of different topics including exploratory fisheries and the development of the off-shore lobster fishery, shrimp fishery, the crab fishery, and the Helgoland Project as well, among other things. We can sort of jump in here. Mike, when and where were you born?

Michael Corbett (MC): I was born in Quincy, south of Boston, March 30th, 1940. Lived in Quincy for 26 years. Wanted to be an architect. That was out of the question. All I remember is \$5,000. I think probably that was, I wanted to go to the Rhode Island School of Design and that probably, it was \$5,000 for the whole four years, but it was just a number that I couldn’t come up with.

JW: Did you wind up going for one semester?

MC: No, I never even applied as soon as I found out what it cost. I needed a new life plan, so one of the things I knew I could afford at that time was Northeastern University’s School of Engineering, so I went to Northeastern. A little bit of a break, I was, just 17 when I graduated from high school, but I didn’t start college for about three years after that. Then I took a year off in the middle of that, so I was 26 by the time I got my degree.

JW: What did you study at Northeastern?

MC: Well, initially I was studying mechanical engineering, but had a little problem. I caught an instructor, faking his derivation, a thermodynamics professor, faking his derivation on the wall.

JW: That’s pretty serious.

MC: Well, what he was doing was he was working off of notes. He kind of lost of his way and I had equipped myself with some notes from the student the prior year, because it was just post-Sputnik and they didn't know how to teach us. Before that, they were teaching us to be engineers and now they were teaching us, preparing us to be Ph.D.s. So, there was no practical teaching; it was all theoretical.

JW: More theoretical.

MC: All. It suddenly went theoretical and they were lost half the time while they were trying to teach it. But I had, from a previous semester, I had a student's notes so that I wasn't furiously copying and just able to think and try to follow the logic of it. Suddenly he took a jump and he was on another page. What I realized is I looked at what he had done and he thought he was going from memory and he blew it. And instead of telling us, he then turned around and just, "and this leads to and boom, boom, boom." After the class I called him on it. He got rip-shit and he actually chest bumped me.

JW: Really?

MC: Yes.

JW: That quite a response.

MC: Yes. So, I told him he was a cheat and a phony. [laughs] I didn't pull back. This was in my third, I had completed three years. It's a five-year program, so I just instinctively bumped him back and he was tall, skinny, and I sent him flying. He stormed out of the room and there was a grad student sitting in this room studying and he said "you're screwed." I said "I am not." I says "I got this guy" and I says "he attacked me." He says "he's the son-in-law of the head of the department." I went "I guess I am screwed." [laughs] I immediately shot over to the industrial engineering department and said "I've been thinking about you guys for three years and I really want to be an industrial engineer, not a mechanical engineer." So, they said "really?" What do I do?" "Well, just take this paperwork around." In two hours I was no longer a mechanical engineer; I was in the industrial engineering program. But, I had a co-op job where I was doing mechanical design, so I continued as a mechanical designer and designing things like a 2,000 horsepower outboard motor and stuff like that. I never actually worked as an industrial engineer. It didn't matter. I just was a mechanical engineer. But what I got into without realizing it, is I had just finished the three-year math block, I got into two more years of probability and statistics. I didn't need that. But, I did not need that thermal course to graduate.

JW: At that time, did you know that you wanted to do something within the world of fisheries?

MC: No, that happened --

JW: Were you considering all options?

MC: No, that happened quite accidentally. I think really the whole time I was in the fisheries, it was an excellent opportunity to exercise my creative needs, but I was never focused into this sort

of thing. It was just one of those crazy things. I had a spent a total of six years at Northeastern with that break, but I was still within the system. I went to work for General, actually I did go to work for General Electric as an industrial engineer, so I misspoke. They had a special program where they moved you around. It was the MTP, Manufacturing Training Program, and it was nationwide thing with GE. It was a big deal and people had made their careers on it.

JW: Was this at a plant in Boston?

MC: No, what they did is I ultimately went out to Schenectady, New York to start. What I was supposed to do in the program that GE has, you change jobs every year and you move every two years over a six-year period. So, you're working three different locations in GE. By the time I graduated, I was also married and had two kids, and still able to pay my tuition. [laughs] Can't do that anymore. About half a dozen of us got hired on a special program that they said they had created. We were in the same program, but we would stay in the Schenectady area, because the Schenectady area was where it all started. There is a --

JW: Did you make it out to Fort Edward?

MC: No.

JW: The plant there?

MC: No, I didn't. No. Actually, what happened, was I started out in large-steam turbine generator and when I expected to be moved, the boss I was working for was why? Said why? So, the half a dozen of us that had come in on this program found that they never really set it up. We were just regular employees. We weren't out of the program, even though we were going to school at night, a few nights a week, and all of that. So, I, out of the half a dozen of us, I think I was the third or fourth one to leave, and I was only there about 18 months. What I did do, their program was not even the equivalent of an associate's degree in industrial engineering. I had just completed a bachelor's degree. There was all this material that I had already covered in greater depth than they were covering, and it didn't matter. It was like homework, so it was like after six years at Northeastern, now suddenly for now a number of years, I've got to repeat it at an elementary level? And homework just took as long, so I did a thorough analysis of the program, made all kinds of recommendations, and wrote a paper on it and I gave it to my boss. My boss read it, sat down, and he says "I want to tell you, this is one of the best insightful reviews that I've ever seen in the program. You really understand it. You've really appraised it well. Burn it." I said, "what?" "Burn it." He says "there are people at the top that built their career on putting this together. No one wants to hear this." [laughs]

JW: Was that a response you had anticipated?

MC: No, I was shocked, because I wanted out of the academic part of it, because it was a total waste of my time and I was burned out already from...engineering school is a 70 to 80-hour affair, and you do it for five years, you don't even want to read a book anymore. I just went home and I didn't burn it, but I never did anything with it. Then I called a little firm in Connecticut that was advertising for engineers. Hiring of engineers and technical staff, it's like

following a market. This week, you could get 20 companies that wanted to talk to you and next week, nobody's hiring. I entered this strange world of everybody wanted me, nobody wanted me. Everybody wanted me, nobody wanted me. It was a little frustrating.

JW: Was that just correlated with economic downturns?

MC: Not even economic downturns, but it correlated with basically like following the market. You had a bad day at the market, all stocks dropped 5%, nobody did anything until the next day. So, it was an extremely erratic and confusing world. I had always lived on the water, on the ocean, so I was claustrophobic in Schenectady. So, periodically every few months I'd come home and say "you want to go visit your mother to my wife" and she'd go, "oh, yes." We'd hop in the car and four hours later we were in Quincy and we'd spend the weekend there and buzz back Sunday night. One time, I guess, I must have had a few vacation days, vacation time, but I had been in the school so long and a commuter school, that I had developed relationships with a lot of the staff and we carpooled together. So, I dropped into Northeastern to just meet up with my old carpool buddies. They were all staff members of some sort. I was having coffee with them and said "how's it going out there", and I said "I'm getting out of there, you know?" "Oh, really?" Every school has an office where basically you can go look for a job and companies will say hey, we're looking for engineers. So, one of the guys said "come on up". He says, "there's this fisheries company in Gloucester, they are looking for an engineer." I'm, "well, all right, I'll go up." Because Gloucester was my mother-in-law's hometown and like Quincy was considered trash, so from the time I was 16 years old when I started dating my first wife, I was back and forth to Gloucester with her. So, Gloucester was like, live in Gloucester and have a job at the same time? I go up there and when I go down, I made a phone call, sure come down. I didn't even know it was the government. So, I came down and talked to them. Realized it was the federal government. I was offered, they offered me a job.

JW: Who was your first contact at the Gloucester base?

MC: He was the Deputy Director, Ernie McRae. He was a very interesting man. He had a degree in biology, but then didn't use it. He'd went out and was a haberdashery salesman for most of his life. [laughs]

JW: Really? Interesting.

MC: Well, and then later on, he said "I'm going to get old one day and I need some kind of way to survive in my old age", so somehow or other he said hey, I'm a biologist, then the Bureau of Commercial Fisheries, under Fish and Wildlife Service, he got hired and went up through the system. So, when I walked in, he was a GS-13 and he was the Deputy Director. The Director, Keith Smith, had been off on a special assignment for about six months and somebody from the West Coast had come over and filled in and was the Director. As in many organizations, the director, Keith, he was pretty much an outside man, so Ernie was the inside man. It's very common.

JW: How old was Ernie at the time?

MC: I would say he was in his 50s and one of his greatest talents was he was a chain-smoker and he could smoke an entire cigarette and never flick the ash off and he could walk around with an ash almost the length of a cigarette. Of course, his three fingers on his hand were completely yellowed up, and he did die of lung cancer. He was a man in the background, but he was a thinker and he probably has never got credit, because he never had his name on anything. But, he was a great guy to work for. He was a thinker and an innovator. He's the man that drove the lobstering and offshore lobstering, all of that. He hired me about a week before Keith Smith came back, and I think he did it because he was afraid when Keith came back, Keith would go, "wait a minute, we have to start this all over again because I'm in charge again." [laughs] I was in. First thing, they did was they sent me out on the *Delaware* my first week, just for a short trip. The original *Delaware* was a circa 1937 beam trawler and a rough, rough sight. For the entire crew and the science crew, there was a single toilet bolted to the floor right beside the seven-cylinder Fairbanks Morse in the engine room. That was the only toilet for everybody. It was pretty tough living. I got off that cruise --

JW: That sort of epitomizes multiple-use conflicts.

MC: I got off that cruise and said "what the hell have I done?" [laughs] I immediately started, because everything happened so fast, I immediately started, I said "geez, I've been here a couple weeks, this doesn't even have to exist on my record. I'll get the hell out of here" and there's all these companies that were still telephoning me up until a few, a couple of weeks earlier and I said "I'm just going to start answering and continue interviews. This was a bad idea." Well, no one suddenly was hiring. [laughs] It was always "well, I'll stay here because this is a good deal, because I don't have to pay Social Security while I'm here and when I walk away, they'll give me all the retirement money back, and I'll still have my 40 quarters when I retire." In fact, I actually had 40 quarters before I went with the government, but I didn't realize it at the time. I was stuck, but I kept saying "well, I'll try and get out, I'll try and get out." Over the years, I ended up with a number of job offers, but was always one of those things where not a good time. I can't pull my kids out of school. I can't do this. You know? So, time and time and time went by and 29 years went by in total. I took an early, a one-year early out, and it worked with our life plan. I was now with my second wife, who I had met in Woods Hole. I have two children by my first marriage and nothing was happening and we weren't getting anything, so I retired after 29 years of federal service, taking an early out and about a \$2,000 cut in my retirement benefit, and went to China and adopted a little girl. So, she's 20 now. It worked out well. Actually, when I left GE, GE was a very forward thinking company and I had a better retirement system and a better benefit package in GE than I went to here in the government. The only trouble was, as a member of management, I had nothing, no protection of any kind. I watched other managers get totally abused. Guys that worked on the weekends and you worked for a salary, so you weren't an hourly worker, put in enormous hours and planned one of these big trip to Disney vacations with the family, of course, and then got told on Friday we're going to need you next week. What do you mean? No.

JW: This was GE?

MC: This was GE. Here you are, you've been the most devoted guy in here, you're working all kinds of hours, you're making these sacrifices, and if you don't come in Monday, don't come

back. That was the world of management, lower level management. I went "oh, these guys are abusing a lot of people. They haven't abused me yet. Told me a few lies to get me here".

JW: But you could see it coming?

MC: Oh, I went this is not, so I go with the federal government and my coworkers, first-level management people, going it's so unprofessional. How can you go there? You earn like two hours a week of vacation time and you earn so many hours of sick time? Professional people, it's arbitrary as to whether or not we get it. Why would you want to leave this system? I'm going "I don't think I can explain it to you if you don't understand what you just said." [laughs]

JW: When you first got to Gloucester, then, you had to take that trip on the *Delaware*. Was that standard practice for --

MC: Well, it wasn't that many people hired. It was a small thing and it just was a good little introduction. Normally, you'd be out for about three weeks on an average trip, 21 days, and you do a six hour on/six hour off, which is not usually what an ocean-going type of timing is, but it's what we always did on our ships. What you do is you go through two sleep cycles every 24 hours. The actual time that goes by is immaterial. You go through 42 cycles in 21 days, so it's as if you're out there for 42 days instead of 21 days. When you're coming back in again, you get channel fever. Channel fever is there's no stopping, because oftentimes you'd be out for 21 days and you knew when you were coming back in again and you'd get a call from somebody in an office and "we want you to go over to do something else and it'll only take two or three days." No. Somebody of the crew would sabotage, dump all the fresh water. They would do something to sabotage the ship so we had no choice but to go back in. Then, the anxiousness to get off a ship was fascinating to watch because the crew would all be on deck with their stuff and as we'd come up to the pier, they would throw their bags some 20' to it, and then when they could physically make the leap, they would run across the deck, hit the rail with their foot, and vault to the dock.

JW: Before the ship had even tied up?

MC: Oh, no. It's still moving. It's still moving. I'd control myself and be up in the pilot house, but my bag was all packed and I was right behind them, but I would watch some of these guys make these leaps and they weren't young men, either. When they hit the dock, oftentimes they would do a body roll. [laughs] Get up, shake themselves off, take their bag, and while we're tying up, they're getting in their car and they're gone. Channel fever. You don't fight it.

JW: What was your first assignment coming to Gloucester?

MC: I almost didn't have one in that find your way around type of thing. It was frustrating because here I was, I had a mechanical engineering job, and what I really wanted to do was to go somewhere and apprentice to an older engineer and kind of learn the real world from him. But instead, here I was a year and a half out of college and I had, had a technically office, I was doing things like work measurement and work study types of things, so totally unrelated. So, I started, there was a magazine, *Machine Design*, probably still exists, but it's a mechanical

engineering type of magazine. I already had a free subscription to it. It's one of those magazines you didn't pay for, but good size. I think I went through there and I sent out information because I became a catalogue collector. It's kind of, among engineering, it's a derogatory term to be called a catalogue engineer, because you --

JW: What does that mean?

MC: What that means is that a lot of companies that have produced products have a very technical catalogue, and the catalogue usually gives you a lot of the engineering information that you need in order to specify the right version of their product. So, in reality, you have to work from the catalogue to understand what's available and you're putting things together. You're not designing. You buy a gear box that's appropriate it. You don't design the gear box and the gears, teeth, and everything else. Although, I did basically that for five years of co-op as a mechanical designer of heavy duty industrial outboard motors. Basically the kind of thing you put on a Mississippi barge and drive it up there, and on the Great Lakes, all the ore-carrying boats we put just the bottom end of our outboard motor. You'd be swinging an 8' prop and you bore a hole right through the bow of the ship and you put that in the middle and it's a bow-thruster. Now, this ship has such maneuverabilities that these ore carriers that couldn't --

JW: So, they had propulsion from the bow as well?

MC: Well, what they've got is steering from the bow. Enormous amount of bow steering in addition to the ability to power from the stern with their propellers. What it allowed the ore carriers to do is they no longer needed a tugboat to dock and undock, which they now could operate independently.

JW: That's pretty revolutionary.

MC: Well, it was and it wasn't. It was very slowly over time. In fact, that company that I worked for in Quincy, Murray and Tregurtha, was sold out, because they gave me the best job offer when I graduated, to stay there. [laughs] Because just with the time I was there and people dying and people having to move into other jobs, as a senior at Northeastern, I was their Chief Designer. [laughs]

JW: Right out of college.

MC: I was still in college. I was still in college, but I was the Chief Designer. I designed the biggest, well, we designed it for 2,000 horsepower. We over-engineered everything, so I just designed a big outboard motor system from scratch that we called it 2,000 horsepower unit, but we could probably put 4,000 horsepower through it. This was a 6" drive shaft, if you can imagine. [laughs] On your car, you're down to here, so it was a big animal. I don't know that it ever got built, because the company got sold and it's now, it still exists, but it's in the Great Lakes, the Great Lakes area. So, I had that kind of interesting background, so I was comfortable on the waterfront and I was also not formula driven as a designer, because there are so many design formulae, like you're trying to design how strong this or how thick this component can be. And I realized right off the bat is that what a ship is towing along and the ship itself may be like 1,200 horsepower and it hangs up on something, there's no way to calculate what the load is.

It really is. There were so many variables. One of the things you do when you're designing for the ocean, in the ocean environment, is that you design in the weak point. You create a weak, you purposely create a weak point so it will fail in a non-catastrophic way and it won't kill anybody, because that what I --

JW: Like the principle of having a sheer pin on a propeller?

MC: Exactly. Right. Yes. So, I always had a sheer pin designed into anything I did, but I still would have to design systems and they would have to go right out and be used. Like the auto industry designs next year's car and they fine tune it and fine tune it and fine tune it, and no, I only had one chance. I would go out with the first time we'd use a particular set of equipment or gear and I would just, my heart would beat, because I would have to anticipate is how many ways people could use it in the wrong way. And, I had to not forget anything. I never killed anybody, but I cost one guy his finger because I did not anticipate something, so there was a weakness over my overall design and the wire slipped out of the [UNINTELLIGIBLE PHRASE], well, it really wasn't --

JW: What device was this?

MC: Actually what it was is they were building the *Delaware II* when I was hired. That was still under construction. It was supposed to be the first stern trawler in America and we took so long to get it built that a commercial company came along with a stern trawler. Europe was ahead of us, technically, technologically, but we weren't. Then somebody would say we want to do some exploratory work, clam dredging off New Jersey. This is a stern trawler now and that's what it's designed to be. Set it up for clam dredging. Okay. So, I had to build this big ramp and come up with it. Normally the way they did it in New Jersey commercially is they just hauled the thing in the air on the side of the boat, brought it in and had a chain bag, and they emptied out the clams and dropped it, but the *Delaware* was designed so that the working deck, the working deck of commercial boats was --

JW: Had those been eastern rigged vessels that were hauling up the clam dredge?

MC: Yes, early eastern. Basically, everything in the East was done from the side, but network reels were being used on the West Coast and hydraulic were being used on the West Coast, while the East Coast was still chain driving everything and as a what we called follower, a tensioner, on the chain, the East Coast people were using blocks of oak that they slid underneath and the chain rolled over it and then they kept moving the oak and when you wore it down, you stuffed another piece of oak in. It was so primitive. So, one of the things I had to learn was commercial hydraulics, which my education didn't help me at all.

JW: What years were you working on the clam dredge?

MC: Late '60s. Late '60s, because I did that out of Gloucester.

JW: This was before the *Delaware II*?

MC: No. I did all the dredge work and I created a system to haul the dredge up on the stern on the vessel, so I had this big --

JW: Just for regular commercial vessels?

MC: No, no. I was just for our purpose because our vessel didn't look like any commercial vessel. The *Delaware II* was naively designed vessel. The working deck was on the second floor, in a sense. [laughs] On a commercial vessel, your working deck was literally water level and you had, sometimes as you worked on deck, the water would wash through as the boat rolled and you'd be in a foot or two of water depending on how the seas were running. We had a working deck that was like 15' off the water.

JW: Did they eventually change that?

MC: No, no, they never did. I mean that was the only way it could be. Also, the *Delaware II* had a stern ramp and it had a door that came up and closed it off. What it had was the pilot house was even higher and the winches were forward and the wire, so you were able to haul the whole net right through to the winches. But, what you did is you opened up the entire vessel, the whole length, so when you design a vessel, you create a model and then you put the model through different tests. On a following sea, they sunk the model. [laughs]

JW: Because the vessel was so -- [overlapping voice]

MC: Well, what would happen is the water on a following sea, the water would come right up the ramp and like a tsunami, it would go right through to the bow of the ship, drive the bow of the ship down and sink the ship. So, the ramp on the back was to keep you from sinking. [laughs]

JW: I guess they never had a mishap like that during [OVERLAPPING VOICES].

MC: No, no. In all the time that I was involved, which was mostly for the 12 years. They took delivery in the first year that I was there. It was an unusual ship in itself, but I re-rigged it for lobstering potting, I re-rigged it for clam dredging. We designed it as a bottom trawler, but we went mid-water trawling with it.

JW: Mike, I was going to ask you before, how much of a challenge was it to go from designing engines to fishing gear?

MC: What it comes down to is problem-solving and it's just another problem. It used to be very frustrating because I was always working for non-engineers. I remember when I was down at Woods Hole, they came in and they said "we've got this Helgoland project. We want to be able to do a hydro-acoustic assessment experiment and we want to use saturated divers living on the bottom." What they wanted to do was take a simple experiment and make it super-complicated to give divers a reason for existing. [laughs]

JW: Yes. Just as a bit of background with the Helgoland experiment, this was in response to Soviet data that was --

MC: Yes, a lot of things --

JW: --hydro-acoustically collected, right?

MC: Yes. They said they did. From where we were coming, a lot of things came together right around 1970. NASA had put a man on the moon and they didn't know what to do next. MIT was full of a bunch of Ph.D.s walking around trying to figure out how they were going to justify their salaries, so a bunch of people started saying the '70s is the decade of the ocean and a whole bunch of terms started to get freely used. And MIT and others were just coming down wanting to help us. So, a guy named Jack Suomala, Dr. Suomala of MIT, he headed up the hydro-acoustic assessment project. I remember them walking into my office and telling me they wanted to do all this and basically what they wanted to do was to bounce sound waves off of the fish as it moved up and down in a water column, because for most of the commercial species, they have an air bladder and that air bladder changes size, depending on what they are in the depth.

JW: Was this basically similar to sonar then?

MC: I don't know because my bag wasn't the hydro-acoustics end of it. My bag was to figure out a way for them to do what they wanted. They came walking in and said, the question for me was "we want to do this. How long will it take you to make the drawings?" I said "oh, a week or two." They said, "oh, fine, and they walked out." I can't even remember who they were, but it was about three of the front office types. And I said, "but, it could take months for me to figure out what to put on those drawings. What you're asking to be done requires the creation of equipment. You're asking to do something that's never been done before and equipment does not exist and a methodology does not exist, so I've got to figure out how to do it and then I've got to design equipment to do it. I won't get to the drawing stage for a while." Yes. [laughs] "Hmm" and out they walked. But they had no concept of the design process. None of them did that I worked for. You don't just sit down and draw something. You have to do a hell of a lot of engineering and creative thinking. I call it the staring at the blackboard time, because I have a probably a good natural ability to visualize and that has been honed through practice, but I can sit here and stare at that wall and it's not blank for me. I can do some pretty complex sketching in my mind and it's all there, it's all real. I can even work dimensions off what I'm seeing in my mind that I'm projecting on the wall. Something that Temple Grandin did. She didn't understand it's a function of creativity; it's not a reflection of her illness.

JW: What was the specific request then that they tasked you with?

MC: I'm not sure. In my mind, I relate it to the Helgoland project, but I'm not sure. There was really a number of projects that I got involved in, some of them were little throwaway things like I mentioned the tow under water benthic sled. That was a quickie.

JW: With the Helgoland project, I think you mentioned before that it turned out, I mean that the final design of what you made was an elevator --

MC: Yes, about a 100-foot elevator.

JW: -- where there was diver inside it. [OVERLAPPING VOICES] --

MC: No, no. There was only a fish.

JW: A fish Inside it?

MC: There was only a fish. There was a big round plastic, well, the elevator was plastic tubing, hydro-acoustically transparent and rather fragile, and it always was probably about 6' in diameter. A little taller than this room. What I had in it was, I had done some studies and I had designed a corset for the fish and then all with leather, fine leather twine, because the leather was also hydro-acoustically transparent in that --

JW: So that sound waves could bounce off of it?

MC: No, it would go through it. I anticipated putting the fish in this harness and then strapping the fish into this 6' thing and then there were devices to bounce sound waves off this fish as the fish was raised in the water column.

JW: So, you could control the fish's motion as it went --

MC: The fish, actually what happened, it was great pictures, is the fish was entirely comfortable in this and the fish would move along just as if it was swimming.

JW: Even wearing the corset?

MC: With the corset, never making any forward motion, always staying right in the middle of the elevator. So, the elevator was completely empty. It was just this tubing, but it was all --

JW: How did you keep the fish in its' stationary position as it moved up and down in the water?

MC: It was tied to the plastic tubing.

JW: Just with monofilament lines?

MC: Yes. I don't remember. We may have used leather, fine leather, twine. I don't remember what we went out with, but it was some outfit in Hingham. When I designed something, I go I just want a second opinion, I want to think about it. And there was some outfit in Hingham that did some acoustic testing on different materials for me. They came back and said "leather's beautiful." [laughs]

JW: What was it about that material's properties?

MC: Probably that it was organic material.

JW: Just regular cattle hide leather?

MC: Yes. Shoelaces.

JW: I'm trying to imagine this fish wearing a leather vest now.

MC: It was a very light corset. It wasn't all wrapped. It was just very light weight, a couple of strapping across in a couple of places tied together.

JW: I guess it must have had the elasticity, then, to allow the swim bladder to enlarge?

MC: Actually, the swim bladder enlarges in the fish. The fish doesn't necessarily blow up, but yes, it did. There was almost nothing restricting the fish, so what you were seeing acoustically when you looked at it was just the fish. What we want to do is see the difference in the signaling as it went up and down, because in the international negotiations with the Russians, they obviously didn't send over their hydro-acoustics specialist so they were kind of well, we think it works this way; we think it works that way.

JW: This was information that they had presented to ICNAF [International Commission for the Northwest Atlantic], I guess?

MC: Yes. From our standpoint and what they were saying is with hydro-acoustic assessments, the Russians were claiming that they were determining school size, species, and relative sizes of the fish, all kind of science fiction from where we were coming from.

JW: So, this seemed implausible to do at the time?

MC: Yes. Implausible, but we didn't have any data or any information to back it up. So, the principal reason for it was so that we could go in and negotiate, because the Russians were saying oh, lots of fish. Much more than you're saying, because they wanted --

JW: This was pre-1976, pre-FCMA [Magnuson-Stevens Fishery Conservation and Management Act]?

MC: Yes.

JW: Still fishing in U.S. waters?

MC: Yes, they were fishing within 12 miles, but we were involved. We were early détente activity. Huntley-Brinkley was the newscasters of the day and they would report that the Russian vessels were seen within 12 miles, close to the 12-mile limit. Every Russian vessel was a spy ship, as far as the news media was concerned. [laughs]

JW: Still those Cold War tensions.

MC: And we were aboard them and they were creepy places. It's kind of hard to relax and eat your breakfast there's a picture that would cover that entire wall of Lenin. [laughs] Staring down at you.

JW: I guess that doesn't help your digestion.

MC: No, no. And the toilet facilities were worse than what was on the original *Delaware*. [laughs]

JW: Wow, that's saying something.

MC: Oh, yes, yes, and there wasn't any. What you had, if you can picture the submarine movies where as they move through a submarine the doors with the big wheels and then close them behind them, all these watertight. Well, you had this room that was oh, less than six, probably five by five square, and it had a great big wheel on it. You opened this watertight door and you went into this little room and there was a hole in the floor and there were two raised platforms the size of shoes. You stood on those two things and you had a handle on either --

JW: There was no seat?

MC: No seat.

JW: Really? Wow.

MC: It had a handle on either bulkhead and you basically did what human beings were evolved to do, you squatted over this hole.

JW: I guess you had to hang on then because you couldn't just maintain --

MC: Well, the boat's rolling at the same time.

JW: It could get messy.

MC: Well, if you don't squat enough, you know, you fill up your left shoe rather than the hole. [laughs]

JW: Sounds pleasant.

MC: I did my best not to go out on those things, but that was an interesting period because as soon as the Russian vessel left, the suits would come down and we'd all be debriefed because they wanted to know who the Party man was on the boat. If you saw the movie *Red October* or read any Tom Clancy's stuff, Clancy was an interesting character. I had a lot of thinking about him because I spent the last 15 years of my career, working career, designing, not designing but developing weapon systems for the Air Force. A little diversion here, but one of the most common ways secret information is learned by an enemy is a collection of information that's not

classified, not secret in any way and putting the picture together and concluding the secret information from all the other information they have. Clancy was a master at doing that.

JW: That synthesis.

MC: And he had contacts all over the place, so he was in the middle of the defense world. I remember reading a novel of his and turned a page, and he had a conversation going on between the main character and some colonel in the Pentagon. They were friends and just chatting. In the conversation, they alluded to some secret information; didn't reveal it, but if you knew it, the hair stood right up. [laughs] I went "whoa! He knows. He knows." But he was investigated right and left because they were convinced that he was, people were telling him secret information. He was just a master at concluding.

JW: The Russians, now, to go back to the Helgoland experiments, when you tested the elevator with the fish in the water column, what were your findings there? Did they contradict the information that the Russians had provided to ICNAF?

MC: The Helgoland project was a complete scientific failure. There never was anything done.

JW: So there were no tests or anything?

MC: There was a desperate attempt because we had a termination date for it. The whole thing took place over a three-month period in the fall. We had the Germans, it was their habitat. It was just us and the Germans doing most of the work.

JW: In Gloucester or --

MC: It actually was out of Rockport.

JW: I know you said it was 125' of water where the shaft was located.

MC: It was on Stellwagen Bank. But we had Russian participation, so we had Russians onsite, who pretty much acted as observers. We had a group of Polish guys that were just, I never met a Pole I didn't like. These guys have been beaten up for a millennium in the middle of, just invaded from one side or the other continuously. These guys, nothing --

JW: A real international crew?

MC: Yes. They're unflappable. I mean there is nothing that you can do to a Pole that he'll blink. [laughs] They were great guys.

JW: When did they terminate the experiment then?

MC: What happened was --

JW: And why didn't they do any actual testing?

MC: What it turned out to be is, was it turned out to be an enormous exercise in human survival. It was a seven-day a week job. We were onsite at like 5 o'clock in the morning or something like that and we came in --

JW: Having steamed out to Stellwagen?

MC: Yes. What we had to do was we had surface divers who had to go down there and replenish almost on a daily basis the oxygen tanks that were necessary to provide the air to the saturated divers that were living down there and running the winches.

JW: How long were they down there at a time? The saturated divers?

MC: I can't remember. Enough for some of them to go batty. It wasn't the only situation. There was a history in the islands to the south where there was a similar extended saturated area and there was some serious, serious mental problems occurred in that. I saw some of that.

JW: Was that from decompression sickness or other effects of breathing those gases or?

MC: No, I think it was...I'm amazed how well the astronauts do in the space station, because it's a similar situation. I think it's just a mental thing of being 125' under water and you can't leave that place because if you go to the surface, your brain explodes. It's messy. In setting this thing up, in one of the initial surface dives down, we killed one of the Germans.

JW: Really?

MC: Yes. He came to the surface and was flopping around. We pulled him up and he just flopped around on deck.

JW: He got the bends?

MC: He got the bends and he died right there on the deck. What had happened is we had multiple lines coming up from the habitat, buoys, we had to be able to find it every day and not lose it. There were lines with big ball floats holding them up, but there was some kind of rigid line that also came up as an air vent of some kind. It looked a little bit bigger, maybe about the size of a rope. What happened is two divers, an American and a German, were ascending and there was about 20' seas running or less, but it was enough of a sea running. So, what happens as you get near the surface is as the sea is running across the top of you, when a trough comes over the top of you, it's as if you instantaneously went up, say, 10' or 20', whatever the distance is from the top of the last wave and the trough that followed it. What they were doing was guiding themselves up holding the rope. Well, what happened, is the ball will move like this, it keeps you the same distance down from wherever the ball is. The German diver grabbed hold of the, just subsurface, reached out and grabbed hold of the rigid air vent or whatever it was, and a trough came over and it was if he suddenly shot up.

JW: Kind of lost his grip and then --

MC: No, he didn't lose his grip. Instead of bobbing up and down and staying the same distance below the surface of the water, he in effect didn't move. He did not move.

JW: He ascended inadvertently because he was in a trough. Yes.

MC: Yes, he not in fact, but in terms of the pressure he was in, it was as if he had instantaneously ascended 10' or 15' or 20' --

JW: That must have been huge waves.

MC: Oh, there was pretty serious out there. We had a power plant that was out there on the surface that provided power and generation and everything below, and it had a 671 diesel on end inside it. It looked like, um, add a little bit to it and put a light on the top of it and it looked like a little miniature lighthouse that we had out there. There were times, I mean, we had no choice. We had to go out no matter what the seas were. There were a couple of times where it was close to hurricane conditions and the power plant went out. So, we had to go out. Divers, they had to somehow get from the boat onto the power plant, get it running again. It was such an exercise in human survival --

JW: What year was it again?

MC: '76. That it was an embarrassment towards the end and it would desperately we were trying to collect any data just so that they could say we have data. And we were down to the last day of the project and we were desperately trying to do it, and I had designed an enormous plug in a watertight box with watertight fittings and that floated above along with everything else. The MIT Ph.D.s would go out, like an afternoon cruise, and they would hook the plug and they would plug in and it plugged them into the entire array down below, then they could collect data. There was always --

JW: This was the hydro-acoustic data on the fish in the tube?

MC: Hydro-acoustic data and then they would run the experiment.

JW: So, they did wind up getting some data, I guess?

MC: No. The last day they drifted, they hooked up and they were all ready to do it, it's the last day, it shuts down, and I forget why it had to shut down that day versus some other time. I don't know what the restriction was, but I think what happened and I'm not sure is they drifted off station. Started stretching and they parted a the wire. [laughs] They weren't able to stay on station and broke the connection. That was it. So, there was never any data. Never any data collected. And it was at that time considered to be horrendously expensive; it was a million dollars that was spent in those three months.

JW: Now it's a drop in the bucket.

MC: Yes, but that was like, wow.

JW: A lot of money.

MC: A lot of money and an embarrassment for, there was never any papers written. There was all kinds of, like, from MIT "well, we're assessing things" and stuff like that and it just kind of disappeared. It was really a terrific education in survival because the surface divers, we would go out there and they had, we would have the boat full of divers because a diver only had, there were different dive tables published by different organizations. I think we ended up using the Navy dive tables, but it was like as little as six minutes on the bottom. That's all they could spend on the bottom each 24-hour period.

JW: So you had to cycle through quite a...?

MC: We would be there on station because we would not come back maybe until eight or nine at night, so we were on station and the divers were in the water and they were down. They had to swim down and replace an oxygen tank and then if that diver didn't quite finish, wasn't able to finish the job, he had to come up and somebody else had to finish the job, so we just burned divers. They were having some serious emotional problems because it was so dangerous that, I mean, they were going to --

JW: How many lives were lost ultimately?

MC: Just the first guy. We were prepared after the first guy. What we had right there at the dock was a, no actually, we had it on the boat. Excuse me, we had it on the boat, but we had a couple of mini-pressure chambers, where the person could lay down and a second person sat at the head of them and you were completely enclosed in this cocoon and he could work with the person, do whatever he could do. Both of you were compressed during that session. Well, you were in a controlled environment because somewhere part way through the project one of the divers, Cliffie Newall, who had transferred down from Maine, came up from a dive and then just collapsed on deck. We knew he had the bends, so we threw him into the, I wasn't there that day because I was manning the radio back at the hotel. We were in radio contact with everybody. So, he collapsed on deck.

JW: I guess they got him back?

MC: Well, what they did is that I had a pickup truck. Not many people drove pickup trucks around then as their passenger car. So, normally we came in, anyway, they came into the, what they did was they called in. They said "Cliffie's collapsed, he's got the bends, we've got him in the thing, we're steaming in." So, what I did was, I had my pickup truck with me and they were coming into a different dock than they normally did because it was the closest and the straightest shot, and it was in Rockport. I called the Rockport police, told them what the situation was, told them that I was going to be speeding through town, and I wanted a police escort. [laughs] And I was heading down to this dock and I would be in a red pickup truck and I needed an escort. Then we took Cliffie to the hospital in Gloucester, so I called the Gloucester police and I says meet us at the town line and you pick up. I just don't want anybody to stop me. It was late at night

anyway, but I just, and then what we did was they grabbed Cliffie and everything and they slid him in the back of my pickup truck and we lashed the whole thing down and I shot to the hospital. And the hospital was ready. I called them, but fortunately it was a very minor incident because later on, about 10 o'clock at night or 11, Cliffie was walking around with a beer in his hand back at the hotel.

JW: So, it turned out.

MC: It turned out very well and as far as anybody knew at the time he didn't have any permanent damage.

JW: During this time were you also working on developing the traps used in the offshore lobster fishery?

MC: That preceded. That was work that was done in Gloucester prior to out being transferred to Woods Hole. That was what I walked in on.

JW: When you first arrived?

MC: When I first arrived, this was --

JW: And what year was that again?

MC: That was in '67. '67.

JW: Why was the lab interested in an offshore lobster fishery?

MC: Actually, the highliner out of Gloucester was the ship the *Judith Lee Rose*, owned by the Rose family, a fishing family; multiple generations. Frank Rose was the patriarch of the family at the time. He was the skipper of the vessel. He was trawling for lobsters, something that is almost counterintuitive. And, he was actually bringing in two catches. You have to land lobsters live, but his trawling process killed half of them, so he was bringing in cooked lobsters, because they'd cook them when they died and he was selling those --

JW: You mean they'd boil them right on ship?

MC: Yes. So, he was selling those and that didn't happen. It didn't exist. But, in his recorded catch that he was able to land, he was making more money as a highliner, he was the biggest money-maker. He was making more money landing lobsters. There was evidence that there was a significant lobster population off the edge of the continental shelf.

JW: He was dragging way out there?

MC: Well, where they fish are in what we call the canyons. The canyons are like the Connecticut canyon is the outfall of the Connecticut River. It's a big canyon and then it just falls off the edge of the shelf, where it gets steep. There's other canyons and some of them are

historical canyons that really were cut by ancient extinct rivers as the glacier melted. I believe that they stayed open because of the intrusion from the south of the Gulf Stream as it comes up.

JW: Constantly scouring them?

MC: Constantly running water, very warm water, as much as 80 degrees on the bottom. I've seen that. All government vessels used to be required to collect bathyal thermal data for the Navy. The Navy wanted to know a whole lot about thermoclines and where they were and how they worked. It had a lot to do with where you were in the water column. You could be relatively invisible, I guess, to the enemy in your submarine. So, what we do like, I think, every four hours is would drop this little bomb over the side and the bomb had a fine, fine copper line on it, a couple thousand feet of it, maybe, and you had a collector on the wall, rolling piece of paper and all this stuff, and what you would get is this sort of thing, then bang, halfway down the water column it'd shoot over, because the water doesn't mix. You've got different temperature waters -

JW: Across the thermocline?

MC: And you see it cross the thermocline and then, you know, it'd be like this and then bang, when you get to the bottom and [WHISTLES], shoots over. I'd look and I'd go 82 degrees? 82 degrees, wow? That's why it's --

JW: You must have some thermal events down there, as well.

MC: No, no, there's no thermal events, but you've got an enormous amount of organic life down there. The thermal events only really occur in the mid-Atlantic trench and anywhere else where the tectonic plates are moving around. So, yes, those are very hot so you've got all these interesting life on the bottom.

JW: The research lab, I guess, must have realized that there was this lobster population living off shore [OVERLAPPING VOICES]?

MC: We understood it. We understood it and Young Frankie, known as Young Frankie, he was older than me at the time, and he died a couple of years ago, Frank Rose, Jr. He was very interested in potting for, so I got to give the Rose family credit for coming to us. So, every night it seemed right about 4, 4:30, I guess, when we would normally be done, is Young Frankie would wander in and went to Ernie's office and they would sit there for a couple of hours and chat about can this be done and how would we do it? Gradually, I got sucked into it. [laughs]

JW: Setting pots off shore?

MC: The idea that we would actually set pots off the edge of the continental shelf in what's a hundred fathom of water, we pretty much knew from work we were already doing. The normal curve peaked at right about a hundred fathoms. What we did is a lot of study to just see how big that normal curve was, whether it was skewed one way or the other, and trying to define around that hundred fathom mark what was the most lucrative depth to be fishing the lobster. So, Frankie, he eventually bought a trawler and I worked with him and we outfitted it as a potting

vessel. Other than a few pictures of me, quite heavy, [laughs] black and white pictures that I think I have somewhere of me with a tape measure walking around Young Frankie's vessel, that's about the only record of it. I mean, I just went over and that's how we worked. And I worked with him and initially in collecting all these catalogues, I also had a barrage of salesmen that would come visit me because maybe they could sell me something; I had asked for a catalogue. One of the things I had got information on were these, well, in supermarkets things like that, you see these trackways. It's a bunch of rollers that go over. You move stuff around in industry all over the place and I thought "whoa, there's a way to slide lobster pots all over the place", so I outfitted Frankie with all this stuff that you would normally have in a supermarket.

JW: Would those just be on the deck, sliding pots?

MC: Yes, we just put them on the deck so you roll them and create paths and stuff like that, but the trouble was they weren't designed for a saltwater environment so everything rusted up very quickly. Later on, I just, in rigging out the *Delaware* at different times, I just went with three pieces of pipe running like this and with the water and everything else, a guy'd just walk it. Three pieces of pipe and he walked between them like that. Because the other problem was the guy's feet, he couldn't walk across the roller; he had to be off to one side, but not a good idea. Not one of my best.

So, Frankie went out there and it was an argument as to who was the first commercial guy out there. While we were doing out development work, there was a minister and I was trying to think of his name the other day, but he got into offshore lobstering and he was very secretive, and everybody was very impressed because he had a \$100,000 backer for his lobster operation from John Hancock. That was impressive. He had his ship completely encased in a big tent; everything was very secretive and he had his --

JW: He was a minister in Gloucester?

MC: No. I don't think he was a practicing minister at this point, but he had been and now he was lobsterman. I don't have firsthand knowledge, but in a conversation with Keith Smith, he said "oh, we taught that guy everything he knows. He came to us and we took him out on cruises and showed him what it was and then he went off." In fact, Yankee magazine did a great big spread, great big story that was all about how he had created everything, this minister, and it was a complete work of fiction.

JW: How did the offshore lobster traps differ? Can you talk about their development?

MC: Well, the offshore lobster traps, well, they were bigger. Basically, they were much bigger.

JW: How big are we talking about?

MC: We're talking, I've forgotten how big. I think they probably commercially they might have shrunk in size, but what we started out and worked with was a pot that was three or four times the size of an existing inshore pot. We were working with all kinds of loads and depths, because when we pulled our string of 10 pots, which we usually had off the bottom, we had all 10 pots

hanging in the water as it came up. I hooked up a tensiometer in the line because we came off the winch and then we went off to the side and I designed an A-frame gantry so that it would come in and as the pots came in, we could swing the pot in and it was on a [UNINTELLIGIBLE], so we had a clip and it could be unclipped and detach it there.

JW: It seems like a lot of weight.

MC: Well, what I did is one of the first measurements I took was I went out on a flat-ass calm day with the vessel and I had the wire set up and we had just hooked up, I had the pots in the bottom and just hooked up to them and doing nothing, not even pulley pulling the pots, but just in a nice, soft roll what I was reading was zero load 2,000 pounds, zero load, 2,000 pounds. So, the minimum load before we even tried to pull the pots off the bottom just with the roll of the ship if you're putting a 2,000-pound load on the line and then it just went up from there.

JW: What was the maximum?

MC: I don't know. I don't know. It wouldn't reach a maximum. I would have the line part before, because if a line parts on deck, it whips and it will decapitate someone.

JW: Huge safety hazard.

MC: Oh, I saw a line part and one of the engineers was walking beside the line, going forward on the port side, and I happened to be up in the pilothouse, we were just trawling, and all of a sudden one of the lines parted and it whipped back and it tore right through his pants and made a nice cut across the back of his right leg. If he had been two steps back, it would have taken his leg off. It was that, so you never want it, usually like on the side trawlers, you had a hanging bollard and the line would come up and go over the bollard and come down. You never, ever went near that or underneath it. Fisherman, all kinds of stories, were on the waterfront, particularly in the barrooms, and Sebastian Junger, who wrote *The Perfect Storm*, he hung around some of the same barrooms that I did and he heard all these same stories. And he put a bunch into that book. [laughs] I was reading the book and I'd go, "oh, I remember hearing about that one. I remember hearing about that one", but he took 20 years of stories and put it all in one trip. All of those things did happen, but not on, well, nobody knew what happened on that particular cruise.

JW: Was Frank Rose's vessel, the *Judith Lee Rose*, the first commercial vessel then to test out the offshore lobster traps?

MC: No, in fact the *Judith Lee Rose* never did anything but trawling; it was always a trawler. It was Young Frankie who built what started out to be the first commercial vessel. I'm foggy now on what happened. The minister was getting, he was very good at self-publicizing himself and so, but very open in his secretiveness. [laughs] He had this automatic detaching [unintelligible] hat he had had that was enormously expensive at the time. It was a couple of castings. The only reason I knew is because I accidentally pulled up one of his pots. [laughs] So, I had one of his.

JW: So you could see first hand.

MC: So, hey, this was a secret thing, you know? Nobody saw it; nobody knew what it was, but supposedly automatic detach. But, I had talked to people who had been crew members and they said it never worked. It never really worked and it was an elaborate, heavy piece and at the time it cost something on the order of \$75, which was an insane amount for that amount. So, in talking with the crew members of this minister's operation, I knew that his elaborate device didn't work and it was very complex and it had to mesh and unmesh and it had to be manually attached and detached. So, I went downtown to one of the fishery supply places and I found a \$4 clip that worked quite well. [laughs] What I had was a tower that the fisherman stood in right by the gantry and he was protected from --

JW: Where was that on the ship?

MC: It was on the starboard side in the forward deck. We had a section of the rail that opened up for getting on and off the ship. What I did was I put this gantry over this section that opened up. Then, when we were hauling or setting the pots, I had it open and that's how everything came through. Then, when we set the pots, we set them off the stern and so as it came in, all the pots entered the stern of the vessel, could be re-baited, and go right over again. It was a nice, efficient system but it really only worked on--.

JW: How long did it take for the offshore lobster fishery to catch on for other people and start engaging in it?

MC: During the time that we successfully put the first pot down and we successfully brought them back up again, and that wasn't on our first try. [laughs] Initially we had too light a wire.

JW: Pots would be lost?

MC: Oh, we lost everything at the beginning. In fact, I think they had made one attempt just about the time I arrived there, I had nothing to do with it. So, I was now the engineer onboard so I just re-engineered everything and just beefed it up. Then, a lot of things, buoy self-destructed, so nothing worked right, right at the beginning. But, we set the first pots in, well, I went there I think in fall of '67, so it might have been into '68. But, by '70, there were 200 commercial vessels fishing, potting, for lobsters offshore.

JW: It caught on fast.

MC: It went from zero to 200 vessels in two years. And, the catch rate offshore by then exceeded the catch rate inshore. It was an untouched and prolific resource that the average inshore lobsterman would harvest one pound per 36-hour soak. I was harvesting 10 pounds per six-hour soak. [laughs]

JW: Did a lot of inshore lobstermen feel a lot of pressure to switch their operation offshore?

MC: Oh, no, none of them. I don't think anybody did. I don't think anybody did. It was a totally different world and a totally different set of circumstances. The inshore lobsterman had his little boat and little gurney and --

JW: So, he wasn't reinvesting in a larger vessel?

MC: No, he had no problem selling his lobsters, still. The demand was so great that in doubling the availability, I don't think we drove the price down at all.

JW: That was going to be my next question.

MC: I don't think we had any significant impact. It was just that many more restaurants had their lobster on the menu.

JW: How did the idea of galvanized wire, then, first come into play here because you had mentioned before that there was a fellow named Musce --

MC: It wasn't galvanized, it was plastic-coated wire.

JW: Plastic-coated wire.

MC: That's the day where everything came --

JW: That's still used today, isn't it?

MC: Yes, that's the way --

JW: That's the standard?

MC: Yes. Although I've been up in Nova Scotia and different places and there's still an interesting variety of pots that are being used and there are some people that are still making their pots in the dead of winter out of oak and fishing --

JW: Still knitting the potheads?

MC: Yes, you still knit the potheads, but just about everybody does it wrong. Everybody's got a ring strapped to the top and what they don't understand is the lobster is neutrally buoyant and he crawls around it like an ant will, so he goes right up the side of the pot. He walks upside down across the top of the pot and everybody has a ring and they tie it up to the top and the lobster just walks out. I don't understand the statistic that says one pound per 36-hour soak, because I don't know how you would operate with a 36-hour soak. It means that you're putting them in there in the daytime and then you're going out in the middle of the night and hauling them and they don't do that. What I thought is the actual catch rate may be what they were talking about back then was actually two pounds per 72-hour soak and they just expressed it by cutting the numbers in half to say how long it takes to catch a pound.

JW: With the plastic-coated wire, what tipped Musce off to the possibility of making this work?

MC: He was the man that built the first pot, but the way it evolved was Ernie McRae, me, I believe Pat Twohig; I believe Pat and I are the only ones left. Pat was the electronic technician, but he was also --

JW: He did an oral history just the other day.

MC: Did he? But he also was always there with his opinion on everything, so he was involved in everything. [laughs] He was not necessarily, as a thinker, always thinking as an electronic technician. He was one of the team, so he was analyzing things. He has an engineering mind, so he was able to make significant contributions in a lot of different areas, but his main job was keep the electronics going. [laughs] I think there was four of us, so I think there was Ernie, Billy Musce, me, and I think Pat. We were in the lobby of our building. As you came in, the office was right over. We were in the little building that's on the State Fish Pier in Gloucester. The immediate one that's to the left as you go through the stone wall.

We were discussing a different problem. For some reason, the lumber mills that normally supplied the oak, and maybe they supplied the oak strips to the pot-makers, had some bigger job to do. Anyway, they weren't delivering the material to the pot-makers in the area and they couldn't build pots and the lobstermen have a continuous need because lobster pots just don't last for a variety of reasons, so there's continuous replenishing of pots. It had reached the point where lobstermen now didn't have enough pots and there was this oak shortage. We're discussing this problem and what can be done. In walks this guy, Jim Knott, and we say "can we help you?" He says "yes, I've got a house that's on the water right beside Good Harbor Beach" and he says "I just got myself one of those family lobster licenses and I wanted to put", you could put a little string out for family use. I don't know what the limit on the pots are, maybe as many as six or whatever. So, he didn't know anything about it and he said "can you tell where I can buy pots and how to do it." So, we said "sure, sure".

We took him in the room and we all just kind of went in there and so, we had this little meeting with this guy and we talked to him and we told him about lobstering and we answered his questions. In the course of the conversation, we wandered off and so, "what do you do for a living?" He said, "oh, I have a plastic coating firm." Oh? What do you do with plastic-coated wire? Really? What's that for?" He says, well, he says "did you ever see, you know, when somebody plants a little rose bush and they put a little fence around it, a little white fence and it's got on the top?" He says "it comes flat with a couple hooks and you just roll it around and hook it on." We went "yeah, yeah, yeah, we know what that is. We've seen that." He says, "well, that's one of my products."

So, it was like a light bulb went on at the same time because one of us said to him, "how big a piece of wire can you make and what's your maximum size that you've got?" So, he told us whatever it was and I remember us looking at one another. Right away, what we were thinking was wrap the pot in plastic-coated wire instead of the oak. So, we said "where is it?" I think it was in Everett or someplace like this. It's what we call here in Gloucester, up the line somewhere.

Next morning, it must have been at least four of us because four could fit in the car, we hopped in a car and went to his plant to see what he was doing and talked to him about the wire. We had had some conversation and that's what we wanted to do, was make a pot out of plastic-coated wire. At the moment, he had three colors to work with: white, international orange, and a dark green. I remember being enamored with the orange, but I don't know who made the decision. Anyway, we ordered a bolt of orange wire and he delivered it to us in a fairly short time. We had a shop and Billy Musce a jack-of-all-trades and he had welding talents and so he built some enormous stuff for me, just incredible big stuff over the years. So, we took the wire and basically as a model the slant-sided wood pot and we talked about it and said why don't we get some re-rod? It's what you normally reinforce concrete with it. It's a rod but it has like ribs all around it.

JW: Oh, re-bar.

MC: Re-bar. Re-rod we call it. What we said to Billy was make a frame out of the same size and normally, if it was some complex thing that I was doing, I would have drawings and all that shit, but this was easy enough to just talk back and forth and we had a good enough working relationship. It was make the frame out of re-rod and then wrap the wire. If you've ever had to reach underneath your couch or something like that and you realize there's these little rings, upholstery rings, that are holding all the bottom end of the fabric? They're usually a sharp edge and you usually catch your finger and cut it on it, so we said "we'll get some of those and we'll use those as a way to secure the plastic-coated wire." So, he went over to the shop and built a pot. A beautiful looking thing; nice bright orange.

We had a little finger pier off the main fish pier in Gloucester, so we took this pot. I don't know how we contacted a bunch of lobstermen but we had a showing of our pot just to get some reaction. I don't know, half a dozen lobstermen came down in the morning. They shit all over it. [laughs] One thing was, "that orange. It can't be orange; it's going to scare the lobster away." I'm taking note of everything they say because if it's a concern, then it's real. It doesn't have to be valid. You have to recognize that they're not going to use the pot if they think it's too bright. [laughs] So, I went okay, no orange. Then they were deeply concerned, one of the lobstermen was, because "it was all made of metal and electrolysis stuff, we were just going to electrocute the lobster on the bottom." I took due note, but I hope not too many people think that. [laughs] Those were two of the main comments, but basically they weren't impressed at all and they walked off.

So, I went back and said "orange won't sell; let's get some of the green stuff", so we ordered another bolt of green wire and made the pots after that with the green. Actually, I was naïve in the early learning stages about everything. I didn't realize that light doesn't really penetrate more than about 16'. Below that everything's black and white, unless you turn on an artificial light. So, the lobster has got to be colorblind. And actually the orange pot would be more noticeable on the bottom than the green one, because the green one would blend in. What you see today is a lot of yellow ones and bright ones. Whether it's just a personal preference or there is some thinking there that the brighter I made it the more likely the lobster's going to see it. That was the first pot.

Then, concurrently with that incident, that day, so now we had created an overnight business because that was the way an offshore, what we did is we designed the offshore pot and, of course, it was a plastic-coated pot. We built them initially with steel frames, but the average guy that was going to build a pot wasn't a welder, so what evolved for the commercial version was going back to a wood frame, but coating it with a plastic-coated wire and wrapping a wood frame in the plastic-coated wire --

JW: The wood is inside?

MC: No, the wood is inside, yes, the plastic coat. You build the wood frame just as you would for an earlier conventional pot with the oak lathes and then you would just wrap the plastic-coated wire in it.

JW: Now, were these offshore pots, were they so large that one person could not pick them up? Did they necessitate two people?

MC: You didn't pick them up. You moved them around. So, you created ways that it was easy to move them and push them, but you didn't lift them up. They were more bulky and of a size rather than, that was probably as much an issue as weight would have been.

JW: How soon after did the regular lobster industry just making inshore lobster pots begin to switch over then from oak to plastic-coated wire?

MC: Rather rapidly. One of the things that had existed, you have to throw shorts back. So, every lobster that you take out of the pot, you measure its' carapace, its' body length, because that's the legal definition. Of course, there are skinny lobsters and fat lobsters, but you measure the length and different states have different lengths that are considered legal. We researched in Maine, the data was there in Maine, and we were able to go back 200 years to trace back evidence of repeated lathes spacing laws in order to let the shorts escape, because what happens is a lobster goes in, eats the bait, then another lobster goes in and the lobster that's in there is the bait. [laughs] They tend to be self --

JW: Cannibalizing each other?

MC: Yes, cannibalizing each other. It's advantageous if the lobster is little, let it get out. Two things happen. One is that the oak immediately fuzzes up. The grain gets rough and it starts to erode. You've got a spacing. Now, a millimeter is significant and all it takes is a half a millimeter on either side of the two boards to open up, so in a matter a few months a pot ceases, a lobsterman realizes this pot is not fishing well anymore. It's gone. Go get some new ones.

JW: So they didn't try to repair the spacing or anything?

MC: If they were subsistence livers, like a lot of them are in Maine, yes. They fix their own pots. They build their own pots. We pulled up a pot once that had just been built. It was brand new and we were out there and hooked on to a pot when we were trawling and it could have been built 200 years ago. Instead of bricks, it had beach stones holding it down. It was a round pot, the

early ones, and you'd take a sapling and you'd bend it and make the arc, tie it down. It was a treasure. One of the guys after the cruise took it home for decoration, but it should have gone into the display, the public display area that we had.

Where were we? What was I trying to answer there? [laughs]

JW: We were talking about how long it took the regular lobster pot industry to begin using plastic-coated wire.

MC: It took on, we didn't really track it or pay a lot of attention to it, what was going on inshore. Our focus was on offshore and what was happen offshore. But, while there was no, the lathes spacing laws didn't work. The other thing that happened of our study of lobster behavior, because in order to, you have to become a behaviorist in order to work with the animal. So, as engineers, we became lobster behaviorists more than any biologist was. [laughs]

JW: Understanding how they move?

MC: Understanding how they moved, why they did things, how they could do things. One of the things I observed lobsters doing and one of the things we did up in Gloucester in the food chemistry lab, they had a big area, and we just put out one of those home swimming pools and filled it full of saltwater and put pots in there and had lobsters in there and had time lapse photography, which was just killed you to watch. The lobsters, once they went in and they filled their faces and they were okay, they walked around and walked around. I would see lobsters, they would take their claws and just put them between the lathes spacings and just kind of run back and forth with their hands, claws I mean, and that was a contributor to the wearing away and the opening up of the lathes, because they were sanding them, sanding the rough edges and just taking wood off like mad. While nobody had ever observed --

JW: Planing the wood?

MC: Nobody had ever observed it. I saw as kind of a repeated behavior, so it explained one of the reasons why the oak seemed to erode as fast as it did. In those days, these little pieces of information we talked about them, but there was like one or two scientific journals and they were biological journals so that we were scientists so we couldn't write a paper in *National Fisherman*. Didn't even think about a thing like that. As an engineer, I would write papers and I would send them off to a biological journal and they wouldn't know what to do with them. I sent off one paper and it's usually a back and forth, back and forth, back and forth thing. I sent off one paper and the next issue of this journal my paper is published. And somebody had gone through and it's a valid thing to do. Two words that are overused when you write, the word *the* and the word *that*. So, whenever I write anything, I go through and a quick way is to cross out all the *thes* and all the *thats* and reread it and then, oh, it needed that the. Put it back in again. I usually eliminate 50 percent of them. Well, somebody had done that initial step and taken every *the* out of my paper. That was the only thing that was done.

JW: It makes the writing much more active.

MC: Yes. What happened was, they published it. What kind of operation did they have? They published the thing and I had, my next-door neighbor and one of my best friends was the de facto chief of the Massachusetts fisheries. He was --

JW: Out of DMF [Division of Marine Fisheries]?

MC: Yes. He was the Deputy and again, it was one of those things, the actual Chief was a political appointee. But as the Deputy, he was the guy that ran the show. He called me up and goes "what did you do?" [laughs] I says "I don't know what they did." I says but I have never, "I'm done." [laughs] "I'm not going to do any of this anymore." I says "I had no idea. That editorial staff, whoever they are, they're totally out of control." [laughs] That was my last embarrassment in trying to publish. The only other time I went rogue and it was really at Ron Smolowitz. Have you interview Ron?

JW: No, not yet.

MC: You've got to corral him. Is that I had made this sled, camera sled, and it --

JW: This was the TUBS?

MC: TUBS, right.

JW: Underwater benthic.

MC: Towed Underwater Benthic Sled. Smolowitz was always entrepreneurial even whatever he was doing. He's made a good living for himself. He's a farmer. Officially a farmer, but he also does fisheries research. My daughter-in-law handles his grants. [laughs] One time Smolowitz went into the office and he was kind of demanding, you know? "Where's my money? I'm doing research for you." And my daughter-in-law, he's talking to my daughter-in-law and he looks at her and he says "do you know who I am?" She says, "oh yes, I know who you are. Do you know who I am?" [laughs]

JW: That's pretty funny.

MC: A small world. In fact, my daughter-in-law is sitting in my old office down there. They just keep moving the functions around. She's sitting in my old office. I don't know exactly where. I've always wanted to go down and see if she's actually where I had --

JW: Down in the main lab?

MC: Down in the main lab, right. I had a big two-room complex where I had three offices for three engineers and then I had a drafting room with two or three drafting tables in the other room. My drafting talent was usually Northeastern co-op students, so I always Northeastern co-op students working for me for the whole 12 years I was with the fisheries and some good guys came out of that. One of them went on to be the skipper of the *Albatross*. [laughs]

JW: Who was that?

MC: Derek Sutton and you just missed him. Derek Sutton just moved to Virginia within a couple of weeks ago. He lived in West Falmouth. He was one of my co-op students. He joined the NOAA Corps when he graduated and he was the labor. It was Smolowitz's project to develop the escape vent.

JW: Escape vent on the lobster trap?

MC: On the lobster trap. That was his project and he set it all up and set it up so the results were statistically significant and had a very controlled thing, but Derek Sutton was then a co-op student and he was the labor. He actually did all the work and [gave?] it away. He did good work and we would have, so we had a mess of lobsters down in the room. One of the big jobs was keeping them from being stolen, because a biologist would come down --

JW: And take one for dinner?

MC: Yes. Or, if some dignitary came, "oh, wait a minute, I'll get you a few lobsters." They'd go walking in on Derek and order him to give them lobsters. Well, these lobsters, it's like going in and saying, "I'd like some of your laboratory mice. Give me a half a dozen of them, you know?" [laughs] And you've bred them for seven generations. It was almost akin to that. So, Derek kept a supply of scrawny, really scrawny half-clawed lobsters that he wasn't using in order to --

JW: Did the requests stop after a while?

MC: Yes, you're going to show off? Here. Here's lobsters that'll disappoint these people and they won't be impressed with you at all. [laughs] It was just a little side thing that we had to do in order to fight off the lobster thieves. Interesting. Interesting world.

JW: Mike, I think we're sort of approaching the end of the second hour here.

MC: Really? We've talked about a whole lot of stuff --

JW: We can always cover more ground in a follow up interview or anything of that nature.

MC: Yes.

JW: Any final thoughts?

MC: I think one of the things I want to tell you about is how the lobster fishery started, the offshore lobster fishery started and who actually built the very first pot. The problem is he's deceased now, Peter Prybot. I think he originally came into Gloucester as a reporter of some sort on the local newspaper. The local newspaper was a groomer of newsmen. Out of Gloucester Daily Times or whatever it was called, I can't remember, some significant Boston newsmen and then national newsmen grew. The owner/editor of the paper years ago was just a natural teacher. So, he came into town to do that, Prybot did, but he broke off and he wrote a couple of books on fisheries and the history of the fisheries. In one of them he addressed the, and then became a

lobsterman himself, inshore lobsterman. He went around some years after and got started and talked to individuals who were prominent in the industry and probably half of them didn't really know the history at the time and he never became aware that the government did. So, in his book he credits Jim Knott for having --

JW: Who owned the factory.

MC: The guy we bought the wire from. I'm sure maybe he went on to build himself some pots, yes, after we had developed the design and were talking and pushing it. I'm sure he became a big-time supplier of, the go-to guy for wire, so we made him a lot of money and created an enormous industry for plastic-coated wire manufacturers. But Peter Prybot's book give him credit for developing it, whether Jim Knott said that or whether he accepted the mantle. Somebody said to me the other day he's been walking around for 50 years saying he developed the plastic-coated wire pot. Not true. It was Exploratory Fishing that did the research base, and our failure as an organization to properly publicize and take credit and publish as an organization and make that a priority contributed to our demise, but we did a lot of good work. A lot of good work. I haven't even mentioned the creation of the shrimp fishery.

JW: We'll have to touch on that at some point.

MC: And now the basic thing was there was an imbalance in nature and it was an erratic resource; nobody trusted it. It seemed to disappear. Nobody was tracking it, so nobody saw any pattern to the disappearance. Nobody was paying attention to it from the government side. It was just the fishermen. It was a nuisance, a nuisance creature. I gave it thought and I was in Norway for a convention of us gear research people, of which when you add them all up in the world, there wasn't too many of us. We all could get together in a room. [laughs]

JW: Pretty low numbers.

MC: It was a big room, but it was still low numbers. I was having a beer one evening and they served it with a little shrimp on the top and the shrimp looked about the size of we had, so that next day I spoke to one of the hosts, the Norwegian hosts, and I said "it's interesting you serve your beer with a shrimp on it." He goes, "yes, yes." He says, "Pandalis borealis." I said, "no, that's our shrimp." He says "it's our shrimp too." He says, and I really didn't know anything about the biology of it, and he told me. He said it occurs in an arc and it's the same species. So, they were fishing the *Pandalis borealis* and that's what we had. So, I asked him, "so you have a fishery? You catch them. Is there any problem." "No. Oh, yes, there's no problem at all." I'm coming back on the plane and I'm thinking about it and I'm going, the only difference, it's the same species, the conditions that they're living in got to be relatively the same or they wouldn't be thriving. They're fishing them, we're not. That's the problem. We have an imbalance and probably they might have it too, but we have an imbalance and we need to fish them in order to prevent what I theorized was a ramping up of the population, a massive die-off, and so a series of [shelves?]. Because it would reach --

JW: A cyclic change.

MC: Yes, and I theorized that that's what was going on, even though there was no data to support it because nobody had paid attention. It was the only thing I could think of, so I kind of went around and talked, sold this, and other people within NOAA said yes, yes, that makes sense. What we did, and I really didn't have much to do with it at all once it got rolling, I just threw the idea out, was it took a lot of NOAA people at different levels to create, get the fishermen to fish it, get a processor to buy them, and get somebody to buy the shrimp from the processor, and they already had such a bad name that nobody in Boston would buy them in the fish market. So, we had to go to New York and go to the Fulton Fish Market as an ultimate --

JW: To start the supply chain, yes.

MC: The supply chain, but it started out we were able to kick the fishery off at three cents a pound. That was while I was still in Gloucester so that still in the late '60s.

JW: Next time we resume, we should continue with shrimp and get into that a bit more.

MC: Yes.

JW: Mike, thank you very much for stopping by today and sharing your recollections about working in Gloucester.

MC: No problem.

JW: It's great. Thank you.