

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
VOICES ORAL HISTORY ARCHIVES
IN PARTNERSHIP WITH NOAA HERITAGE AND THE NATIONAL WEATHER SERVICE

AN INTERVIEW WITH JOHN MITCHELL
FOR THE
NOAA 50th ORAL HISTORY PROJECT

INTERVIEW CONDUCTED BY
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This is an interview for the Maritime and Seafood Industry Museum and the University of Southern Mississippi. The interview is with John Mitchell and it is taking place on March 11, 2010, at 10:30AM in Pascagoula, Mississippi. I am the interviewer, Stephanie Scull-DeArme. First, I'd like to thank you John for taking time to talk with me today. I'd like to get some background information about you so I'm going to ask you, for the record, could you state your name please?

JM: Yes, John Mitchell.

SS: And for the record in case all the labels are lost or damaged some time in the future, how do you spell your name?

JM: J-O-H-N M-I-T-C-H-E-L-L

SS: When were you born?

JM: I was born October 29, 1955.

SS: Where were you born?

JM: Chicago Heights, Illinois.

SS: Thank you so much. Let me just ask you for the record also, what your title here is at your job, and the place you work?

JM: My title is Unit Leader for the Harvesting Systems Unit, NOAA Fisheries, Southeast Fishery Science Center, Mississippi Laboratories. It's a long title. [laughter]

SS: Great. Thanks. We'll jump right in to these grant questions and I'll ask you the first one. What role did you play in introducing TEDs to the shrimping industry?

JM: Started out working as a fisheries technician here at the Pascagoula laboratory in 1981. My first several years with NOAA here was as a fisheries observer and about that time, there became some vacancies available for individuals to work on the TED project. The particular unit here at the laboratory that was responsible for TED research was the Harvesting Systems Unit. I was hired on as an Assistant Technician to work aboard commercial trawlers and to compare the catches of shrimp and fish from trawls equipped with TEDs versus non-TED trawls. For me that began in 1982, '83. So, I spent a great deal of time throughout the Gulf of Mexico traveling to different ports, meeting up with fisherman that had agreed to trial TEDs for us.

I usually travelled with one of our fisheries' gears specialist, also employed here at NOAA. These are gentleman that were formally employed in the shrimp business, in the shrimp fishery, and had some real talents with regard to building nets and constructing different kinds of fishing gear. So, we hired them to work on, not just the TED project but other projects that we had here. It gave us that capacity to have people that were very familiar with the fishery and the equipment

and the gear. I would travel with one of these guys and we would work on testing TEDs aboard commercial trawlers.

So, started out in the very early stages of TEDs here. However, the development of TEDs actually preceded me are initials. Our initial NOAA's involvement goes back to the late '70s and started right here. The TEDs that we're all familiar with today weren't the ones that we started out with. We started out with the much more, with a different concept which was a barrier trawl. Looking at, trying to install large panels of webbing in front of the mouth of the net which would deflect sea turtles over the top of the net, rather than letting the turtle getting in the trawl then excluding it once it was in. It was a different approach initially so there was a lot of work done with the barrier trawl concept. I would say probably two, two-year's worth of trials.

SS: To that it was initially released and then it was scrapped. [laughter]

JM: It was scrapped and the reason it was scrapped, while it was very affective at excluding turtles, it did not do so well for retaining shrimp. [laughter] Because this large panel caused the trawl to – deformation of the trawl reduced the efficiency of the net. So, that idea was scrapped and we began looking at some ideas that were coming from the industry. One of the ideas was a grid which was being used as an excluder for jelly fish. This came from the Atlantic Coast and I'm just going to take a guess because I've never been sure where the jelly ball excluder idea came from but I think it came from the Georgia, South Carolina, area.

SS: Okay.

JM: So, there were some fisherman in that area that were already using a grid to exclude jelly fish from their net during certain times of the year.

SS: That was for their own benefit?

JM: For their own benefit.

SS: Did not come from having to come in line with the regulation at all?

JM: No, it was just a way to get rid of the excess bycatch that they weren't interested in keeping, which causes the net to really fish inefficiently. We looked at that idea and thought we could expand upon that. Make it larger and possibly use it to allow a turtle to escape. That was really the beginning.

SS: How –

JM: Go ahead.

SS: How did that jelly fish excluder device differ from what we now know as TED?

JM: You know it's interesting. It doesn't differ a whole lot now. My understanding of it is, and I've just seen some rough sketches of the early one. It was fairly small and the spacing of the bars

was somewhat smaller than as used today. Then, the evolution of the TED over the years is taking many different branches. But it's interesting that it's now, sort of, come back to almost a very similar design. Very simple design which is what the first jelly fish excluder was. Again, we have much bigger device you can get a turtle out of the net but it in general it's very similar.

SS: Can you estimate what the size of the jelly fish excluder was?

JM: I'm going to just take a guess and say it was probably no more than about thirty inches in diameter.

SS: How big are those jelly fish?

JM: They usually are probably anywhere from twelve to maybe fifteen inches in diameter.

SS: So, it's maybe twice as big?

JM: Yeah.

SS: That's your biggest jelly fish should be?

JM: Right.

SS: Just to back up a little bit. Can you tell me what you did as an observer when you started in 1981 when you said that you were a fishery technician?

JM: Right. I was hired here at the laboratory to work as a fisheries observer on Japanese longliners that were fishing in the Gulf of Mexico for tuna. These boats, at that time, the US allowed foreign vessels to fish within our territorial waters and the Gulf of Mexico is a known very productive area for tuna. The Japanese were allowed to come in and fish and as a requirement, they had to take a fisheries observer from the US. I would board the boats, and I would ride the boats for months. Sometimes transferring from one boat to another at sea. It was a great experience for me.

SS: In what ways?

JM: Exposure to a completely culture, having to learn how to communicate in other ways than language [laughter] because many of the fisherman didn't speak English.

SS: How is your Japanese?

JM: It was much better when I finished [laughter] but it was terrible in the beginning. But, I would just never trade that for anything that I've ever done. Not only was a great exposure to the fish that are out here in the Gulf of Mexico but culturally. It sort of spark my interest in learning more about fishing methods around the world. And, I get a good understanding of how tough it is to make a living as a commercial fisherman. It's tough work.

SS: What was it exactly that you were looking for?

JM: My job was to make sure that the Japanese fishermen, as is the job of most foreign fisheries observers, is that they take only what they are permitted to take. They were allowed to take only tuna. So, anything else they caught had to be returned to the sea.

SS: Was it returned live?

JM: In most cases longline fisheries it was. Longline fisheries are baited hooks that are set at various depths in the ocean and they can target a number of types of fish: tuna, bottom fish, but as fisheries go, or as fishing gear goes, it's fairly selective. We do have some problems with incidental takes of sea turtles and marine mammals with longline gear. It can be, and we are working on that as well here now making that more selective.

SS: Can you estimate what percent of their catch was bycatch?

JM: Was bycatch? I would say probably sixty to seventy percent of their catch was bycatch. Yeah. Things like sharks, other pelagic species.

SS: What about mammals? Did you see turtles and dolphins?

JM: We saw turtles on occasion. I never saw a mammal caught on any of the gear but it does happen. Mammals such as pilot whales, occasionally take the bait and get hooked, and turtle.

SS: Do they drown?

JM: Depending on how deep the gear is set. If it is shallow set gear like for swordfish, they can sometimes reach the surface. But if it's deep set gear for tuna, they usually can't get up to get a breath.

SS: Do the Japanese check those lines often enough to save a mammal like that from drowning or did they at that time?

JM: Did they? Typically, their lines would be set for about a twelve-hour period so if the animal is caught; if a mammal was caught, there's a chance that it wouldn't survive.

SS: Depending on how long it had already been down there.

JM: Right. Exactly.

SS: How soon it needed to surface and breathe.

JM: Right, right.

SS: How hard is it to get a hook out of a turtle's mouth?

JM: There's devices now that make it actually pretty easy. So, you can bring a turtle up along side the boat and there are different hook extractors that can be used and you can get it out. If it can't be extracted easily then there are; by law [technical problems] [chatter] they're by law supposed to cut the line as close to the hook -- [interrupted by background chatter] [long pause]

SS: So, you cut the line as close –

JM: As close to the mouth as possible, as close to the hook and the hooks will eventually rust and fall out.

SS: Oh, they'll disintegrate.

JM: They'll disintegrate.

SS: Yeah.

JM: Yeah, deteriorate.

SS: Did you often see like any old timers having more than one hook there? [laughter]

JM: Like I said, I never saw many turtles. I don't think I saw; I mean I saw a number of turtles out there but don't recall ever seeing one hooked.

SS: Great.

JM: But, that said it is a problem today in many of longline fisheries around the world is a serious problem. But for some reason during my two years of work, I don't think I saw one turtle.

SS: I think maybe in the '80s they were starting to decline.

JM: Yeah, that could be. That very well could be, that they just weren't there.

SS: There was another question I had. [long pause] [chatter] I don't see it. I guess I just thought of it now I can't remember what it was. Okay, maybe it'll come back to me. So, is there anything else you can think about, about the early days of introducing TEDs to the shrimping industry?

JM: Well, there's a lot. The initial, you almost have to go back and think about, or have an understanding, of how the whole issue of turtle captures was presented to the fishery. That is about the time that I started here, and so, as a Junior Biologist/Technician, I was not in on a lot of the early interactions with the fishery. I will say that initially the industry was very cooperative with NOAA Fisheries. We did quite a bit of testing of TEDs aboard commercial trawlers and fishermen used, voluntarily, worked with us.

SS: How would define commercial trawler?

JM: Commercial trawler, in our case it was mostly an offshore vessel. Probably anywhere from fifty-five to eighty feet in length That used two to four nets.

SS: Okay. And what is offshore?

JM: Offshore would be anything outside the, we actually have a definition of offshore. There's a US Coast Guard line called the Collision at Sea line. Called the COLREGS Line. If you look on any Coast Guard chart, you'll see a little blue line that's just off shore of the mainland and that is what the federal regulations used as delineation between offshore and inshore. So offshore, I'm just going to roughly say three miles off shore the mainland would be considered offshore. Anything inside that line would be considered inshore.

SS: So, the barrier islands are just kind of ignored in that definition?

JM: Well the barrier islands here is the line.

SS: Oh.

JM: The COLREGS Line runs right across the barrier islands here. So, the COLREGS Line is usually the for any state would be the most seaward land mass. That's where the line runs.

SS: Now just for the record, can you define fishery? We've talked about the industry and the fishery.

JM: The fishery, right. When I say fishery, I mean any group of fisherman and gear that is used, and type of gear that's used to target a specific species or group of species. I say fishery a lot and I mean like the shrimp fishery or the grouper fishery.

SS: So, the commercial trawlers were cooperating with you?

JM: They were cooperating and we really got a lot of good information on how the early prototype TEDs were going to affect the shrimp catch. And, whether or not there were going to be a fishing net, excluding turtles. It was all voluntary. There were some individuals that we contracted to do specific types of work, or research, on the TEDs for us. A lot of times we would show up with a TED. We would ask commercial fishermen, are you interested in trying this thing out? They knew about the problem. In most cases, a fisherman had encountered turtles. They caught turtles in their nets. So, they knew. Yeah, I've seen it. So, yeah, maybe I can avoid catching these things if I tried this.

SS: What do you think motivated them to do that?

JM: I think inherently fishermen are just curious. They're curious like anybody that runs a business. If they see something that might improve the way they operate, they'll give it a try.

SS: So maybe turtles were a nuisance?

JM: Yeah, I think in some ways, in some areas of the US they could be a nuisance. They can damage the catch. They caught in the net along with the very valuable shrimp. They thrash around and they break the shrimp up. Not in all areas but multiple turtle catches can be a real problem. I think in addition, I think the fishermen thought, you know, I catch a lot of garbage that I don't really want and other fish like sharks and stingrays. Maybe this thing can help. So, I think that was the incentive initially for them to give it a try. The other part of it too, is that, this is kind of going along with how the whole issue progressed. As it became more evident that the government's very serious about these TEDs, and implementation of the TEDs.

I think a lot of the pushback from the industry and fishermen was that the average fishermen just didn't catch a whole lot of turtles. In a given year, a typical shrimper from Biloxi might catch one or two turtles in a year, okay. It wasn't something they caught every day. I think their resentment might stem from the fact that, I certainly can't be the problem here. I don't see many of these things. Now, there's talk of this device being required in my net. That doesn't make sense.

When I think of a lot of the guys didn't understand was that at that time in the early '80s, the effort, the shrimping effort in the Gulf of Mexico was enormous. It was at its peak. There's estimates of upwards of eight thousand offshore shrimp boats in the '80s in the Gulf. And another two to three thousand along the Atlantic seaboard. Now those are just offshore boats and come inshore and there are turtles inshore as well. The numbers go even greater. The smaller bay and bijou boats. Louisiana alone had thousands of these boats. When you multiply that kind of effort, it only takes one or two turtles a year before you start doing some damage to the population.

SS: Yeah.

JM: I guess going back, initially it was a lot of assistance from the industry. I think as things progressed, it looked like it was not going to be voluntary thing. That's one of the things we tried to promote was, look these TEDs can do a little more than just exclude turtles. They can clean up your catch. You can get rid of debris. You don't have to spend. That picture behind you shows you the kind of bycatch that they catch.

SS: What was the target? [laughter]

JM: The target's shrimp and he's picking shrimp out of that pile. So, the TED can eliminate a lot of that stuff. I won't say eliminate all of it. But we tried to promote those kind of benefits. To the extent that we went further with the design of the TED and modified it so that it would be not only a sea turtle excluder but it would do a better job at excluding fish. We renamed the TED from a Turtle Excluder Device to a Trawling Efficiency Device.

SS: Wow that's great, it even works with the initials.

JM: Yeah.

SS: That's wonderful.

JM: We did a series of studies to look at how can we modify this device so that we're doing a better job at getting rid of fish. It involved opening up the sides of the TED, the webbing of the trawls so that fish could swim out. Because what we saw, this is another branch of the story, but we do a lot of diving on nets here. We actually get in the water and look at how these things are configured. We modified the TED to improve the fish exclusion and we were able to achieve pretty good fish reduction rates. Fifty to sixty percent less fish with the TEDs.

SS: That's enormous.

JM: Pretty significant. Again, that work was in the mid '80s to the late '80s, we refined this TED design to exclude fish and again at that time, TEDs were not required. We were still trying to work to show there are some other benefits to this device. It still wasn't enough to get fishermen to say, you know what, that is a good idea. I'm going to use that thing voluntarily. That leads into the late '80s. Then the litigation process started between conservation groups and threatening suit against NMFS, National Marine Fisheries Service, or NOAA Fisheries.

SS: Not against the fishermen but against NOAA.

JM: Well no. Against NOAA for not enforcing the Endangered Species Act because turtles were listed as Endangered, or Threatened Species. The ESA, the Endangered Species Act, and I'm going to guess, I think it went into effect in 1978. So, by law, the agency responsible for enforcing marine applications of the ESA, which is National Marine Fisheries Service, my agency.

SS: Did you all have enforcement officers for anything else?

JM: Yeah. We do.

SS: Yes, so you already had.

JM: We had enforcement officers that were, and we still do, that enforce federal fisheries regulations. But at that time the ESA, here is where I get fuzzy, the ESA was still fairly new and I think a lot of agencies that were responsible for enforcing it. Not just National Marine Fisheries Service but like the US Fish and Wildlife Service had a whole species list of land-based animals that they had to deal with. I think they were all trying to come to terms with how are we going to do this? How are we going to --? What are the fines going to be? What are the penalties going to be? I think the agency realized that we're allowing this to happen. These fishermen are actually breaking the law if they kill a turtle. They're breaking the law, and we got to help them.

That's the tough part, I think, for us who were involved in the development of the device. And, trying to do the outreach to get the fishermen involved in the process. I think that's the part that they didn't understand that had we not done what we were doing, had we not made these efforts, they would be out of business. I mean the law. The ESA is a very powerful law and it has shut some very thriving businesses down for lesser acts than catching turtles. The way we were able to sort of fend off the lawsuits for many years was: look, we've got a program we're out there

showing, we've got some advancements in design and technology, and we think we can get this solved. We need more time to transition the idea into the industry.

SS: So, going from you can volunteer here please use this to you have to use this or you are going to be fined.

JM: Yeah. That was a big shift. [laughter] It was a big, big shift.

SS: You guys weren't such nice guys after.

JM: No, we weren't. We weren't. And again, from my group, we're not big. At that time, we were even smaller, there were only about six of us. We got the brunt of it. My fellow workers and I that walked down the docks with TEDs over our shoulders weren't received very well there in the mid '80s. We were the face of the agency.

SS: What are some examples of negative reactions on the dock?

JM: Simply get off this dock. Get off my boat. Very verbal. I personally have been threatened.

SS: With? Bodily harm?

JM: Yeah, bodily harm. Every down in my group has been one time been threatened.

SS: How do you handle that?

JM: You just turn away. You walk away.

SS: Yeah.

JM: You walk away.

SS: Okay.

JM: You can't confront them and have it get physical. Now, all of our guys had it happen to them one time or another. Have been called out in public meetings. You're taking food out of my child's mouth by making me use this thing.

SS: Boy that sounds tough.

JM: It was very tough.

SS: Did the shrimpers start to get it that there are at least two way to look at it? Either you use this and you have a job with less shrimp, or you don't use it and you have no job shrimping. Did they start to understand this is really to help you stay in business?

JM: It took a great deal of time. I don't like to paint all of the shrimpers with the same brush. There were a lot of fishermen that saw the writing on the wall very early and said, you know what, I'm going to learn how to use this thing. And, those were the guys that we would focus on because we weren't getting anywhere with the belligerent ones. The one's that said hell no I'm not using it.

SS: It's a waste of time?

JM: It's a waste of time and you're not going to win them over any time soon. You do any good with the money that we had to work on the project, you had to make the best of it. So, you found the guys that were going to do the work for you. Early on, there were a select crew of fishermen that saw that this thing wasn't going away. I'd better figure this out. Maybe I can design a better idea and that's what we were after. We were seeking, we needed the industry to get involved. So, that we could get collective minds thinking about how to --. We didn't claim to have the final answer. But it took a long time and I'm venturing to say, twenty years before a couple of things happened. The design got right and fishermen realized this thing can work. This thing can actually make me money. Do they like having it in their nets today? Some would say no. I think you'd find the majority of them to say, I'd leave it in if I didn't have to use it tomorrow. That kind of thing.

SS: The majority.

JM: As we were approaching the date were the fishermen were going to have to start using TEDs, is when it got very ugly. In terms of the public hearings and outcry from the industry.

SS: For the record can you tell me what a public hearing is and why you held them?

JM: The public hearings were an opportunity for affected citizens to make comments on proposed rulemaking. In this case, the proposed rule was the implementation, or the requirement of TEDs in trawls that were fished for shrimp. From Brownsville, Texas, to Virginia/North Carolina Border. As I said earlier you were talking about a huge number of people. A lot of fishermen. A lot of boats. A lot of nets. These public hearings were set up to solicit public comment. Give people opportunity to come and comment on the rule. They were set up all on the seaboard. I didn't attend all of them. I attended quite a few. I attended quite a few in Louisiana which was the hot bed of insurrection, if you would.

SS: It figures.

JM: But that was their purpose. To allow the fishermen to speak. Not just the fishermen but anyone else that was involved with the industry, including shrimp buyers and processors. It was also, at least for the agency, my agency, the opportunity to get in front of the public and say okay, here's exactly what we're talking about. Because a lot of misinformation was being spread. As it does today.

SS: Oh yeah, of course. Yeah.

JM: There were rumors of seventy-five percent loss of shrimp with TEDs.

SS: When in reality what do you think the loss is?

JM: Well, at that time, our studies was showing there was no loss.

SS: Oh.

JM: The design of the TED that we had built, was actually an extremely good TED for shrimp. We did hundreds of comparison tows between a TED equipped net and a non-TED net. Using what was termed the NMFS's TED. I don't know if you seen this sort of box-like trap looking TED.

SS: I don't think I've seen that.

JM: Okay. Well, that was the NMFS' TED and it was the first device that was designed, and it was designed by us.

SS: Do you think you can dig it out of somewhere in the future and maybe get a copy to the museum?

JM: Sure.

SS: Of a photo or a diagram?

JM: Sure, definitely.

SS: Okay, great.

JM: The comparative testing that we did with that design showed no difference in shrimp catch. In fact, showed a slight increase in shrimp catch when using the TED.

SS: Were the public meetings a chance for you to dispel the rumors?

JM: It was a chance for us to present the data we had to everyone and say, arbitrarily we are not coming out here and saying you got to pull this thing. We actually, we've done quite a bit of work. And here's what the data shows. The data show that it does very well at excluding turtles, it's ninety-seven percent effective on excluding turtles, and it doesn't impact the shrimp catch. Here's the data to show that. In fact, it shows that over time it could actually increase production using this device. Which makes sense when you think about the trawls that is a dynamic piece of gear on the bottom. It's webbing, it's mesh. As you load that net up with more and more debris and excess fish, it starts to get less efficient and starts to close the net down.

SS: The weight starts to?

JM: Exactly. It doesn't cover the same area that it did.

SS: It decreases the mouth actually, of the trawl?

JM: Exactly. But, it takes many tows over many areas, over a long period of time, to be able to get that kind of data, and we had it.

SS: So, you were filming, the divers were filming this?

JM: It was difficult to film on actual shrimp grounds because it's so very muddy, turbid water. We had videos to show this is what it looks like underwater. This is what it's doing to your net. We found that the TED really doesn't affect the trawl that much. It doesn't cause more drag. There a lot of misconceptions about it that fishermen had; what it was doing to their net. That we were able to sort of answer with our diving capabilities and our filming. We would present the information at the public hearings. Here's what our data shows.

You are not going to convince them that this thing can actually benefit them. They thought it was all a bunch of hocus pocus. There were, again, a select group of fishermen that quietly looked at it and said, that makes sense. Those are the guys that took the ideas and they would call us later on and say, what if I did this to it? Would this still be acceptable in terms of turtle exclusion? Those are guys that we would work with. They were the ones that refined it to what we have today. They were the ones in the long run decided, you know what, this thing can be an advantage. The funny thing is a lot of them didn't spread it around. [laughter]

SS: They wanted the shrimp. It becomes a kind of intellectual property that they don't want to give up.

JM: Exactly. They had a working advantage against the guys that just refused to use it. Or, just sewed just anything into their net that looked like a TED just to get by.

SS: And if those guys got fined and their equipment got confiscated, less competition for people that were complying with the law.

JM: Exactly.

SS: [laughter] Human nature.

JM: It is.

SS: So funny.

JM: It is. Like I said. Like many stories. It's very complex that it takes so many different routes. You have the defiant side of the industry, the fishing industry, that says: You are not going to come down here, you are not coming into Louisiana and tell me that I have to pull this thing; that I have to sew this in my net. I said it earlier, Louisiana was the defiant one. To the extent that today in Louisiana, the Louisiana State laws do not require TEDs in their nets. You've got to remember that this is a federal law, because turtles are protected by federal law. So, it supersedes

any state. The states cannot say we are not going to allow TEDs in our waters. You have to use TEDs. But, Louisiana has said, okay, it's a federal law. If you want to enforce it, you bring the federal agents in here and enforce it. But, Louisiana state law is not going to enforce it.

SS: That's how you get reelected [laughter] in Louisiana.

JM: Exactly.

SS: Right? Yeah.

JM: I think one of the best examples of how different Louisiana handled all of this was, I went to a public hearing in Houma, Louisiana. [laughter] A very packed public auditorium. I don't even remember what year it was. I'm gonna guess and say it was '87 or '88. The agency had set up the meeting. There probably were five to six hundred people in this auditorium. Before the meeting started a limousine pulled up and it was Governor Edwin Edwards who walked into the auditorium. I remember he had a glass in his hand that looked like bourbon. [laughter] And he walked down to the stage, got the microphone; this is a federal meeting, and this was staged by the US government to discuss the TEDs rule and to allow public comment. So, I don't think he was invited but he walked down with his entourage, got to the microphone and proceeded to speak in Cajun French to the entire crowd. I don't know what he said because I don't know Cajun French but he got them fired up. Essentially, I think he told them, you'll never have to pull a TED in Louisiana waters as long as I'm governor. Then he left. He got back in the limo and left.

SS: That reminds me of something that Senator Stennis said before integration. He said, "My grandchildren will be picking cotton before black children ride in yellow school busses in Mississippi."

JM: Say that.

SS: [laughter] That's southern politicians, you know.

JM: I'll be darned.

SS: I don't know. [laughter] I don't know how to finish that sentence.

JM: I've never heard that.

SS: So, in Cajun French, Edwards gets this audience worked up then he left.

JM: Get's them all worked up then leaves.

SS: What did you do?

JM: Yeah, it was the responsibility of our group to get the crowd back in order. It was very volatile, and to the point, where as I recall our group, the representatives from fisheries that were there, I think one of them was the original director of this laboratory, Andy Kammerer.

SS: Oh, I have an interview with him next week.

JM: Whoa, boy. He's got some stories. [laughter] A number of other, the upper management within this region; I think they finally just said, you know what, we're just going to open this up to public comment. We're not going to, there was no way they were going to be able to control the crowds and talk to them reasonably about regulation. So, they just opened the mic up. Then it was just one person after another coming down to the mic. Usually with one or two kids in tow to show [laughter] –

SS: These are the mouths that we're feeding.

JM: These are the mouths you are taking the food from.

SS: Do you think it helped them though just to vent?

JM: Definitely.

SS: Just to get it off their chest?

JM: Definitely did. From those meetings we've held a number of less public, but outreach meetings with fishermen for not just for TEDs but for a number of other things. We've learned that you have to expect a certain amount of venting. You almost plan for that in any kind of meeting with fishermen. On any of these kinds of things. And once they get it out, you know what, they're pretty darn reasonable. But, you've got to give them an opportunity to say what they want to say.

SS: They seem to be such an independent lot.

JM: They are, they really are.

SS: Self-starters, don't depend much on anybody else.

JM: No. You know, it's a tough work and typically nobody helped them get there. I shouldn't say that. A lot of guys get boats given to them by their father, whatever. But, it's a tough business.

SS: No union.

JM: Right.

SS: That I know of.

JM: Yeah.

SS: So how did the shrimpers get the TEDs, say you had finished a meeting? Did they come down front and say where do I get one?

JM: A number of them would. Typically, not in Louisiana because they'd probably get their tires slashed out in the parking lot later. After the meetings, that's were myself and some of my co-workers would come in and we would be available to answer questions. They'd come up to us and say where do I get one? How can I get one of these things? And, we typically would give TEDs away. We've given thousands of TEDs away. In the course of this whole issue.

SS: What would that cost you in terms of monetary, do you know?

JM: It started out maybe a hundred dollars, hundred and twenty. Today, a good TED is going to run you about four hundred.

SS: For what size boat?

JM: For an offshore boat that pulls, like a sixty-five foot to eighty-foot boat, a 100-foot boat that pulls four nets.

SS: Okay. So, would that be \$1,600 dollars for four TEDs?

JM: Then you need a spare. One or two spares in case something happens to your net or your TED, you've got to have another one available.

SS: That really is tough.

JM: It's an investment. Early on fishermen didn't spend a lot of money on TEDs. They would build something in their backyard that met the requirements. Then, they would just kind of haphazardly sew it into the net. Not knowing whether it was done correctly, or it met the requirements for the opening for the turtle to get out. As a result, there were some significant losses of shrimp with early TED designs. And that was the tough part. Because we didn't say, the agency didn't say, you have to use this TED. We've tested this. We know what it can do. And if you use it right, you're going to have minimal loss of shrimp. We said, here are the generic requirements. It's got to be a minimum size. It's got to have spacing of bars that's four inches, and a few other things. For the most part, you could build it yourself. Since then, primarily in the '90s, we started looking at these guys are claiming they're losing thirty, forty, fifty percent of their shrimp and what's going on?

SS: And those are with TEDs that were marketed, right?

JM: Yeah. There were a lot of manufacturers, not a lot, there were manufactures of TEDs that came out. They would build a TED based on the generic description. And to look at the TED, it doesn't look like there's much to it. In terms of getting it installed correctly and using the materials that are going to last over a long period of time, there's a lot more to it. So, when a

fisherman would come to us and said that thing is, my TED is, losing thirty, forty percent of the shrimp. If we could look at it and he could hang it up for us in the back deck of the boat we could tell him yeah, you are, or you aren't. There's things you can see initially, or right off, that tell us if you did this or you did this you might have a better shrimp catch.

SS: Even up to the 1990s that's happening. So, it's an ever changing, evolving net science kind of thing.

JM: It is. I think we are at a point now where the industry is in such bad shape overall in terms of cost of fuel, imported shrimp that is coming in; these guys are just barely getting by. What that's done is reduce the number of boats in the fleet overall. I'm sure you've heard this.

SS: Katrina didn't do the fleet size any favors either.

JM: It didn't. No. Now you got this reduction of effort in number of boats. The guys that are left are the ones that in my understanding are the ones that are in it for the long haul. With regard to their TEDs, we're seeing these guys are concerned that they've got the best stuff, the best TED on the boat. So, we're not seeing this diversity in TED design and quality that we used to see. Now it's all, if they're in the fishery they're using the best stuff they can get.

SS: Can NOAA come out and say, if there are several TEDs that are marketed, can NOAA come out and say this is the one we recommend?

JM: We've tried that, thought about it, and our legal department isn't really excited about us doing that. They don't want us to put a stamp of approval on a given TED design. I can understand it because when you get out at sea and you're using a TED that's got a NOAA stamp of approval on it, there's some things that a fisherman can do to it if he wanted to, to make it inefficient. To make it illegal. If a US Coast Guard officer boards your boat and checks your TED, which they do, or a NOAA law enforcement officer checks your TED; if we've endorsed that TED, and there are some things that they can do to make it illegal, it gets to be a bit of a conflict, a little bit of a problem. There are too many things that could be done to the TED that could make it not work. So, endorsing one design is probably not the best idea.

SS: Actually, we talked about how in the '80s there might have been 8,000 offshore boats, and you said, maybe 3,000, closer to shore. What would you estimate is out there now?

JM: I don't have the exact figures. We do know that with regards to offshore efforts, there has been a seventy percent reduction in the fleet size. Since 2004.

SS: Since 2004, okay. And Katrina, which for the record was a massive hurricane, was in 2005. Then it was followed closely by Hurricane Rita which probably damaged some shrimping efforts in Louisiana.

JM: Exactly.

SS: Seventy percent reduction offshore. Any idea what the reduction is inshore?

JM: I don't have a good feel for the inshore because most of those boats are permitted through the states. They're fishing strictly state waters. What I've heard with regard to the number of permitted boats in federal waters now, which is outside the COLREG line, that there might be six hundred permits, six to seven hundred permits for federal waters.

SS: Would that be Mississippi permits, or federal permits for the whole Gulf of Mexico area?

JM: Yeah, that would be for the whole Gulf of Mexico area. The federal permit allows you to fish in federal waters, anywhere in the Gulf. Then, there is a separate permit for each of the states. State jurisdiction. But I would expect that you'd see this home a pretty similar decline in the inshore fisheries too. The small-time inshore fishermen that works just Mississippi Sound, or the bays, or the bays, he's got to pay for the same kind of fuel. He's got to pay for gas and he's not getting that kind of money on his shrimp.

SS: Not big numbers of shrimp. What are shrimp prices right now, wholesale?

JM: Well, wholesale, I've heard everything from a dollar and a half to two dollars for [varied] fifteen count shrimp. Which is a jumbo. Back in the '80s, those same shrimp would bring almost three dollars a pound. Sometimes more.

SS: Was fuel cheaper in the '80s? I can't even remember.

JM: Yeah. For diesel, it was less than a dollar a gallon.

SS: And what is diesel now?

JM: You know I don't really know. I'm going to say it's probably around, it may be about two dollars a gallon.

SS: We had started out with number one. What role you played in introducing TEDs? So, we've touched on some of these questions. The second question is how are TEDs viewed in the early days? Is there anything you'd like to add to that?

JM: I think we covered the industry's view early on. From the conservationists' side of things, they were keeping very close tabs on what the government was doing, what our agency was doing. They were reading our reports and they were saying that with the very early NMFS' TED we had come upon a device that was excluding ninety-seven percent of the turtles and we were showing that it had no effect on shrimp catch rates. That's when they said you've got the answer. You need to move forward and implement this, ASAP. You are bound by law to do this. That was mid to late '80s. That's when the agency started the process of writing regulations and going out and doing the public hearing. Is wasn't just happening fast enough for the conservation side of things. That's when we saw the counter rise in fisheries industry associations that were pushing back.

SS: You guys were caught in the middle.

JM: We were right in the middle of it. Exactly. So, you had concerned shrimpers in Louisiana. The concerned shrimpers of Texas. That got involved and started pushing back and saying no, not going to do it, now here. Again, I was still, I wasn't in management at that time. I was one of the researchers. I don't have a lot of the details of the back and forth negotiations between the industry and NOAA management and the NGOs. There were a number of meetings that were held to try to work out a common agreement to the regulation. That became very complex and convoluted. The conservation side of things wanted TEDs used everywhere all the time. Industry would push back and say we think it should only be offshore boats, and it should be on nets any smaller than X. They started to compromise.

SS: Where the fishery industry folks ever in a meeting with you and the NGOs or the conservation groups?

JM: Not in the early days. I didn't get a chance to sit in on much of that. There were some meetings that were held here in which some of the details of the regulations were discussed. For example: there was discussion to use, have an exemption for TEDs for boats that were of certain size. If you were a small inshore boat and you only pulled a net that was like say twenty feet in length, you could be exempt, but you had to abide by tow times.

SS: Okay.

JM: We had some meetings with industry and some sea turtle physiologists to sort out what's a reasonable tow time? What could kill a turtle? Those were held right here. Not in this building because this building is new. So, kind of worked those kind of details out, and industry voiced their opinion. Well, a twenty-minute tow time isn't reasonable.

SS: In terms of a catch.

JM: In terms of a catch. A fisherman, his argument against that would be, I'll spend all day just pulling my net up, putting it back, pulling it up, putting it back. I need something a little bit more reasonable in terms of time.

SS: Why would a small boat, why would it be exempt and a large boat wouldn't?

JM: Well, that's a good question. Because it's certainly capable of catching a turtle. Regardless of the size of the net or the size of the boat. It was determined, and again, the conservation side—they compromised. A lot of their initial demands with regard to the [regs] to give a little and what they gave was, okay well, if you're saying that these smaller boats can't tow, and they really can't tow as long as a big offshore boat. They just don't have the horsepower. I mean the longer you keep your net down the more fish and shrimp you're going to catch. Be it too much, you just can't handle it on a small boat. By virtue of their sheer size of their boat, and the size of the net, they can't tow for much more than maybe an hour or an hour and a half. Conservation saw that and they said okay, we'll go along with letting you be exempt from TEDs but we still want you to comply with some sort of restriction in tow time. I think those tow times ended up

being fifty-five minutes in summer, the water's warmer. And, I think it was seventy minutes in winter.

SS: So, when the water's colder the respirations are fewer? So, the turtle can stay down longer?

JM: That's the theory.

SS: Or, its metabolism has slowed down?

JM: That's the theory, they slow down so that they can retain, they can utilize the blood that's in there, or the oxygen that's in their blood much more efficiently.

SS: Yeah. A slower metabolism. In the colder weather. I guess it would work and reasoning would be that even if a turtle had been holding its breath for fifty minutes, another fifty minutes it would still survive. Something like that?

JM: Potentially.

SS: If it was brought to the surface?

JM: It could. It could possibly do that if the water was cold enough. Now, there was also some evidence, and a paper was just written a year ago that shows that's not really the case with turtles. That, in fact, it's just the opposite. The colder water –

SS: They use more oxygen.

JM: Yeah. Which is totally opposite of what the original thought was. They are an amazing animal, as to how long they can stay submerged, and still think they're dead, and they come up and they look dead. They're comatose. You know they've been down for quite some time but yet, just leaving them off to the side on the deck in a shaded area they revive. They come back.

SS: Do you take them out of the sun so they don't dehydrate?

JM: Yeah, exactly. Keep them cool. Keep them wet. Elevate the posterior part of the carapace. So, that if they do have water in their lungs it will drain. And you just leave them. You can talk to any shrimper that's ever caught a turtle that has tried to revive it. They'll tell you that. Stick them in a corner. Keep them shaded. Keep them wet. And every once and a while they say you go and pump on their shell.

SS: CPR?

JM: Yeah. They come around.

SS: I actually saw one on the beach. I guess it was around 2001. But didn't know a thing about them. I couldn't move it. It was big.

JM: Was it big?

SS: I don't know it was about four feet long. And it seemed like it was dead. I don't know where it was in relation to the tide. I don't know if the tide was going in or out. But I've always thought what a shame that it just stayed there and maybe rotted or something. Or maybe it came back around.

JM: It is hard to say. Usually when they wash up on the beach, that's about it for them. They've been dead for some time and they drift in.

SS: It looked like it was just in perfectly fine shape. It wasn't damaged, you know. I mean I didn't turn it over but it looked like a brand-new turtle. It was beautiful. I don't know what kind it was. I didn't know who to call to report it. I have two blood hounds. I had them with me. And at that time, I didn't realize I wasn't supposed to have them on the beach. I grew up in Gulfport and I left in '73. When I was a kid I took my dog down to the beach all the time. I tried to figure out a way to rig the dogs' leashes up to the turtle to get it to the van then I thought I can't pick it up when I get it to the van. So, I just had to leave it where it was. It was beautiful. I hope it did revive and get back in the water.

JM: It may have.

SS: How do you think, in regards to question number three. How are TEDs viewed today by the shrimping industry?

JM: I think it's still a mixed. I may have said that things are drastically changed. With regard to the way they view TEDs, I don't remember. I think there's still a mix out there. I think the majority of fishermen have resigned to the fact it's not going away. It's here. Been here for over twenty-five years now. Those that are left in the fishery, shrimp fishery. They have much larger problems than TEDs these days. They are trying to make it from one trip to the next. What we've seen is actually a lot more interest from fishermen. In, hey, what's the latest and greatest on TEDs? What can you tell me that's new?

SS: They want to know the best TED practices.

JM: Right. So that's encouraging. That's a function of my group, Harvesting Systems Group. It's a sort of now be the point source for the industry on new ideas. Not just for TEDs but also for fish excluders, which are also a requirement now. I talked a little bit about that modification that we made in the early days to allow fish to escape. Now there is a requirement that in addition to a TED you got to have a fish excluder to reduce fish bycatch in your trawl.

SS: Which is different than a TED.

JM: Well, yeah. It's a different piece of gear. It's dependent on the TED because we use the TED to get rid of a lot of debris, and large objects, that would not allow the fishing splitter to work as well as it could.

SS: So, it's in place so that whatever got through the TED might still get out through the fish excluder?

JM: Yeah, exactly. Our group is this sort of source of information for the industry. Over the years we have built up this relationship with a lot of the guys from, a lot of fishermen, all the way from North Carolina to Texas. That if they want to know what's the latest and greatest, they'll give us a call. I think overall, as I said. I think the majority have determined that the TED is a good thing. I had one fisherman tell me that, he was at a meeting and came up to me. I've known him for a long time, and he said, you know I just wanted to let you know what I did the other day. He said, I took my TED out. I said, oh, okay. He said, I hadn't had it out of the net in many, many years. And he said, I just wanted to see for myself again what it was doing to my catch. Which is a big risk because if you get boarded by Coast Guard or by Federal Officials, it's a pretty stiff fine. But he took the risk and he said, you know I forgot, I made one tow and he said, I forgot all the garbage that I used to catch. All the sharks, all the stingrays, the trash. He said, I completely forgot. And he said, it was like very obvious that this TED is doing a lot for me and I had forgotten.

SS: He needs to do a commercial for NOAA.

JM: He should, yeah. [laughter] He should.

SS: Some public relations work. We've talked about number four. Some of the challenges faced in developing TEDs. Are there any challenges that we haven't talked about you can think of?

JM: Well, no I think we've pretty much covered everything. It was every month of the process for ten, fifteen years was another on something new. Some new challenge. Once we had gotten over the hurdle of implementation, and the regulations, and we had ramped up our capacity, our groups' ability to do outreach. We had shifted from doing basic research now to an outreach role. We had a regulation requiring TEDs. We had to make sure the fishermen had the information they needed to use it effectively. So that was a big challenge. Again, we hired some ex fishermen to be our, I call them, our disciples. [laughter] They spread the gospel of TED. [laughter] They went forth and talked to the masses and they got everybody the information they needed. That wasn't easy, that was not easy. And still, even in the '90s a lot of resentment. A lot of resentment. But they did it, and they did a great job.

A challenge that came up in the mid '90s also was the rule and the regulation was expanded to cover countries outside the US that were exporting shrimp into the US. This was a law that was passed under pressure to Congress by both the US fishing industry. That said, hey look, we're here protecting turtles. Yet, we've got all this imported wild caught shrimp, just like they fish the same way we do, and they're not using TEDs.

SS: Doesn't seem fair.

JM: Doesn't seem fair. On the other side of the coin, it is the first time that the industry and the conservation groups [laughter] join together. Because the conservation groups said, yeah, we want turtle protection to be expanded in these other countries. So, the law was passed. I think it

was in May of 1995, the requirement for TEDs went global. If you were a nation exporting wild caught shrimp, not aquaculture shrimp, but wild caught shrimp. This led to a series of challenges from other countries on the World Trade Organization. Saying, this is unfair. We got involved with the State Department. They said, look we need a way to be able to transfer this technology to these other countries. Can you help? You guys are the experts. Beginning in '95, we started working globally. Doing the same thing we've done here in the US. Since that time, we've probably conducted TED workshops and outreach to over twenty countries around the world.

SS: What were their reactions? I guess I'm thinking about were you meeting with fishermen? Were you meeting with –

JM: It was a mixed group. We would meet with –. Because we were working as technical advisors to our State Department, we were on official business. Our first interactions would be with the foreign government. Usually their fisheries departments. Ultimately, we were there to conduct workshops for fishermen. We would stage workshops in local ports. Do at sea demonstrations with a group of fishermen. Spend a day or two on a boat showing them how TEDs work.

SS: Did they have the same reaction as the US shrimpers had had?

JM: I think, yeah. For the most part they were very skeptical. But, at the same time, they were interested in it. You could see that they were looking at it. Thinking, okay, maybe this thing – Just like I was telling you the US, some of the US shrimpers could see right away that this thing might actually be a benefit. I think we saw that with a number of the foreign fishermen. They were always very respectful of us. I don't think we went to a country where we had any fisherman just outright come up to us and say, you know what, this is a piece of crap. Get out of here. [laughter]

SS: And I'm gonna throw you overboard. [laughter]

JM: No, they never did that.

SS: More respect.

JM: I think they respected the thought, or just the idea that somebody somewhere was working on this kind of idea. This concept. And that they appreciated for this ingenuity, I think. And that somebody's trying to come to us and offer us this new way of fishing. I think they appreciated that.

SS: Did you get the sense that they were going to be able to afford to keep TEDs in their nets?

JM: I think in third world countries it's always the biggest question. The technology is not going to be adopted as it was here. Because it simply costs—money.

SS: Right.

JM: Places like India and in other; well, India is not third world anymore. The cost of a TED, even \$150 US TED is more than they can afford. In some countries the governments would help pay for TEDs. In many places the industries makes money and they catch a lot of shrimp and they export a lot of product to the US. There's a lot of capitol there.

SS: That was their motivation.

JM: There motivation was to keep the US market open.

SS: I guess I'm thinking about people who might not think of fish we throw back as trash fish.

JM: Exactly.

SS: They might have a market for those, they might eat them themselves.

JM: You're exactly right.

SS: So, there might be some resistance there.

JM: And there was. That's a good point because that consistently was the fear, or the concern, that a lot of the foreign fishermen had with the TED. What's going to happen to my fish? They probably make a lot of money. They do make a lot of money on their shrimp or more money than anything else they catch. But the fish is what sometimes they used to pay the crew.

SS: They actually paid them in fish?

JM: Well, they'll sell the fish at the dock and then the Captain will turn around and that's your money. It's incentive for the crew to pick out certain fish and make sure it's put on ice, or whatever. They go through the extra effort and then they get the profit from it.

SS: So, all of that culture would have to change if they were going to use the TED.

JM: Yes, but the TED is a sorting grid, as well as, you still are able to retain a lot of marketable fish with the TEDs. You are not losing all your fish. You are going to lose big, big fish, big species. You have the spacing between the bars that's four inches, so, anything larger than that in terms of body width is probably going to be excluded. Big fish like red fish, and groupers, and snappers, and such like that probably would be excluded. A lot of the smaller fish that are also marketable are retained, they're not excluded.

SS: So, it kind of works out.

JM: It does.

SS: It just sorts them by size more than they are completely excluded.

JM: Exactly. A lot of the times when we do the demonstrations that's the thing that most fisherman are surprised to see. They say, wow, I'm not losing all my fish.

SS: Yeah.

JM: I am able to keep a lot of the species that I want to sell. In fact, we have two projects going on right now. One is in Gabon, Africa. And, one is in Malaysia, where we're introducing TEDs. So, we have people working there and that's the big concern. Both of those areas got a lot of sea turtles so we're working with NGOs. They want us to come and demonstrate TEDs but we have to go over and we have to demonstrate through these experimental method that, what is the impact going to be on, not just the shrimp? What's the impact going to be on fish? That's what we're doing now. We're in the process of doing a number of tows that we can say, here's what a TED is going to do to this particular species and this and this.

SS: Yeah. Sounds like interesting work.

JM: Yes.

SS: If my funding runs out, I think I might apply for one of those jobs. [laughter]

JM: We need help.

SS: We've talked about five two. It's what were the challenges facing getting the shrimping industry to use TEDs. Is there anything you want to add to that?

JM: No, I think we covered it pretty well. I would say that the key to all of this was getting good TEDs to fishermen. I think I said earlier it was easy to build a bad TED. It's not as easy to build a good TED. So, we had to work pretty closely with TED manufacturers like Noah Saunders, who started from scratch with regards to TEDs. He's a great example and didn't know what a TED was. We worked with him, he came out and participated in some of our projects out at sea and he got to see exactly what we were talking about. He started building the Super Shooter which was the standard for a good TED—and still is.

SS: Wow.

JM: He and a couple other key people were really the one's that turned things around. We got a call from a fisherman in North Carolina. He said, I got to have a TED. I don't care what it costs. I need something that's going to work. You could tell them. Here's the guys, they know what we're talking about. They looked at the way we built them. They come out and they work with us. That's our recommendation. Doing that kind of thing, you would get these very good TEDs seeded out there in different parts of the country. Then it's just word of mouth.

SS: Yeah. It created a market.

JM: Right.

SS: Pretty exciting.

JM: Yeah.

SS: We've talked about how the early TED models compared to later models. Which is question number six but is there anything you want to add to that?

JM: No, I don't think so. We covered that pretty well.

SS: You also talked about seven, describing your experience with protests against TED regulations. We talked about that some. In terms of the meetings that you had. Did you have any other experiences with protests?

JM: Personally no. It's interesting though, that even today we talked about our experiences in other countries. Just last week I was in a meeting in Costa Rica. And, Costa Rica; I call it the Louisiana of Latin America. [laughter] They're very vocal fishermen. I did say that most fishermen in other countries have been respectful. But, if there [laughter] was one place it's Costa Rica that they still have a problem with it. So, whenever I go down there, they get kind of vocal with me. That's fine. We've gone through it before. It's still around. It's still there in some places. Some of the countries that have just started using TEDs within the last ten years are where we were twenty years ago.

SS: You can kind of predict what kind of problems you are going to have [inaudible].

JM: And you got to have the answers for them. In the other countries, when I show up, or someone else from my group shows up, to help with their TED development, they still see this as a US law. That says, you know, the US came down here and said you can't. You are going to have to use these things or you won't have access to our market. They resent that.

SS: Sure.

JM: But, what is interesting this time. I was in a meeting where a couple of the fishermen got up and got very vocal but their own government representatives were there and they stood up. The government representatives said, look this is not a US law. This is a Costa Rica law now. You have no issue with the US. Which is a big change because even in the early days of this foreign implementation, the governments felt the same ways the shrimpers did. They said, you know, here the US, is again pushing, their weight around.

SS: Right.

JM: But overtime, they've seen that the fishing industry's still working, even though they have TEDs. It wasn't the big bomb that they thought it was going to be. They were all going to lose shrimp, and businesses was going to fall apart. But anyway, that's sort of an interesting. The resentment is still there. It shows up in different ways now.

SS: Some people just don't like to be told what to do.

JM: No.

SS: Probably all of us.

JM: All of us.

SS: Have you ever been involved enforcing compliance regarding the use of TEDs?

JM: Yes, yeah.

SS: What does that look like?

JM: Well, another mission of our unit, the Harvesting Systems Unit, is to train enforcement agents in how to enforce TEDs. The best way to do that is to go out to sea with them. With a group of enforcement officers. Whether it's Coast Guard. Whether it's state agencies. Or, even our own NOAA Office of Law Enforcement. We do this training. We have our own small RHI (Rigid Hull Inflatable) that we can take them offshore, or wherever. We actually do boardings. We can see. We can train them. A lot of the guys that are involved in this kind of fisheries enforcement, they've never done it before. Coast Guard, they get a lot of turnover so they call us in to actually help them do some training.

SS: They need to know what the net looks like, what the TED looks like.

JM: They need to get familiar with the whole scene of coming along side of a working shrimp boat. What do you do? How do you inspect the TEDs? There are certain things you have to do. Certain things you can do to see if the fishermen maybe has his TED sewn shut. There are certain things you key on to look for before you ask him to bring his nets up.

SS: Is a board, once you've boarded, are you always going to ask for the net to come up?

JM: Yes. The way we prefer to do it is to find a boat that's actually got its nets in the water and is fishing. Its nets are down on the sea floor. You come up. You radio the Captain, and identify yourself, and ask him if it's okay to board the vessel. While the nets are still fishing, you come alongside. Come up and get up on the deck. Then you say okay, now you can bring your nets up. That's when you watch to see if there's anything that the fishermen are doing. Because there's ways they can sew the net. Sew the TED up. Then trip the sewing line before the net even gets up on the boat.

SS: Trip the sewing line. What does that mean?

JM: I brought you a model.

SS: Really.

JM: It's mine, you can't keep it.

SS: Okay. I wish I had brought a camera. I should have. I should have brought a camera. I may have to come back and I'll bring a camera just; we're five after twelve.

JM: Are we really?

SS: Yeah.

JM: Wow. This model was built by a very old friend of ours from Brunswick, Georgia. Home of Sinky Boone. [laughter] Man by the name of Jack [River] built this model and it's a great teaching device. It gets tangled very easily. I was going to show you.

SS: That's for catching really little shrimp. [laughter]

JM: Have you've seen a trawl?

SS: You know, I've just seen them photographed. I've never seen it in 3D.

JM: This is like a one thirty-second scale model. [a lot of shuffling] Sorry [inaudible]

SS: That's okay. [a lot of shuffling] [long pause]

JM: We get a lot of students that come through.

SS: Oh, that's great.

JM: We actually have a full-size trawl that we call the Turtle Hurdle. [laughter] We can set it up on a grassy area and the kids can actually go in the net, and run through it, and come out the TED.

SS: Wow. They're that big, huh?

JM: Yeah.

SS: That children can get through them. When you see a photograph of a turtle going through a TED underwater, there's nothing really for scale.

JM: No, there's nothing.

SS: You can't tell how big the turtle is.

JM: Exactly. It's tough. [long pause] [inaudible chatter] If I were a shrimper, I'd have this untangled minutes ago. [laughter] There we are. So, these silver wires are the tow cables. This is what you would see from the boat. [inaudible chatter] So you'd see one, there's actually one cable coming from the outrigger of the boat. Tie break to that, and then it splits. It's got a split, a bridle.

SS: Like reigns.

JM: Yeah. And one goes to each door, those are the shrimp doors. As this whole device goes down in the water, the boat's moving forward at about three and a half to four knots.

SS: It spreads the doors apart.

JM: Spreads the doors apart, okay? Now the net is completely spread and it's on the bottom. It goes all the way to the bottom like this. These doors take a position just about like that when they're fishing. This net is floated. These little wooden things are floats. It opens the mouth of the net up like this.

SS: So, the top of the net goes as far as it can and [inaudible] floats.

JM: It's only about three and a half to four feet high. It's not super high. You don't want it; the shrimp are down right on the bottom.

SS: Okay.

JM: It doesn't need to go very high. The less height, the less drag you have. It's much easier to pull. It's basically a funnel. These chains will ride along the sea floor and they kick the shrimp up and into the trawl. They call this a tickler chain. The turtle then is feeding on the bottom. On whatever shells, crab, and it incidentally gets caught up in this net. They're not real observant. My dealing with turtles, they don't have a real good sense of sound. Their vision is probably pretty good. A shrimp trawl is actually pretty quiet. You can hear the boat go over top but this is much further behind the actual boat. Maybe a hundred yards or so. So, the turtle doesn't hear it coming and gets caught. We've got video of how a turtle reacts once it gets caught. It actually tries to swim and try to come out of the net.

SS: Back toward the mouth?

JM: Right. They orient this way. But the net's travelling two and a half, three knots. Eventually it tires. The turtle tires. It goes back into this section. There's the TED.

SS: So that's the best place to put it at the tail end?

JM: Right.

SS: Where the funnel is actually getting smaller.

JM: Correct. Right. Here's where the TED is, we've actually got a [inaudible], that's illegal. [laughter]

SS: A little grid.

JM: This is the opening. When the TED is fishing, it's in a fishing configuration, this flap actually comes way back over here like this and closes off the TED. But it's not sealed tightly. It'll open if something hits it, and open up freely. And then the water flow, once something comes out the water flows just kinda tucks it back up underneath like that. So, all the time the shrimp are filtering through. They're not going to come out that opening.

SS: They're filtering through all the way to the back.

JM: Into the tail back. So here is where everything collects, right here.

SS: That's where they're going to haul off, an empty?

JM: Yes.

SS: I thought it was all of this part.

JM: No. So, I'm also going to point this out. This is the fish excluder. This is called a fish eye.

SS: It looks like a triangle.

JM: Yeah. It's got a little opening right there. Everything filters through the TED. Fish as well. What we see is that during tow, all these fish are actively swimming. The water's warm, they can swim two, two and a half knots easy. So, --

SS: They're swimming here.

JM: They're swimming here. They eventually tire. They get back in this section. And, if you give them an opening, they'll come out.

SS: And that one's on top, the TED's on the bottom?

JM: Yeah. The TED can go either way. You can have a TED that exits on the bottom, or you can have one that comes up the top. It doesn't matter. So, that's the fish excluder. When the fisherman decides it's time for him to haul back, he takes his boat out of gear and he starts hauling the cable up on its winch. That brings the doors together. The doors are coming up off the bottom like this. Everything is coming up through the water calm. Doors come out of the water. All of this is still kind of dangling in the water, maybe even near the bottom. These doors come right up to that outrigger that's on the side of the boat. At this point, the net and everything is now at the surface. Just trailing behind the boat like this. He wants to bring his shrimp up. He's got a hook and he throws it out there and he grabs ahold of this line. Everything else stays. This is called the lazy line. He puts this on another little winch and starts winding it in.

SS: So, he's really just pulling out the tail ends.

JM: He gets it up. He gets it to the the side of the boat, and they swing it over.

SS: It's like a purse at the bottom?

JM: Yeah, it's just a purse.

SS: You can untie it and then contents dump out.

JM: Everything dumps out. Then he ties it back up and he throws it back over the side, floating in water. He does the same for his other net on the other side of the boat cause he's got two, at least two. Maybe four. Two on each side. Then he puts the boat in gear and they set off again. They drop the doors, things starts over.

SS: Except now they have something to sort out aboard boat.

JM: Now they go back and do that for an hour, two hours, depending on the size of the catch.

SS: One of the shrimpers I interviewed said that hardly any of the bycatch that he throws back actually gets into the sea because he's got all these predators: sharks, and dolphins, and pelicans, and seagulls waiting for it.

JM: They do, they do.

SS: You were saying that you can have the TED, the fisherman could have the TED in there, but still not be in compliance because he's sewn something closed?

JM: Yeah. They could sew that flap, the flap that lets the turtle out. That can be sewn shut. It's a very simple thing to do. Just grab some twine and sew it shut. It's not a common thing anymore. It was common, not common, but it was more frequent back in the '90s. There have been serious cases made so fishermen have decided it's not worth it. [long pause]

SS: Going on to number nine at twelve fifteen. Do you know how compliance regarding the use of TEDs has changed over the years?

JM: I would say that it's improved considerably. The early days it was sort of a cause and effect sort of relationship with fishermen and TED compliance. As I mentioned earlier, because we had, there were really just this wide variety of TEDs out there. Some fishermen were truly extreme saying, a lot of shrimp loss. The only way they knew to correct that was to sew the TED up, or do some other things to it that would make it illegal. Enforcement efforts were ramped up because that led a lot of illegal TEDs in a small area. Let's say, for example, off the coast of Louisiana, led to these stranding events for sea turtles in the summer months.

SS: How does that work? Tell me about that.

JM: It's not just Louisiana, it happened everywhere. It happened in Georgia. It happened in Texas. We would start getting reports of large numbers, or consistent, numbers of sea turtles washing up on the beaches. It happened to coincide with maybe the opening week of shrimp season in Texas. Our first thought was, somebody's out there fishing with the TED sewn up.

Especially as sea turtles' populations recover, we see a lot more turtles out there now. It only takes two or three boats that are fishing illegally to cause a stranding event.

SS: So, they were dead? The stranding event is a dead turtle?

JM: The stranding usually refers to a turtle that's washed up on the beach dead. And again, the reason these guys, or some of them, would sew their TEDs up because they were truly losing shrimp. That came back to us, to my crew. We needed to get involved even further with industry and get out on some of these boats and look at their TEDs. And, talk to these guys one on one. We did a lot of partnering up with enforcement. Let us ride with you. We spent a lot of time on the water and we saw problems.

SS: So, that if enforcement would stop and give someone a fine, you could at the same time tell them how to solve their problem.

JM: Yes, exactly. That took many years of getting out there on the water and I think we did two things: It showed enforcement that you guys need to be out here doing this. Even if you do just a handful of boardings in a month's time. You have to let fishermen know that your presence and there's a real chance you'll get checked. And when you do the boardings, you have to know what you are looking at. You can't BS these guys. And you can't get on board and just say well there's a TED, yeah it looks right, you're good. You got to check it. If they know that you don't know what you are looking at, there's a greater chance they'll cheat with it. It is a matter of making sure enforcement officers were trained. That they were confident to board a boat, and check a TED. Also, at the same time, compliance hinged on fishermen having a decent TED that wasn't going to lose them shrimp. You had to hit it from different sides.

Today, we still see problems. You factor in another component to this in that we have a large number of Vietnamese shrimpers on the Gulf Coast. There's a language problem. There may be a bit of lack of concern from some of the Vietnamese community over TED regulations. I think we've seen that. They don't seem, at least in the early days, they didn't seem that concerned with having the proper TEDs onboard. It's changed but still we see, I think overall, we see more issues with TEDs in the Vietnamese community than we do on other boats. It's a problem that we're trying to address. We work with Dave Burrage's group. Dave's got an interpreter. A Vietnamese gentleman that works for him now. We do a lot of dockside work with him and get out and try to talk to them about TEDs.

SS: So maybe it doesn't go beyond just the language problem? Or, you think it does?

JM: I don't know. I think it's a reflection of that it's a very closed community. They don't interact with; this is just my perception, they don't interact with other fishermen. That's how you disseminate this kind of information. It's not just us. You hear it from Bubba Joe down the road. Or in the boat next to you at anchor, that hey, you know, I bought a TED from Noah Saunders the other day and that thing works. That's how you pick it up. That's how you improve. We try to do the same thing and get that information into the community there. I don't think they talk as freely amongst themselves as our other fishermen do. I don't know why.

SS: Maybe networking is kind of an American institution.

JM: It may be. I know that the Vietnamese are very competitive with one another. They don't share secrets very often. At the same time, they are very innovative and some of the new ideas that we have obtained on fish excluders, that extra component that they have to use in federal waters have come directly from the Vietnamese community. They see the problem with bycatch, they know.

SS: They are more amenable to the fish excluder than the turtle excluder. Maybe because they eat turtles.

JM: Well, I don't know. I think they know they shouldn't be eating turtles in the US.

SS: But culturally, I don't know.

JM: I see what you're saying.

SS: I grew up in the US and I've seen fish in the markets all my life but I've never walked into an [AMPM] or Walmart and seen turtle for sale. But maybe the Vietnamese, maybe there are turtles for sale in their markets and so for them, that's giving up a delicacy.

JM: It very well could be. They have less regard. Yeah, if a turtle being something they could potentially eat or sell.

SS: Why exclude them, they're highly desirable to eat. I don't know, that would be interesting to know.

JM: Yeah it would be. I think, with that said about we see more problems with TEDs with the Vietnamese community now. Again, I don't want to paint them all with the same brush because I think even within the Vietnamese community you have pockets. There is a Louisiana community. There's a Mississippi community. There's a Texas community. I don't think they interact a lot between themselves. If we see problems, it's a group. It may be the Louisiana community. All those guys are using TEDs this way, which is wrong. It's just because they don't know any better maybe--I don't know. We do need to do a better job in getting into the Vietnamese community. Not just for TEDs but for a lot of other things.

SS: A lot of other regulations?

JM: Talk to them more about sustainable fishing overall. In using different kinds of things like fish excluders, different fish excluders. To try to reduce the bycatches, juvenile fish.

SS: Yeah, one would think that not over fishing would be common sense but maybe not.

JM: Well, if you go to Vietnam and you go to some other countries in that part of the world, they don't know about sustainable fishing. Everybody out for themselves. Use the smallest mesh you can use and catch whatever you can.

SS: I bet very little of it gets thrown back.

JM: Very little, very little gets thrown back. You go to the fish markets and they're selling fish that are two and a half to three inches long. Which we would, that's a juvenile. That's less than one-year old fish.

SS: And what's the problem with consuming many fish that size? What would the problem be?

JM: The problem is that you're harvesting the broodstock. You're harvesting all the recruits that make up the larger population. And the population continues to decline and doesn't, has no new recruits. It has effects on the diversity of the population. Those fish don't have the chance to spawn. The thousands and tens of thousand of eggs that they normally would and can have serious implications on the health of the population in general.

SS: Which can even come down to, I guess, like chance mutations of DNA being adaptive to their environment. And some evolution happening when you decrease the number of the harvesting broodstock, you decrease the chances of any adaptation happening. That might mean they become extinct.

JM: Exactly. Yeah, you decrease their ability to adapt to environmental changes. We all know that we're, looks like we're, in some environmental changes right now that are –

SS: We're really good at that. We're really good at reducing the chances of adaptation. Excellent. But are there regulations against reducing broodstock in the US?

JM: Yeah. We have in all the shrimp trawl fisheries we have a minimum mesh size. You can't use anything smaller than an inch and three quarter in the tail section of the net which is where the juveniles would escape.

SS: If they happen to not get through the –

JM: If they happen to not get through the fishing excluder, then there is an added –

SS: That mesh size back there let's them out.

JM: Right.

SS: Well I am going to turn off the recorder cause we're at 12:30PM and then maybe you and I could decide about what we are going to do about finishing.

JM: Okay.

SS: But I do want to get on the record thank you very much.

JM: I've enjoyed it immensely.

SS: Great.