

MARITIME AND SEAFOOD INDUSTRY MUSEUM
UNIVERSITY OF SOUTHERN MISSISSIPPI

AN INTERVIEW WITH SUSAN SHIPMAN
FOR THE
TURTLE EXCLUDER DEVICE ORAL HISTORIES

INTERVIEW CONDUCTED BY
STEPHANIE SCULL-DEARMEY

ST. SIMONS ISLAND, GEORGIA
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TRANSCRIPT BY
FANTASTIC TRANSCRIPTS

Stephanie Scull-DeArme: The little recorder looks like it's working. This is an interview for the Maritime & Seafood Industry Museum and the University of Southern Mississippi. The interview is with Ms. Susan Shipman, and it is taking place on May 12, 2010, in Hattiesburg, Mississippi on my end, and St. Simons Island on Ms. Shipman's end. I am the interviewer, Stephanie Scull-DeArme. First I'd like to thank you, Susan, for taking time to talk with me today. I'd like to get a little bit of background information about you, so I'm going to ask you, for the record, could you state your name, please?

Susan Shipman: OK. My name is Susan Shipman. S-H-I-P, as in Paul, M-A-N.

SSD: When were you born?

SS: I was born February 4, 1954, in Dyersburg, Tennessee.

SSD: Is it D-Y-E-R –

SS: S-B-U-R-G. Yes.

SSD: Tennessee. I know that you're retired. Could you tell us your position at retirement and give us a brief description of what you did?

SS: Right. When I retired, I was the director of the Coastal Resources Division of Georgia DNR – Department of Natural Resources – and had oversight responsibility for marine fisheries, which included research and surveys, public access, the commercial and recreational fisheries – that type of thing. And then our other main role was marsh and shore protection and permitting. Any waterfront development that occurred along the shoreline we regulated. I also administered Georgia's coastal management program.

SSD: Great. Thank you. I will dive right into these questions that the museum would like to have answered, and I'll ask you what role you played in introducing turtle excluder devices to the shrimping industry.

SS: In Georgia, turtle excluder devices were actually introduced into the industry by the industry itself. They had a prototype device early on, even prior to the earliest regulations. They had installed hard grates into their nets, and it was called a Georgia Jumper, and that was to exclude jelly ball excluders. So, they were actually in the industry prior to my department as a regulatory agency requiring them. My role was – with time as the relationship of sea turtle mortality and shrimping became known. We moved forward to promulgate regulations at the state level, which complemented those regulations that were being developed at the federal level. I think we were either the first or the second state to require TEDs in our shrimping industry.

SSD: Do you remember about what year that was?

SS: Yes. It was 1990. I think the federal requirement went in in '89, and we followed right after that.

SSD: Did you guys ever try to promote voluntary compliance for TEDs?

SS: No. Not really. I mean, so many of our shrimpers were using them anyway just to exclude jelly balls – the big cannonball jellyfish that are here in the spring – and that’s the time of year when sea turtles – beginning mid-May in Georgia is when sea turtles come ashore to nest. The nesting runs from mid-May to mid-July. So their roe shrimp season – the shrimp that are carrying the eggs – that’s a big-dollar season for shrimpers because the shrimp are very large. So our guys – many of them were using TEDs voluntarily but using them as jellyfish excluders. The turtles were just a secondary beneficiary of that.

SSD: Right. A couple of questions come up. I hope I don’t forget them. So do you know if there were observers on shrimp boats to see what was coming up in the nets with the jelly ball excluder?

SS: I do not. The University of Georgia Marine Extension Service – if anyone would know that, they would. But I don’t know that there was anyone keeping records of catch and bycatch and that kind of thing at that time.

SSD: Well, what kinds of turtles primarily are in your offshore waters? Or they’re probably inshore also but are in your waters.

SS: I’d say they’re near shore and it varies depending on winds and that type of thing in the spring of the year, but we have a lot of leatherbacks, the large leatherbacks that migrate through. Now, there’s been a large – you know, it’s only been in recent years that they have developed excluder devices for leatherbacks. But our primary turtle here is the loggerhead and they are the ones that are coming ashore to nest mid-May to mid-July, and then the hatchlings are hatching anywhere from mid-July into mid-September. It may run a little bit later on either end of the nesting and the hatching seasons, but typically that would be what you would say would be the average. We also have a few green turtles – not many. Very few. Hawksbills are very rarely spotted up here, and then we have Kemp’s Ridley.

SSD: Do you have a lot of Kemp’s there?

SS: I wouldn’t say a lot, but they’re probably the second most common up to the loggerhead. By far, the loggerhead is the most common. Probably Kemp’s would rank second. Leatherbacks in the spring would be the second behind loggerheads, but they’re pretty much just a spring phenomenon. We’ve had a few nests of leatherbacks.

SSD: Wow.

SS: Yeah.

SSD: That’s so cool. I wish I could see some of that.

SS: They’re big. [laughter] They’re very big. Like small Volkswagens.

SSD: [laughter] So the females have to get pretty big before they can nest?

SS: Yes. I'm not sure on the age of leatherbacks, but your loggerheads will not be maturing until they're twenty-five, thirty. I think some of the latest figures I saw were – I think, the average age of maturation for reproductive purposes was around thirty-four.

SSD: Wow. That's a long time.

SS: Yes. They're certainly long-lived, and they don't reproduce until a fairly high age.

SSD: Now, the Kemp's ridleys were on the brink of extinction, I believe.

SS: Right. So they did the – in the Gulf, they did the head start program and that – I don't know if it exactly coincided with TEDs, but I think the two efforts combined have really – not to mention the Mexicans became very rigorous in terms of patrolling their nesting beaches to protect those turtles, and probably those three things coincided to really help a turn-around with that species.

SSD: Yes. Because Mexico is one of Kemp's ridleys' main nesting grounds, is that right?

SS: Right. Yes. I think it's Rancho Nuevo, that beach, I believe. I'm not totally sure. I'm not an endangered species person, so my knowledge of it is from sitting in meetings from the regulatory arena.

SSD: Right. I want to get back to the regulatory process. But I wanted to ask you about the National Marine Fisheries TEDs. Were you ever required by the feds to use the NMFS TEDs?

SS: Well, because it's the Endangered Species Act, their law, as I understand it, technically could come into state waters anyway. We were promulgating regulations to backstop theirs, but at the same time, it's like harassing a sea turtle that is on a beach that's a state-owned beach. Those federal laws take precedence. That's not the case with most things. Usually state laws supersede, although they, in most cases, can't be weaker than a federal law, but you can have more restrictive laws. When we developed our TED regulations, we actually incorporated by reference into our rules the federally-accepted TEDs, and we did that so that, with time, as TEDs were refined and perfected, as new TEDs came along and the federal government approved them, they would automatically be approved for use in our state waters, too.

SSD: So, I guess when you write regs like that, you have to know precisely what is the certified TED because you're going to have to enforce it also. So you have to be able to train people to recognize it?

SS: What we ended up doing, we referenced the code of federal regulations, the section that incorporated the federally-approved TED. Now, at the same time, and this relates to some questions down the line – at the same time, our law enforcement officials – and I don't remember the year that we went into what's called a joint enforcement agreement [JEA]. It was in the '90s at some point. We had that with the National Marine Fisheries Service, and so our enforcement

agents, DNR's enforcement agents, were in a separate division from mine, but they're in the same building. We work very closely together. They were deputized to enforce the federal regulations as well. They were trained by the National Marine Fisheries Service. The National Marine Fisheries Service has a training unit in Charleston, South Carolina, which is, I'd say – probably has been there, I'm guessing, maybe in the last decade, twelve years. It doesn't go back as far as the very early days of TEDs, but as TED regulations progressed, the training center would come down and train the DNR agents.

SSD: When you think back to the time when you were writing the regs, is there anything anecdotal that you'd like to put on the record that you think people might be interested in in a hundred or two hundred years?

SS: [laughter] Oh, my goodness. I really can't because, again, we were just sort of tracking the federal government at the time. One of the earliest regulations was what was called the trawl time. We never implemented that, and it was very short-lived in the federal system. I think it was the very first regulation. Shrimpers could have their nets down a certain number of minutes and this, that, and the other. Even when it went in, everybody said that's virtually impossible to enforce. Are you going to be standing on the beach with binoculars to see when a boat puts its net – releases the net down into the water to actually fish, versus just having the nets hanging the rigging. It was a ludicrous regulation. That was a federal regulation. As I said, it was very short-lived. The feds, I think, repealed it pretty quickly, and then the requirements for the actual TEDs followed that. That's where we jumped in for the actual TED requirements.

SSD: Well, how were TEDs viewed in the early days?

SS: Well, again, in Georgia, I think they were viewed as jelly ball excluders. Again, these were the hard-grate TEDs. They were called the George Jumper. Since they had been developed in Georgia, a lot of people were using them anyway. So I always got the impression from our fishermen that they were more accepting of them than perhaps shrimpers in other areas. I think the east coast shrimpers were always more accepting than the Gulf shrimpers. I think that's because they were using them.

SSD: Right.

SS: The other thing we did as an agency, and this would have been – oh, gosh – right in the very early days of TED requirements. We used some energy surcharge money that had gone to our governor's office of energy. We bought TEDs and handed them out to shrimpers that signed up, that didn't have them or whatever. Again, that was the hard-grate Georgia Jumper. I don't recall how many we distributed. I mentioned to you the other day Mike Harris, and Mike probably would recall how many we had distributed.

SSD: I talked to him. I think it was Monday. Yes. That was a great interview.

SS: Yes. He was our lead person on it.

SSD: Well, just for the record, what did the jellyfish actually do to the trawl nets that made the shrimpers want to exclude them?

SS: Oh. Well, they're heavy for one thing, and they would weigh down the bag and really, I think, impact the fishing efficiency, plus they would mash the shrimp in the bag of a net. They're just so heavy. When you get a number of them bunched up in the bag of a net, they just crush everything. So, you'd have crushed shrimp which weren't very marketable, and they're very heavy, so they affect your fuel consumption while you're trawling and all of that.

SSD: I guess they take time to toss back in when they're sorting the catch.

SS: Yes, exactly. So, at the time, it was not a harvestable commodity. Since then, they have developed a small jelly ball fishery off the coast of Georgia. The potential downside of that is that jelly balls are an important part of the leatherback sea turtles' diet, so you don't want to over-harvest them. One reason that the leatherbacks are near to shore in the spring is they're following the food source. So, if the jelly balls are near shore, so are the leatherbacks if they're making their migration north.

SSD: Right. The same thing happens with Kemp's ridleys in the Gulf. They're following the shrimp.

SS: Yes. But the cannonballs are truly the size of a cannonball. [laughter]

SSD: Are they really? Oh, my goodness.

SS: Yeah. They're like the size of a bowling ball.

SSD: Wow.

SS: Yeah. And they're heavy.

SSD: Oh, that is huge.

SS: Yes, it is.

SSD: You're the first person who's said that. That's really interesting. I wish I had thought to ask earlier – well, how big are they?

SS: Yes. They really make a mess of what else is in the bag with them. They'll crush fish, shrimp, anybody.

SSD: I guess being pulled through the water, there's water pressure on them also once they get in the bag.

SS: Exactly. Yes.

SSD: Well, do you know how TEDs are viewed today by the shrimping industry?

SS: I think they're begrudgingly accepted. Of course, subsequent to TED requirements in the last '90s came the requirements for what we called the bycatch excluders, and those were really the fish excluders. I think the fishermen are much more opposed to the fish excluders than they are the sea turtle excluders.

SSD: Do you know why they would be?

SS: I think they perceived more shrimp loss in their fishing operations from the bycatch excluder devices, although the research would suggest that's not the case. If you look at overall harvest, put the whole fleet together, everybody that's out there harvesting, the catch rates, or the catch was not diminished because of those devices. The catch has been down primarily because of effort – attrition in the fishery, economic pressures, and stresses on the industry has caused a lot of attrition in the industry. A lot of boats have dropped out. But the catch-per-unit effort, if you talk to the regulators and the people who monitor fishing statistics, at least in Georgia, our catch-per-unit effort has been steady if not increased. Well, you've got a pie that's a certain size. You've got fewer people that are taking a slice out of it. Now, for fishermen on an individual basis, you have to look at what's their [operation]. We looked at catch per trip. But are they having to trawl longer per trip to catch the same amount of shrimp? I'm not sure because they are not the best record-keepers.

SSD: [laughter] What are some of the other pressures that are making fishermen drop out of that career?

SS: Well, largely economics. I mean, diesel – gosh _ what was it last year? Whenever the diesel prices just went through the roof. You got probably the biggest pressure on them is the depressed price of shrimp because of imports, and consumption remains up in terms of human consumption and demand for shrimp, and supply is provided primarily from imports. So that continues to depress the price of shrimp to our shrimpers as your regulatory costs – your costs of bycatch reduction devices, which we call BRDs, or TEDs – and their operating costs. In the Georgia fleet, a large number of these boats are wooden, and they're virtually uninsurable, so many people don't have insurance, and they can't afford to keep the boats up. We laugh and say so many of these boats are a sinking waiting to happen.

SSD: Wow.

SS: Yes. They're just parked at the dock, and they can't leave the dock because they can't afford to.

SSD: Oh, wow. Amazing. So you can't insure a wooden boat. It's too vulnerable?

SS: [inaudible] here. Particularly an older boat, and so much of our fleet is older. You do have the steel-hull boats, and you've got some fiberglass boats, but insurance is just extremely high in that industry. I would say a disproportionately low number of boats can afford insurance.

SSD: Wow. That's amazing. That's the first time that's come up, too.

SS: Really?

SSD: Yes. I'm so glad you mentioned that.

SS: That's caused a lot of boats to drop out, as well as just the fuel prices – whatever it was – two years ago or a year and a half ago. I mean, that really broke – that helped break the back of the industry that – I mean, their operating margin with the low price they were receiving for shrimp, they couldn't even afford to fish.

SSD: Yeah. Well, on the Gulf Coast, Katrina put many shrimpers out of business. Do you guys have storms that do that on the East Coast?

SS: We have not had one in a long time now. I couldn't really speak to what happened after Hugo – whether much of that fleet was impacted or not. I know in McClellanville, which took the brunt of Hugo, and that was in 1989 – that was a shrimping port, and I know they ended up with – a number of boats were actually on the hill, on the high ground, after that storm. I don't know what the fate of those vessels was, whether insurance at the time – that was, gosh, twenty-one years ago. The whole economic character of the fishery was a little bit different then.

SSD: It's been really interesting talking to shrimpers on the Gulf coast here. They're so independent, and at least two of them told me, "No, I don't have insurance on my house. I built it. It's paid for. I insure it myself." [laughter] I don't spend as much as I make. They're just incredibly independent, and they always, in a hurricane, will take their boats to safe harbor. It's just that when Katrina hit, the safe harbors that had been safe were not safe. But they just get out there and rebuild their boats themselves. They're so independent. Well, what were the challenges faced in developing TEDs?

SS: I think one of the challenges with time – again, this was so long ago. I'm trying to recall. My recollection was that many of the Gulf shrimpers didn't want to pull the hard TEDs even though they seemed fairly well-suited to our boats over here on the East Coast. They started developing the soft TEDs, and those are the net webbing that helps eject the sea turtles. I think those were challenges – just finding something that would exclude the turtles and retain as many shrimp as possible. In other words, to minimize the shrimp loss. I think that was the big challenge in perfecting and refining, and developing TEDs. I recall a challenge over here. We have very murky water in Georgia because we have a number of rivers that empty into the ocean along our coast. So we have very brown, muddy-looking water. If you're trying to film TEDs, they would have to take any device developed here down to Cape Canaveral to find water that was clear enough to do the testing and the filming and all to see how the TEDs were functioning underwater because you just simply could not film up here.

SSD: Do you think that affected the credibility with the shrimpers? Maybe they thought, well, that may be what it does in Florida, but how do we know what it does in Georgia?

SS: We heard some of those comments. Not a great deal, but I think our shrimpers were more skeptical of the soft TEDs than they were of the hard TEDs just because they had developed the hard TED, and I think government had a bigger role developing the soft TED – and the Gulf shrimpers. There's distrust between the regions.

SSD: Is there?

SS: Somewhat. Distrust may not be the right word, but there's some rivalry of sorts between Gulf shrimpers and the East Coast shrimpers. The rock shrimpers from the Gulf coast come around here and shrimp, and our guys do not like them at all.

SSD: Well, it feels like it's their water versus this is an outsider.

SS: Yeah. Yes, their fishing grounds. The Gulf boats these days that come over here – now, it will be interesting to see with this oil spill whether we get a big influx of Gulf boats. That's the big fear over here right now.

SSD: It's legal, right, for them to fish there with a license?

SS: Oh, yes. Yes. Absolutely. But they tend to be larger freezer boats. A number of them may be rock shrimpers that come and shrimp off the east coast of Florida. Then, they come on up here during Georgia's roe shrimp season and shrimp for roe shrimp. I think because of the size of the boat, they have freezer capacity and that type of thing. I think some of our guys resent them being in our waters. In the past, they tried to pass legislation to limit the size of nets that could be used in state waters and that kind of thing. That was all industry-driven and somewhat precipitated by influx of large Gulf boats.

SSD: For the record, can you tell us what rock shrimp are?

SS: Yes. Rock shrimp are deeper-water shrimp found on more coral-line, sandy, shelly bottom, and they're found typically off-shore Florida. I want to say – I'm trying to remember the depth zone – but probably about a hundred-and-twenty feet to maybe two-hundred-eighty or three-hundred feet. They're largely found in a zone that runs the contour of the coast from about maybe Daytona down to Fort Pierce – is probably the prime rock shrimping areas. They are a hard-shelled shrimp. I'm trying to think what the colloquial name is. But anyway, they have more of a lobster taste to them.

SSD: Are they bigger?

SS: No. They're not really bigger than the penaeid shrimp. They're a different family. I think they're in a different family. We have the shallow-water shrimp – the brown, the pink, the white, with white shrimp being the predominant shrimp here in South Carolina, Georgia, and northeast Florida. North Carolina, I think the brown shrimp is probably their prevalent shrimp. Then, as you probably learn through your interviews as you get down into the southern part of Florida, pink shrimp are prevalent. Well, rock – those three types of shrimp are in a family called the penaeidae. That's just the scientific family. Rock shrimp, I believe, are in a different family, but

they're definitely deeper-water shrimp. They are longer-lived than our shrimp, but they really like that shelly, coral-line bottom which you find off of Florida. You don't find it up here.

SSD: For the record, what are roe shrimp?

SS: Roe shrimp are the white shrimp, the species – white shrimp is the species. That is the adult spawning shrimp in the spring, and they tend to be very large because the females are large and are bearing eggs, and the males are a little bit larger, then, too.

SSD: Are they allowed to be taken with their eggs?

SS: They're allowed to be taken, but primarily after a certain percentage has been documented as being in an advanced stage of reproduction. That's one of the things that our agency did. We routinely sample the shrimp populations year in, year out, month in, month out. For about two weeks out of every month, we trawled thirty-six stations up and down the coast, and in the spring, you would look at the reproductive stage of the females, and you could see how advanced their eggs or their ovaries were and whether they were in an advanced stage of development and would soon be spawning. We had various tags or labels, if you will, that we attached – we recorded for every female, depending on how far along advanced her eggs were, like yellow, ripe, etc. When we saw a certain percent of shrimp in our catches, in our sample catches, that were ripe, we would make a recommendation to our commissioner of natural resources of when to open the season. Anytime you saw more than the majority of shrimp were in the most advanced stage of egg development, you felt like you'd had an adequate spawn in state waters. Now, what I'm telling you only applies to state waters. The only time we ever closed federal waters was when we had a very severe winter that would kill a lot of the shrimp. The states, because of their sampling program, would know when their over-wintering stock had been depleted significantly. That's the only time we would ever close federal waters. Otherwise, they stay open year-round.

SSD: So the goal was to maximize reproduction so that it's a sustainable fishery?

SS: Yes. We felt, yeah, based on our knowledge of shrimp biology that an adequate number had spawned, we would open state waters. Of course, on the East Coast, it's a little bit different than in the Gulf. Our state waters run from the beach out to three miles. We don't have a nine-mile state limit over here. We have a three-mile limit.

SSD: Is St. Simon's a barrier island?

SS: Yes. This is a barrier island. We have fourteen barrier islands along our coast.

SSD: Which is probably another reason that you have murky water. We also have murky water on the Mississippi Gulf Coast.

SS: Yeah. We got the Savannah River all to – we have five major rivers that are dumping.

SSD: The barrier islands hold in that organic soup, so it doesn't get – yes, right.

SS: Yes. That's how we got the great marshes and why we have a seafood industry.

SSD: Right. I mean, that is why those animals are feeding there because it is an organic soup and full of nutrients.

SS: Yes, exactly.

SSD: Where do the shrimp spawn?

SS: They spawn in near-shore waters. The white shrimp do. It's more of a question mark of where the brown shrimp spawn. The white shrimp spawn in the spring of the year. Typically when the water temperature hits seventy degrees, the ovarian development – the eggs start to develop, and then the shrimp will move off-shore into the near-shore waters. These shrimp typically don't move beyond about fifty-five or sixty feet of depth, and we have a very shallow coastline off of Georgia. Most of our spawning is taking place in fifteen, twenty feet of water, but it's in high-salinity water and along our beaches the near-shore waters, just off-shore along the beaches. They will spawn generally from April into June.

SSD: Great. I'm taking notes. I'm sorry about these silences.

SS: No, that's fine.

SSD: Is there anything else about challenges in developing TEDs that you wanted to talk about?

SS: No, not that I can think of offhand.

SSD: I think we touched some on number five, the challenges faced in getting the shrimping industry to use TEDs. We've said that on the East Coast, they were already using a form of TEDs and didn't probably resist it as much as the Gulf shrimpers did.

SS: Right.

SSD: Is there anything else that comes to mind in reference to question five?

SS: Well, as you were commenting earlier, shrimpers are a very independent lot. They don't like to be told what they have to do. [laughter] I'd say that the biggest challenge is – it's a bold categorization, but I do think they're anti-regulation. It's just the nature of their work and why they do what they want to do. They want to be out on the ocean, doing their thing, understandably. Yet, at the same time, they will support certain regulations. If they had their way, I think they'd want to do everything voluntarily, and I think some would comply voluntarily. They just don't like being told they have to do something.

SSD: Who does? [laughter] How did early TED models compare to later models?

SS: Well, we touched on this a little bit earlier. The earliest models were the hard TED models. That's like the barbecue grill grate, the round grate. That was, I'd say, the prototype, and that continued to be refined and improved. I think the Georgia shrimpers – again because that had been developed here, the earliest prototype – they felt some ownership in that. I think once it became clear to them they were going to have to use TEDs, many of them, and the developer of the prototype, Sinkey Boone, whom I don't know if you've talked with him yet or not.

SSD: I have. I have.

SS: I think he took it upon himself to help develop and refine that. Then, we also had the University of Georgia Marine Extension Service that was very much in a partnership with the shrimpers, and they were working hard, I think, to help refine and develop TEDs that were better, that didn't have maybe as much shrimp loss but accomplished what everybody was trying to accomplish – exclude the turtles, save the turtles, but at the same time, keep the catches up.

SSD: Right. Do you have any experiences with protests against TED regulations?

SS: Mostly just verbal [inaudible] in terms of public hearings. I ran the hearings when we were proposing the rule-making and that type of thing and very vociferous objections. But we didn't have any civil disobedience over here. We didn't have any of the blockades or anything like that as some of the Gulf shrimpers did, as you probably heard. They probably told you about the Louisiana shrimpers, and they were [inaudible] –

SSD: Texas and Louisiana seemed to be –

SS: Yes. The blockades and that kind of thing. We didn't have anything like that over here.

SSD: All right. Have you ever been involved in enforcing compliance regarding the use of TEDs?

SS: No. We were the one – as many agencies, we were the research – well, the scientific assessment arm and regulatory arm of DNR in terms of developing the regulations. Then our sister division that I mentioned to you had the enforcement unit within them. They were the Wildlife Resources Division. So we developed the regs and took them to our board of natural resources and had them promulgated, and then the sister division enforced them. But we did work closely with them in terms of developing outreach materials to give out to the shrimpers about the angles that the TEDS had to be installed and that kind of thing. So we worked hand in hand, but we were not literally on the boat helping to enforce them. Now, our non [inaudible] group that Mike Harris heads up, some of his people did, and I think to this day still go out early in the season with some of the law enforcement officers and help them in terms of looking at TEDs and that kind of thing. But in our coastal division and our marine fisheries section, we didn't play an enforcement role.

SSD: Do you know how compliance regarding the use of TEDs might have changed over the years?

SS: I think with time, it improved. You know, there's certainly still attempts to alter the angles. You know, shrimpers like to tweak things understandably to maximize their catch. You know, it's just like with anything – you know, your profit margin is the name of the game. So they try to work with their equipment, I think, to maximize that. But sometimes they'll get that angle, you know, a little off or this, that and the other, and they'll receive warnings from the enforcement people. Another thing they did early on, which is kind of interesting – the enforcement people would tell me this when they'd come back to the dock because, again, we all were headquartered in one big building, and so we had a lot of interaction with the enforcement people. They would sew the flap – the escape flap for the turtle – they'd sew that up, and they'd have a trip cord, so if they saw the enforcement officers coming, they could just pull that cord, and it would open the flap back up. We saw some of that – or they saw some of that.

SSD: Wow. So ingenious.

SS: Yes. With bycatch reduction devices - you remember the nerf footballs, the little soft football – kind of the foam football? Do you know what a nerf football is?

SSD: Yes.

SS: Well, the fish excluders are called a fisheye, and they're kind of in the shape of an eye, kind of the shape of a football. Shrimpers would actually stuff these nerf footballs into the opening of the bycatch reduction devices to keep the shrimp from going out.

SSD: It would also keep the targeted bycatch from going out.

SS: Exactly. So every now and then, you know, officers would board them, and they'd pull up their nets, and here are these plastic footballs crammed in the openings.

SSD: “Oh, how did that get there?” [laughter]

SS: Yes, exactly.

SSD: “It must have been in the ocean.”

SS: So, you had a little bit of that. Then we saw an upsurge every now and then periodically through the years if those Gulf boats would come around and we'd see an upsurge in turtle strandings in the spring. There was suspicion that they were not using the TEDs properly over here.

SSD: We've got that going on the coast right now. They're doing necropsies on the turtles that are washing up –

SS: Yes.

SSD: – and not finding any oil, and so they're blaming the shrimpers, which really makes me sad because I can't believe that it's a coincidence that turtles are being beached and stranded, and oil is gushing into the Gulf of Mexico.

SS: I know.

SSD: But then my husband heard that the dispersant is toxic.

SS: Yes, there's been big debate about dispersants – about the toxicity of them – and I didn't read the article. I saw it online the other night. My understanding and I could be totally wrong – but the way I was reading the header, they were also trying in-water dispersants that are to be used in the deep sea. I mean, just so much of that nothing is known about. They're making it up as they go, which is kind of scary.

SSD: It's very scary. Very scary. I've always thought that, well, if the freshwater aquifers dry up, there's – we've got the ocean. We can desalinate it.

SS: Yes, right. [inaudible]

SSD: But it's starting to be so dirty that –

SS: Yes. It's going to cost a fortune.

SSD: Right. Yes. Let's see. We've touched a little bit on eleven, how your agency engages with other agencies involved with the enforcement. Is there anything you'd like to add to that?

SS: Yes. As I mentioned, Georgia DNR has a joint enforcement agreement with the National Marine Fisheries Service, and most of the states in the Southeast now do. I think North Carolina may be one of the outliers that does not, although I know they've been working on getting one in place. Through time, that has been a trend that the National Marine Fisheries Service has really pushed for, and with budget crunches that the states are facing, the JEA money has been tremendously important to the states. It's enabled them to get boats. The contract that Georgia has with the National Marine Fisheries Service – we contract for a certain number of hours for federal fishery enforcement, endangered species enforcement – that kind of thing. Then, we bill the federal government. That's been a real boost to the state enforcement and has back-filled some of the budget cuts. As a result of that, the agencies – there are two bodies – there's an interstate fishery commission on the Atlantic coast called the Atlantic States Marine Fishery Commission. They have a very active enforcement committee, which includes the states all the way from Maine through Florida. Then, of course, there's the Federal Fishery Management Council which, for our part of the world, is the South Atlantic Fishery Council, and it takes in North Carolina through the Florida Keys on the Atlantic side. So our enforcement captains or their proxies get together fairly frequently through these two bodies, and they're able to coordinate with the federal government. The National Marine Fisheries Service also sits on both of those committees. So there's quite a bit of coordination. Also, as I mentioned, the Coast Guard has the training center in Charleston, and they train enforcement agents in the enforcement, not only of TEDs but also the fishery enforcement for federal waters. That's

largely reflective of the joint enforcement agreement that the states are helping Coast Guard and National Marine Fisheries Service enforce all these fishery laws.

SSD: It's pretty impressive, really, to think about the way the United States is able to enforce fishery regulations and laws – that's a huge territory and a foreign environment. We're landlubbers. When I've talked to some of these folks that I interviewed about the foreign countries' enforcement, it's so sketchy. They just don't have the resources we have for enforcement, and I'm really impressed.

SS: National Marine Fisheries Service really doesn't have the resources either, but through these contracts, these enforcement agreements, and using the Coast Guard – of course, after 9/11, the Coast Guard's emphasis changed so much to protection, which is port protection, port security. Here in Georgia, we have Kings Bay Naval Submarine Base, which is the East Coast nuclear base. We got Coast Guard that are literally forty miles down the road trying to protect the main nuclear base for the whole East Coast.

SSD: Right.

SS: But, at the same time, there's some benefits to that. At DNR, we share a campus with the Coast Guard. So Station Brunswick is headquartered literally – they used to lease the property from us, and then they ultimately – we sold it to them. But they are on the very same property. They use the same docks and everything as our law enforcement people here on the coast. That fosters quite a bit of cooperation, communication, so I do think Georgia – just the little proximity – we're in each other's backyard – that helps a great deal. Then the other thing we have here in Brunswick is the federal law enforcement training center. It's the old naval base here. It probably has about three thousand people there at any time. National Marine Fisheries Service agents also come up here and train. They have an agent, actually, full-time assigned out there. That further fosters communication and coordination, and cooperation between Georgia and federal enforcement. I think we're in a unique situation because of that.

SSD: Yes. Boy, there's so much more power when you can cooperate.

SS: Yeah. Well, resources are just so thin right now. If you can leverage each other's resources, that's the only way to really be successful, I think.

SSD: Right. You guys have got it together.

SS: Well, I guess the luck of geographic locality. [laughter]

SSD: Proximity is so important.

SS: Yes. It is. Our vessels and even our law enforcement provide platforms for training. We have a research trawler, a shrimp trawler – DNR does – and we provide that to the National Marine Fisheries Service to the Coast Guard for training.

SSD: Fabulous. How big is it? Do you know, offhand?

SS: It's sixty feet. It's the research vessel, *Anna*, and the agency has had her since the late '60s, so she's been around almost fifty years.

SSD: Yeah. Those boats – they really go a long time.

SS: It's a wooden boat, too.

SSD: Oh, how fabulous.

SS: I always complained when I was the agency head – God, it was like pouring money into the water, keeping that boat up. At the same time, the crews have done a fabulous job keeping her up, and she's a very useful platform.

SSD: Someday, she'll be archived somewhere.

SS: Yes. Yes.

SSD: It'll be great.

SS: It's a great boat.

SSD: Yes. Is there anything else you wanted to add to number eleven?

SS: No. That's probably it. I just think we have – again, our proximity – it's enhanced the rapport and joint operations. We have a lot of joint operations going on.

SSD: Well, how do you think TEDs have affected the shrimp industry?

SS: I think in the long run, it's probably increased their cost of operations. It is a regulatory cost. It costs them money to install them into the nets and that kind of thing. On an individual basis, it may have affected their individual productivity. But as I mentioned earlier, studies show that overall it has not affected the productivity of the fleet overall. I would like to think that TEDs have influenced the shrimpers through time to be a bit more accepting of regulation. I'm hoping that, through time, maybe it's caused somewhat of a shift in mindset.

SSD: Right. Yes. I almost said –

SS: A bit more acceptance of the regulatory environment and why it's there and why it's important.

SSD: I almost called it a sea change in their culture, and then I thought, can I say that? Is that too corny? But it is. It is a change in their culture.

SS: Yes.

SSD: Because one of the things that I've heard in other interviews is, the culture of the shrimper was hole in the net is bad. You don't want hole in the net. If you get a hole in the net, you want to repair it. Then here comes NMFS and then the state saying –

SS: "Put a hole in your net."

SSD: "You got to have this hole in your net."

SS: Every one of your nets. Yes. I think clearly it has caused a change in the culture. There's no doubt about that.

SSD: Well, I even had a young shrimper in the Gulf of Mexico who shrimps in the sound and who also – it's interesting – has a college education. He feels that TEDs have increased his shrimp yield.

SS: It could well be because it's partly excluding some of the unwanted catch.

SSD: And debris, he said. He knows that he's picking up less debris than he used to.

SS: Yes. I think their catch clearly is cleaner. There's no doubt about that.

SSD: Well, how have TEDs affected the sea turtle population? Is there any way to know that?

SS: Well, I think with time, again, you look at catch-per-unit of effort or catch-per-hours of tows, and you see whether you're catching more turtles. It's a real hard thing to know, and it's something that at least the researchers at our office, with our sister division, struggled with. Are you seeing more turtles because, of course, they're being excluded, and their survival is better? How much of the increased population that observers on boats may see is due to that versus the turnaround on the actual numbers in the water? Are there more turtles? They also look at nesting success, the number of nests per beach per year, what's happening with those nests? Now, in Georgia, we have the – it's the northern loggerhead population. It's questionable whether that population is actually increasing, but I think with TEDs, if it is truly continuing to decline, that decline would have been sharper and more rapid. If nothing else, I think TEDs probably have helped stem the slope of that decline, if you will, and hopefully arrested it somewhat. Hopefully, with time – and it's a two-pronged approach. You can exclude the turtles, and they're in the water, but you've also to make sure those nests are protected and that you've got successful hatching. That's where all your habitat issues come into play. That's where wearing the other hat that I wore in my department – we also regulated beachfront development. So that, say, if someone is in what we call the shore protection zone, and they want to build a hotel, they're going to have to use turtle-friendly lighting and all of that. You've got to have the two-pronged approach to successfully recover turtle populations.

SSD: For the record, can you tell us what turtle-friendly lighting is?

SS: Turtle-friendly lighting can be a variety of things. Turtles are deterred on the beach – both nesting turtles are deterred from coming ashore if the lights are too bright and of a certain

wavelength. They cannot – I'm told – somebody figured it out they don't see red wavelengths very well or a particular spectrum of light. So lights have been developed that emit that spectrum of light that the turtles cannot see. That's one approach. A second approach is if you have lights already installed, but they are not of the appropriate spectrum, you can put baffles or shading around the lights so that the light is directed down. You can have a mechanical approach to turtle-friendly lighting, and you can actually have a technical approach with regard to the wavelength of light.

SSD: That would be for the adult turtles coming on to that.

SS: Sorry. I digressed and didn't finish that thought. It's for the turtles coming ashore to nest as well as the hatchlings. Hatchlings go toward light when they hatch, and if lights are very bright, the turtles will go toward the land rather than toward the water. So you want to have it dark, and you want to have light-shielded so that the hatchlings cannot see it. That becomes a real challenge, and Florida probably is the leader in dealing with this because their coastline is so developed – much more so than ours. But you got these nesting beaches that are in very developed areas.

SSD: So if there weren't any lights there, the hatchlings would be looking for the light on the horizon, I guess.

SS: Yes. Exactly. They're looking for that just slight differential of light between the ocean and the sky.

SSD: That would take them in the direction of their –

SS: Yes. Of the water.

SSD: – new home. Yeah. Their target. Very interesting.

SS: Yeah. We end up – I mean, we've got stories here that are true of hatchlings ending up in hotel swimming pools and that kind of thing because of the lighting.

SSD: Are they mortalities when they do that? Does the chlorine kill them?

SS: Typically, yes.

SSD: Oh, that's so sad. I would love to have been a biologist, I think. These interviews have really been fun. I've learned so much.

SS: I imagine it is very educational to a social scientist.

SSD: Yeah. Any other commentary you want to add to thirteen, how TEDs have affected sea turtle populations?

SS: No. I just think overall they've been good, but they're only one part of the fix.

SSD: Number fourteen is a question that I put in because I thought it would be interesting to get everybody's perspective. It's kind of an existential question, but why do you think sea turtles are important?

SS: Well, as a biologist by training, I think all life forms are important. They have a place. They're part of a much bigger planet and ecosystem. Sea turtles, in many cases, are a keystone species for reef systems and marine ecosystems. Plus, they're fascinating. I mean, they represent that bridge between the reptiles and the aquatic forms. You've got that bridge between water and land, and that's always interesting, I think, where you have a water-based organism that then comes ashore to lay its eggs, which is really important in the evolutionary tree.

SSD: They've changed very little since –

SS: Right. Yes. So, you can learn a lot in terms of evolutionary biology by studying them and how they originated and what their current life form is, and that kind of thing.

SSD: What is a keystone species, for the record?

SS: A keystone species typically is a species that is – they tend to be large. We call them the – in many cases, they're the charismatic megafauna. They can be at the top of the food chain. Now, in the case of sea turtles, they aren't necessarily, but because of their size, they don't have a lot of predators. The sharks will prey on them and that kind of thing, but they tend to anchor like a reef. You'll go off-shore to some of the reef areas, and you'll see one big sea turtle out there. They're thought of as kind of the anchor of that little micro-ecosystem there. They tell you a lot about the health of that particular ecosystem. If a sea turtle is there and thriving and that kind of thing, generally, it's a fairly healthy environment.

SSD: Wow. Anything else you want to add to that?

SS: Goliath grouper – those are the huge grouper – they're thought of as keystone species, too.

SSD: Goliath grouper.

SS: Goliath grouper. They used to be called jewfish, and someone changed the name a few years back. I guess they felt it was politically incorrect.

SSD: Right. Yes.

SS: Yeah. Their name is Goliath Grouper, and they're one of the largest groupers. I mean, you think of the leatherback sea turtles. They're the largest sea turtle, and they just don't have many predators.

SSD: I guess when they get to a certain size, they're untouchable, except for a shrimp trawl.

SS: Yes. But a trawl, in most cases, at least on the East Coast, we don't allow them to go across reefs. In a sense, they're protected areas; they're fragile areas, and these species that are there anchoring that reef, they're very important. They're important not only for biological purposes but for aesthetic purposes. Divers love to see jewfish or goliath grouper. They love to see sea turtles – that kind of thing. It conveys a healthy ecosystem and, I guess, the wonders of the ocean to people when they see these things.

SSD: Yes. All right. Thank you for that. Very eloquent. Back to a kind of banal question. What is the penalty for netting sea turtles? Just kind of a ballpark figure or something that you remember. If you don't remember, that's okay.

SS: Well, I look at that. It typically has depended on the nature of the offense, so to speak. National Marine Fisheries Service – I assume they still do this – oftentimes, the officers will make the case, and then the attorneys will negotiate the fines and the penalties. Sometimes those may be negotiated down, depending on the circumstances. Historically, in fisheries, they might be negotiated down depending on the ability to pay, and that one always drove me crazy. You might get a lesser fine if you don't have the money to pay the fine. I just thought that was insane. I don't think they applied that policy on endangered species, but they certainly did on fisheries in the past. But the states have always – another reason we always liked the joint enforcement agreements and being deputized to enforce the federal law, the federal fines were always higher than the states. The penalties were always much higher. So we'd much prefer prosecuting somebody under the federal statute than the state statute. It was just more of a deterrent to repeat offense and that kind of thing. So we just felt that the federal fines were – because they were higher, they were better deterrents. It sent a signal to the other shrimpers. I've seen fines in the past anywhere from twelve hundred dollars. I've seen them as high as eight thousand. I think I recall some that might have been as high as ten thousand that probably were egregious, and it could have been their second, third or fourth offense.

SSD: Right.

SS: That all goes into the mix when those penalties are being determined.

SSD: Now, here's something that I'm just going to throw out of left field that did not go on this set of questions because it hadn't occurred yet, I don't think, when I sent you these questions. But what comes to mind for you around this oil leak that's out in the Gulf of Mexico and the consequences on the living marine resources in that area?

SS: Well, obviously concern. It's hard to even fathom because I remember, back in the '80s with the Exxon Valdez and just how mortified I was. I think any biologist was looking at that. Now, seeing that in the Gulf. Frankly, it really has altered – I've never been a big fan of energy development. I would prefer this country to be looking more toward alternative sources. I personally have a cabin that is totally solar-powered out on a farm.

SSD: Oh, great for you.

SS: Yes. We're still finishing it, but the solar, the electricity, everything is in, and it's totally solar, and we're not on the grid, either.

SSD: That's fabulous.

SS: So we have ten solar panels. Then, Georgia Power has been working the last couple of years when I was with DNR – Georgia Power was looking at developing wind energy off the coast. I'm a big proponent of alternative sources of energy. I've sort of accepted the shallow drilling in the Gulf. It's like, well, it's there, it's been there forever, although certainly, I think Louisiana, with the channelization, the saltwater intrusion, and that impact on their marshes and that type of thing. Clearly, there were implications and impacts that Louisiana, I think, experienced many, many years ago. Some of those, I think, came home to roost with Katrina not having as healthy marshlands as they once did to be the buffer to the storms. But all that aside, I really have severe reservations about deepwater drilling as a result of this blowout and what that means for the surrounding marine ecosystem – just the whole safety of it. Obviously, something went terribly awry, and I don't think they have the technology developed, clearly. They don't seem to. I'm intrigued with these attempted fixes. They're making it up as they go, as we mentioned earlier, and now they're going to throw garbage [laughter] to try to stop it. They're using tires and golf balls down into the –

SSD: Golf balls against the pressure that comes up from the center there.

SS: I'm going, "Oh, my gosh." It's just amazing. So, gosh, I'm somewhat stunned and mortified but at a loss for what a possible solution is – got to get that thing plugged.

SSD: But what if they can't? What's it going to do to the marine resources up there?

SS: Well, it's just got huge implications for fishing, for the marshes, for everything. Now, I will tell you my experience with oil spills over here. Although we didn't have that many, we did have one in the Savannah River in '86, about half a million gallons. With time, the oil evaporated, and there were very few long-term impacts whatsoever at all. But you had a finite amount of oil to deal with, and the environment, with time – and I don't remember the grade of oil it was or whatever, but it did evaporate and burn off through time. But this is a continuous flow right now.

SSD: Yeah. Two-hundred-thousand gallons a day.

SS: Yes. So there's nothing to stem it, and there's no way you avoid – God, just the oily impacts to birds, to the marsh, to seafood. It's a total disaster if they don't get this –

SSD: Will the seafood be safe to eat if it has a little oil in it, like the shrimp?

SS: It will taint it. It will taste horrible. I can tell when an oyster has come from Texas many times because you will taste a faint taste of oil. Believe it or not, back in the '80s, when we had the Savannah River oil spill, we had some oyster beds nearby, and we were told by the scientists at the time that your tastebuds were even more sensitive than the laboratory equipment. That,

through taste, you could detect even a smaller amount of oil than the lab equipment could detect. So we literally had taste tests through the weeks following that spill to see if there was still oil residue. Of course, they were blind taste tests and controlled, and you had oysters from the East Coast mixed in. But you could definitely taste oil in them.

SSD: Amazing. Amazing.

SS: I think it'll be totally devastating, I think, to their shellfish industry. Fish and mobile organisms can somewhat move out of those areas to some extent, but for those shellfish that are sitting on the bottom, there is nowhere for them to go.

SSD: Will they move out? Do they know they should? Is it something they flee from?

SS: Well, oftentimes – and I really can't speak to that. I have no experience in monitoring or tracking organisms, whether they will move with oil. They certainly will move out of areas that have depressed oxygen and chemical spills – that kind of thing. If they can escape an area, oftentimes, they will.

SSD: So now I'm thinking about the turtles and whether they're –

SS: Yes. I mean, it's big, the Gulf of Mexico, so hopefully, some of those turtles will go farther seaward. I'm not –

SSD: Is it coming up on their nesting time when they're going to want to –?

SS: Well, that's what I'm not sure. I don't know what the nesting cycle is for the Gulf. I really don't know. But obviously, they're ingrained –

SSD: It's spring, right?

SS: Yes. They're a little pea-brained, and it truly is a pea brain. But they will be programmed genetically to try to go to the shore, and nothing is going to turn that around.

SSD: Well, maybe they'll get to the shore before – around Texas and Mexico – before they're affected by –

SS: Yes, that's the best hope that the spill stays confined to the area where the projections and trajectories are right now. I hate it for those of you who are in that path, but, hopefully, it won't hit those beaches of Texas and Mexico, and hopefully, it won't spread over into the Florida area either.

SSD: Right. Although I believe, just anecdotally, I have a friend who has a brother in Pensacola, and he said they can smell it. They can smell the oil already.

SS: What a mess.

SSD: Yes. Foreign corporations ruining our lives.

SS: Yes.

SSD: I interviewed shrimpers who live from catch to catch, and they're going to lose their business, most (inaudible).

SS: Yes. The only bright side I can see to that is that – and there is no bright side. I guess the only thing that – if there is a silver lining whatsoever at all, it's they were on the ropes anyway. They may be able to go out of the industry with some sort of compensation –

SSD: I hope so.

SS: – from BP.

SSD: Listen, I don't know if you heard this. My husband told me last night that BP has gotten their case moved to Houston to an oil-loving judge –

SS: Oh, Lord.

SSD: – and they want to combine all the lawsuits into one suit.

SS: Yeah. That doesn't surprise me at all.

SSD: And there's a cap that some presidential administration put (inaudible) seventy-five million dollars.

SS: Yeah. Now that they're working to get repealed and increase that to ten billion.

SSD: Good.

SS: I forget which legislators are working on that, but that is one that they're working on right now in Congress. But as opposed to, say, if it's a natural disaster or – I don't know some oil tanker, some fledgling Libyan flag oil tanker – I'm not sure if the shrimpers would get compensation at all. They got a better chance, I think, of getting it out of BP as the fishermen in Alaska did. But, at the same time, that's just monetary compensation. That doesn't compensate them for the, quote, "price listings," which is their way of life, their culture, the impacts to that.

SSD: Right.

SS: Those are just things you can't compensate for.

SSD: Even the cash which we all need in order to live and survive in the world, that could be a long time coming.

SS: Oh, yes. It's a finite – and, I mean, that will be in the courts for some time and, in the meantime, you know, how do they get by?

SSD: It's so sad. It breaks my heart. Now it's become very personal to me because I've, you know, talked to those guys and see how hard they work and the other pressures that were already on them – the diesel, the imported shrimp.

SS: Yeah. This truly is the straw that breaks their back.

SSD: I think so. Yes. Well, do you have time to move on to the conservation questions?

SS: Sure.

SSD: OK. The first one – why are TEDs necessary?

SS: I think with studies through time linking turtle mortality to shrimping, that they are necessary to reduce that trawl-related mortality of an endangered and threatened species.

SSD: Do you know what actions some conservation groups took to support the need for TEDs?

SS: It's interesting. Over here, they were somewhat quiet, although I think they certainly were more vocal at the federal level. At the state level, we didn't have a lot of input from them. The Georgia Conservancy was supportive, but they didn't express nearly the interest in this that they do in shorefront development now. They just weren't as well-organized twenty years ago and that kind of thing. At the federal level, clearly, they submitted petitions to the regulatory bodies like the Federal Fishery Council. The few that were around in Georgia at the time supported proposed regulations. They'd come to the public hearings and deliver comments in support and write letters and that type of thing. Then I think at the federal level, they'd been effective through their notice of intent to sue. They've really, in many cases, held the feds' feet to the fire and not let them backtrack and really kept – they forced the National Marine Fisheries Service to keep their eye on the ball largely through threat of litigation.

SSD: Anything else you want to add?

SS: No. I think through time, they've certainly become more active, but in the early '80s, some were influential, but there weren't as many of them as there are now, and they weren't as well organized as they are now. I do think it's interesting – through time, I think they have grown their organizations and strengthened their organizations through taking on TEDs and sea turtles as a cause, just because sea turtles are, as I've mentioned earlier – we refer to them as well as whales, dolphins, manatees – as the charismatic megafauna.

SSD: I love that. [laughter] Did your opinion of issues faced by turtles and fishermen change over time, and how would they?

SS: With time, I would say I had a better appreciation for the regulatory costs associated with turtle excluder devices, bycatch reduction devices versus their declining operating margins.

Early on, I have to confess; I didn't have a lot of empathy for them when they whined and complained about having to put TEDs and the cost, etc. I mean, their profit margins were so much higher then. Through time, as the industry really has dwindled and is, frankly, I think, on the ropes, I have had much more empathy for them. Not to the extent that I would want to relax any of the regulations, but to the degree that we could in any way find ways to help them monetarily to mitigate some of the regulatory costs. We tried to do that whenever we could.

SSD: Oh, that's great. Well, we have covered this under two questions, and we get down to where you grew up. Do you have time to talk a little bit about your childhood, what it was like?

SS: Yes.

SSD: Tell me about that.

SS: Well, I grew up in a small town in Tennessee, of probably fifteen to eighteen thousand people. We were about eleven miles from the Mississippi River. We were north of Memphis and south of St. Louis. I was the youngest of three children and loved the outdoors. Absolutely loved the outdoors. My father was an engineer, and he was in the textile industry. On weekends, he would take me fishing up to a lake, and we would just do various things. I just had a fascination with animals. Early on, I loved to play in the woods and in the streams and the ditches. I think I was drawn to water. I was an Aquarian by birth, and I think that played a role in it, too. So, I just loved the outdoors. I was a budding biologist from the time I could walk, I think, and just really enjoyed that. I was growing up in the late '50s and '60s, and marine science was a very new science. I guess I watched all the TV shows like everybody else – *Sea Hunt* and *Flipper* and all of that. My grandmother had grown up on the North Carolina coast, and so we went over there for vacation, I think, when I was about ten. I was just fascinated with the tides. My cousins lived right on the water, and we'd go down and play on a mudflat with the fiddler crabs and the [inaudible], and I think I got hooked then. It was in my blood, I think, a marine environment, but I'm the only one in my family that ended up on the coast.

SSD: Interesting. Out of two siblings.

SS: Out of three of us. My brother's in Knoxville, and my sister's outside of Philly. One, I guess, could call that the coast, but I don't really. [laughter]

SSD: [laughter] Won't go that far. So your choice of a career path grew out of your love of nature, you think?

SS: Yes, as a child. I had a strong leaning toward math and science, I think, because of my father. I was very good in the sciences, loved the sciences. Marine biology, as I said, was just coming on the scene, and I just decided in high school that's what I wanted to do and followed that path.

SSD: Great. We talked about your title when you retired. As you think back on that, could you paint a picture of a typical day of work, just for the record, in case two hundred years from now,

this is the only shred of culture that someone can find in the marine science culture? What was a typical day like?

SS: Well, it depended on whether – when I was the director versus when I was the chief of marine fisheries [inaudible].

SSD: You can choose. You choose which one.

SS: I'd say a typical day when I was heading up marine fisheries would be possibly a conversation on the phone with a counterpart in another state. Let's just pick South Carolina. We worked very closely with them. We might be talking about when we were going to open our shrimping season, and we would be trying to coordinate to spread the boats out so that we would have less pressure on the sea turtles, actually, in both states. We preferred to have joint openings whenever we could. So, I might be on the phone talking to them. If it was during the legislative session, I might be in Atlanta testifying before a committee about a proposed regulatory reform to our shrimping statutes that might be, for instance, to modify the time of day they could shrimp. Potentially, I could be working on a regulation, helping to draft either a regulation or a statute. I did a lot of that. I'd have people in and out of the office all day long. We'd be discussing policy issues regarding fisheries. Could be contracts that we were – or research projects that we were working with other states or universities on, that type of thing.

SSD: Sounds fascinating.

SS: Yeah. It was never boring. [laughter] And then, in the latter years, I spent a lot of time in court. We were always being sued, mostly by the environmentalists who didn't want us issuing permits for development, but yet the law allowed for it. So, we couldn't just arbitrarily deny a permit. In fact, the statute said you shall issue the permit if it doesn't violate the public interest [inaudible]. So, spent a lot of time in court.

SSD: Yes. So if you had to issue a permit for development, were you then able to say, "But you have to abide by these rules?"

SS: Oh, yes. Absolutely. We would condition every single permit, and they were extensively conditioned. As I mentioned, if they were shorefront, they would have to have all kinds of turtle protection measures and also had to protect the public's access to the beaches – that type of thing.

SSD: I think it's really wonderful that sea turtles and people can co-inhabit so closely, and we could've done that with every species, I think. I really wish we had. It's too late for some of them.

SS: Yes. You have to think outside the box and use ingenuity to come up with solutions. I am absolutely convinced. I truly believe in compromise. So many people just see it black or white, and they see no in-between, and there's almost always an in-between.

SSD: Well, I know in speaking with – I can't remember who it was – it might have been Tom McIlwain, but I'm not going to say it was because I'm relying on my memory. But the conservationists, I believe, were demanding that the shrimping areas just be closed to shrimping.

SS: Oh, yes.

SSD: Yes. They didn't want to kill the industry. They wanted to protect the turtles, and that's how they wanted to do it.

SS: Right. I think a lot of their – and you could say this for both sides. I think a lot of them have a narrow lens that they see things through, and they may not see all sides to the issues or have the knowledge. Sometimes I don't think the conservationists had any inkling of the ripple effects or the far-reaching ramifications of closing an area. They just thought, "Oh, those boats will just go somewhere else." Those guys live there. That's their home. We ran into that all the time.

SSD: The shrimps live there, too, right? [laughter]

SS: Exactly. Yes. As regulators, we always said as long as we were making everybody unhappy, we probably were doing our job.

SSD: [laughter] That means everybody's a little happy and everybody's a little unhappy.

SS: Everybody's ox was getting gored a little bit. We were probably doing our jobs.

SSD: Oh, that's great. Yes. So the TED was a huge compromise.

SS: Oh, absolutely. Yes.

SSD: Unfortunately, many shrimpers, because of their narrow lens – I mean, how can you know something you don't know? How do you find out? Which reminds me – I think one of the reasons that conservation has grown and the organizations are more organized and bigger now is personal computers.

SS: That's true of everything.

SSD: The Internet, right?

SS: Just the communication, the spread of communication, and the instantaneous communication. It's incredible.

SSD: I look at the kids today at the university, and it's just so ordinary to them. It's so run-of-the-mill. I, like you, was born in '54, and we didn't have that when we were in college, right?

SS: No. I wasn't allowed to use a calculator in any of my science classes until my junior year in college.

SSD: That's right. Yes.

SS: I used the slide rule.

SSD: Yes. Even though calculators cost about ten dollars and textbooks cost thirty, right?

SS: Yes. At the time, I remember buying my first Texas Instruments calculator that was four hundred dollars.

SSD: Wow.

SS: Yes. That was outrageous.

SSD: They were rare and new.

SS: Yeah. It was amazing.

SSD: Expensive, yes. Well, some of these other questions have been thoroughly covered in other interviews, and some of them are about the Gulf of Mexico, but we could easily substitute your area there on the East Coast. Do you know anything about why sea turtles can't prevent drowning in nets by using anaerobic respiration?

SS: No. I honestly don't. I don't know the first thing about that.

SSD: Well, that's all right. You don't have to. Do you think bottom trawling harms the ecosystem of the Atlantic bottom?

SS: It depends on where. The South Atlantic Fishery Council that I sat on until I retired – I think I was on it for twenty-seven years or something – we, in 1990, prohibited bottom trawling on hard ground areas, on the reef areas, because it clearly destroyed that habitat. It clearly impacted and destroyed sponges, corals, that kind of thing. Those take years and years and years to reproduce and to reestablish. So, very harmful. We prohibited trawling in 1990 on those hard ground areas, and we actually did it in the snapper-grouper fishery because that's where snapper and grouper are found. We took that approach to it, and so we prohibited that. I've read an awful lot and seen studies, pro and con, with regard to the soft bottom areas, and many, many studies I've seen – and fishermen, of course, think it's like a farm. You need to plow it, etc. I'm sure you've heard that. [inaudible]

SSD: Oh, it does no harm at all. Yes. That's right.

SS: Right. It certainly affects the diversity of organisms that are found there, and it influences and skews those organisms toward worms and this, that, and the other. It definitely affects the diversity and the distribution of organisms that are found in that area. At the same time, that's why it's – I think that's why you find shrimp there and you find the organisms that you do find there, is they're feeding on those resident benthic populations and that kind of thing.

SSD: And benthic is what's on the bottom? Is that right?

SS: Yes. What's on the bottom – the small clams, the small worms, that kind of thing. They'll be feeding and all. At the same time, shrimp are very transient. You know, they're moving. They don't really stay in one place at any one time. They're moving through areas. We do not allow trawling in Georgia in our sounds, in our in-shore waters. Yes. We outlawed that in the late '70s.

SSD: Why is that?

SS: Well, it had to do, at the time, with – there were freezes. We had some severe freezes, and we closed the whole fishery. This was just before I came to work for DNR. They closed the entire state waters for a pretty lengthy time – very severe freeze – and had impacted quite a bit of the shrimp stocks.

SSD: It was the roe shrimp [that] were affected at that point by the cold water because they didn't turn on their [inaudible] –

SS: Yes. They were killed in the winter when they were over-wintering in the in-shore waters. So what happened – the crabbers expanded their crabbing area with crab pots while the trawl fishery was closed. So, they moved into new areas that they had not been able to fish but had always wanted to fish. In a sense, you had a displacement of one group and an influx of the other. There was some thought of not to open those in-shore waters to trawling. The recreational fishermen didn't want them open again, and the crabbers didn't want them open again. Again, I was not here at the time, but from what I can gather, the forces that prevailed kept those in-shore waters closed. Through time, ultimately, South Carolina closed their in-shore waters as well.

SSD: What a big adjustment.

SS: But our fishery is strictly a near-shore fishery. Early in the '80s, we did some experimental openings – very short term, for a day here, one year. Then one year we did four days and that kind of thing. The shrimp catch certainly was very profitable on those days, but you had such an outcry by the other user groups that politically, it was a very sensitive issue. We felt it important to retain the ability in statute to be able to open those areas from unforeseen circumstances than to lose that authority altogether because of the backlash of the recreational fishermen. I mean, there were some moves to totally, just by statute, close those in-shore waters. It's been more by policy that we kept them closed through time. The commissioner still has the ability to open them, but they've not been open since the '80s.

SSD: Wow, that's very interesting.

SS: Yes. Anyway, that's a bit of a digression from your question. We've not had a lot of that controversy in terms of trawling, what it does to the ecosystem, and this, that, and the other. It's more a user conflict than anything else.

SSD: What do you mean by that?

SS: Well, the shrimp nets would catch the crab pots, and the fishermen would perceive that the nets would catch the important sport fish that they were seeking and that kind of thing.

SSD: Right. I understand that. Do you know of other alternatives, in addition to TEDs that might mitigate harm done to turtles by shrimping? Some other methods besides bottom trawling that can catch shrimp?

SS: Yes. I mean, there's been discussion of converting the trawl industry to a cast net fishery.

SSD: Cast net.

SS: Yeah. Cast nets. South Carolina has a big recreational cast net fishery. I don't think they allow it commercially. I could be wrong on that. Once upon a time, they didn't allow it commercially. It was almost like they divided their fishery up. The commercial industry was going to be a trawl fishery, and the recreational fishery was going to be a cast net fishery. Georgia, we allow – it was part of our regulatory reform that – I think we did that in 2007, and we do allow a small cast net fishery. We have catch limits on it. It can be commercial or recreational. The commercial catch limits are a little bit larger than what's allowed for recreational cast netting. There's been quite a bit of discussion. I mean, it's a low-cost fishery. It's an in-shore fishery – very low capital. Use a small boat and a cast net. At the same time, it's clearly not as efficient as a trawl fishery. So, you could speculate that you might lose some of what you might otherwise catch in your state waters. You might lose that crop, part of that crop to, like, Florida. Our shrimp tend to migrate south when they move off-shore. So, you potentially could lose some of those.

SSD: Well, I can't remember who, but someone I interviewed was talking about how maybe fishermen should be marketing wild-caught US shrimp as a real delicacy and go for –

SS: Yes. The higher prices [inaudible] –

SSD: Yes. And the image.

SS: – smaller catch, the higher dollar. In Georgia, they are doing that. I don't know if you've had an opportunity to talk with Georgia fishermen yet, but they have been trying to market wild Georgia shrimp, and you'll see billboards around. Even in the Atlanta restaurant market, you will see the shrimp marketed on a menu as fresh Georgia shrimp, that kind of thing.

SSD: Right, yes.

SS: That has helped with their price. If you haven't talked with John Wallace – he was head of the Georgia Shrimpers' Association and served on the Fishery Management Council, and John was real active in the marketing campaign.

SSD: I'm not sure. I don't think that name rings a bell. I'm limited to the people who the grant specified.

SS: Well, sure. But that has been an effort ongoing for, I'd say, the past three or four years. It's to better market Georgia shrimp and command a premium price.

SSD: It seems like if that could be done, then the cast net fishery could become more lucrative.

SS: Yes.

SSD: I don't know if this happens in Georgia, but on the Mississippi Gulf Coast, one shrimper I interviewed was able to stay in the shrimping business by wholesaling most of his catch but retailing some of it at the dock.

SS: Right. You're seeing more and more of that going on, and you're seeing it with fish, particularly because the catch limits on certain fish are so reduced now, particularly snapper-grouper. Many of those species are off-limits, and we've got very low limits on others. You're seeing more fishermen that are marketing almost like a cooperative that you buy a share in their catch. I'm hearing more and more of that going on where, say a consumer like myself – I would agree to buy, say, ten pounds of fish a week from X fisherman. He comes to the dock. I go down, and I pay him for the fish, and I pay him a premium dollar. But also, I know I'm getting a clean, organic, premium product.

SSD: Right. And it's not the product of seventeen pounds of bycatch per pound of shrimp which is – I read in Wikipedia, which is not the greatest source in the world – but like in Thailand, you're going to have seventeen pounds of bycatch for a pound of shrimp.

SS: Yes. You may have antibiotics that, if it's pond-raised – the quality of pond-raised shrimp in terms of the looks, consistency, beautiful packaging, this, that, and the other. But they may be chemically tainted with something that the US government would otherwise not allow.

SSD: That's happened in some Chinese imports. There was an antibiotic they were using that's carcinogenic, so then they just switched to another antibiotic that's not approved in the U.S. [laughter]

SS: Right.

SSD: So I've been eating a lot of tofu recently. [laughter]

SS: I still eat a lot of local shrimp and local fish, and I try to get it from the markets. But I think you're seeing more and more boats that are selling retail from the boat. Within the Georgia licensing structure, they're allowed to do that as long as they have their commercial fishing license.

SSD: That's great. Yes. That must be true here, also, because I know several shrimpers are doing that. Frank Parker was lucky because his wife and parents could do it while he went out

and shrimped some more. They could still be on the dock. Another thing he did was start crabbing in the off-season and, again, his parents and wife said, well, when you're shrimping, we'll continue crabbing. He's been very resourceful in finding a way to stay in business.

SS: You see a lot of that in North Carolina. Our guys down here tend to be – they may be shrimpers, and then, during the off-season, they'll work on the hill, maybe in carpentry or boat repair or whatever, or at the ports. There's one shrimper who is particularly successful, and he works as a longshoreman at the Georgia Port Authority and makes I forget what an hour, but an astronomical – his kids are in private school.

SSD: [laughter] Good for him.

SS: Yes. He's a very good shrimper. He's got good business savvy. Then our crabbers will crab, and in the off-season, they'll do something else on the hill. We don't have a lot of crossover between our fisheries. We have a lot of crabbers that are also shrimpers – shrimp trawlers. We do have some crabbers that are also cast netters because they can use the same small boat and that kind of thing. It's really a capital investment situation, I think.

SSD: It sounds like it has such a minimal effect on the natural environment.

SS: Yes. With bycatch reduction devices, turtle excluder devices, I think we've pretty much minimized the impact with, perhaps, the exception of – you're influencing a bottom type that might not be the same as if it were left un-trawled. But I'm not sure that that's a bad bottom type in terms of a benthic environment – benthic, meaning bottom-dwelling. I'm not sure that the population of organisms – that's necessarily detrimental when it's constantly trawled and you have kind of that transitional – what's called a successional population of benthic organisms.

SSD: That would be interesting to study, wouldn't it?

SS: Yes. They've done a number of different studies, but they've been – and they've been done all over the world. They've been done in different environments. You really need to do it in your particular environment.

SSD: I'm not a scientist, but I would think to standardize all procedures.

SS: Yes. Right.

SSD: Have a protocol. Yes. Well, I was thinking in terms of cast net fishery and crab pots that they would have very little impact on the environment. Although, I don't know what kind of bycatch you get with a cast net or a crab pot.

SS: Well, the cast net, not much. Because you're throwing the net and pulling it up immediately, you can release any unwanted bycatch. The cast net fishery, by far, is the cleanest, most environmentally sound, and probably best suited. It is very labor-intensive. It is hard to throw a cast net repeatedly, time after time after time. It'll flat wear you out. Now, a crab pot, on the other hand, for the most part, it's not trawling along the bottom. So provided that the pot

is not being dropped on a sensitive habitat type, that's good. The issue with crab pots is that diamondback terrapins – these are the little turtles. They're not a sea turtle, but they're a terrapin, and they live in the marshes. They get in the crab pots and drown. So we got another turtle bycatch issue going on, and people are researching to see how to put escape vents in crab pots for these types of turtles. The other issue with crab pots that you have is dolphins try to get to the bait that is in the center of a crab pot, and sometimes they will get their tails wrapped in the crab pot rope, and they will drown. So, there are some issues with crab pots not nearly as controversial, probably, as the sea turtle catch in trawl nets, but it hasn't been studied as much. I think it's just now starting to be studied. So it is an issue, and there are some – I know there's some work going on. There are various teams that have been put together to try to address the marine mammal interaction issue with crab pots.

SSD: Yes. I thought of that immediately, and I was wondering how are marine mammals protected?

SS: There are some workgroups working on that. Are there quick releases, so to speak, to the buoy ropes that can release those buoy ropes if they start to get tangled and all?

SSD: So would then the dolphin be swimming the ocean with a rope training from its fin?

SS: Sometimes they are.

SSD: Yes. That might not be good, either.

SS: Yes. Sometimes they are. It's not unlike the whole issue with whales and lobster trap gear.

SSD: I didn't know there was an issue.

SS: Oh, there's a huge issue with right whales and lobster gear. In the northeast, as the whales migrate to the southern part of the U.S. to calve and have their babies, they get entangled in the ropes. It is a huge issue.

SSD: Wow. They're just attacked on every front. It's sad.

SS: Yes.

SSD: I'm looking at some of these other questions and thinking they've been pretty well covered in other interviews unless there's something that you wanted to say about midwater trawling.

SS: No. The only questions I've got, and I may not have printed out all of the ones – I had the ones for National Marine Fisheries Service and the conservationists. I didn't have others, and, again, I may not have printed out everything.

SSD: All right.

SS: We don't really have any midwater trawling here. That's more of a North Carolina phenomenon and mid-Atlantic northeast phenomenon and, I guess, maybe in the Gulf of Mexico.

SSD: Yes. I'm not sure about the Gulf of Mexico. I don't think there is much midwater trawling in the Gulf of Mexico. I'm not really sure about that.

SS: Yeah. We don't have any down here.

SSD: Do you have anything like the dead zone that's in the Gulf of Mexico, off your eastern coast there?

SS: No. We've got a few very confined areas in some of our rivers that – I wouldn't say they're a dead zone, but they do have depressed oxygen. Typically for fish, you want to see 3.0 to 4.0 milligrams of oxygen per liter. That's kind of the threshold below which you don't want to go. We've got some riverine areas near our sounds that, in the summer, will drop down below three, that get into the twos. That could be influenced by nutrient runoff from the high ground and all kinds of things, so there's some work underway to study that. But we don't have a big dead zone area at all. We have a huge tidal flow here. We have a seven-foot tide.

SSD: Wow.

SS: Oh, yes. That's an average. On spring tides, it will be a nine-foot tide, and some times of the year, depending on the winds, we can have an eleven to twelve-foot tide. So we have a lot of mixing in our estuarine zone just because of the tidal flow. The water is running so rapidly. That's why it's never been feasible over here to have butterfly nets, wing nets that you just put out in the water and let the shrimp flow into it. The tide flow here is just so rapid; they just don't work.

SSD: When you say mixing, are you referring to the water or the wildlife or both?

SS: No. I'm referring to actually – I'm sorry – to the water; both surface and bottom water are very well-mixed, and we got a lot of oxygen mixed up in that water because of just the tidal flow, the amplitude. We have a lot of wind. The wind is just the ocean winds and breezes and that kind of thing.

SSD: Well, we're coming to the end, and the last question that we like to ask our interviewees is this one. Is there anything you would like to put on this record that we have not talked about?

SS: The only thing I can think of – I think fishing is a really important part of the heritage of this country, and I truly hope that fisheries survive. There's a lot of critique and criticism and attack on commercial fishing from many fronts, as we've discussed today. I truly hope it can survive. It's a vitally important part of the cultural heritage of this country, I believe, certainly of the South, but also of the Northeast, of the Mid-Atlantic, of the Gulf. It's just very, very important.

SSD: The Pacific, too, Alaska –

SS: Yes, absolutely. Alaska. It's a rich heritage. Look how popular *The Deadliest Catch* is on TV. Everyone loves to watch that show. It's the romance of the sea mixed with just really important – and I don't know if you've read the book by John McPhee about the shad fishery [*The Founding Fish*].

SSD: I haven't.

SS: George Washington fed his troops on shad when they were on the Delaware during – it's amazing. I think the name of that book is *First Fish*. I can't remember. Look up John McPhee, and it's his book on shad and the history of fishing. It's so rich when you think about the aboriginals and the Indians and the prehistoric record in this country of the oyster middens and just all of that.

SSD: I don't know anything about the prehistoric record of oyster middens.

SS: Well, if you look back, and they do carbon dating on things, there are fish in the Indian records in history. The Indians fished along the coast, of course, for subsistence. Their oyster middens have a very rich historical record. They're like the trash heaps. It was like the landfill of the Indians. But it tells you a lot about their diets and –

SSD: Right. So McPhee – is it M-C-F-E-E?

SS: It's M-C-P-H-E-E. John McPhee.

SSD: All right. I'm going to look for that book. Anything else that you'd like to put on the record?

SS: I can't think of anything. I just hope I'm still able to buy fresh wild local shrimp while I live here on the coast.

SSD: Well, I hope you are, too. Don't take it for granted because I don't think I'll be buying any for a while.

SS: I know. Well, certainly on the Gulf coast. Gosh, I hope they get that situation under control soon. I really do.

SSD: Well, Susan, thank you so much for allowing –

SS: You're welcome.

SSD: – a total stranger to call you and ask you a bunch of questions. I'm going to turn off the machine now.

-----END OF INTERVIEW-----

Reviewed by Molly Graham 1/4/2021