

Stephanie Scull-DeArme: This is an interview for the Maritime and Seafood Industry Museum and the University of Southern Mississippi. The interview is with Gary Graham. It is taking place on Tuesday, March 23rd, 2010, in Texas where Mr. Graham is and in Hattiesburg, Mississippi where I am. I am the interviewer, Stephanie Scull-DeArme. First, I would like to thank you, Gary, for taking time to talk with me today. I would like to get some background information about you, which is what we usually do in our oral history interviews. So, I am going to ask you, for the record, could you state your name, please?

Gary Graham: My name is Gary Graham.

SSD: For the record, in case all the labels are lost and damaged sometime in the future, how do you spell your name?

GG: G-A-R-Y is my first name, Gary, last name, Graham, G-R-A-H-A-M.

SSD: When were you born?

GG: I was born in May 31st, 1946.

SSD: Where were you born?

GG: Wharton, Texas.

SSD: How do you spell that?

GG: W-H-A-R-T-O-N.

SSD: Texas. Now, if we were doing an interview face-to-face, it would be a lot easier for me to know when I can get a question in because nonverbal cues give you a lot of information when you are talking with someone. So, I nod my head a lot when I do [laughter] an interview, but you are not going to be able to see that because we are on the phone. So, forgive me if I interrupt you sometimes or if I am just silent. I am still listening to you. I just do not want to talk over you. So, first of all, Gary, can you tell me what your current title would be? What you are doing currently?

GG: Actually, I'm retired. I retired as a professor and marine fishery specialist with the Texas Sea Grant Program. I went back to work for them on a part-time basis as a marine fishery specialist. I also served as a gulf regional coordinator for the Gulf and South Atlantic Fisheries Foundation, which ties end to all of this.

SSD: To start with the first question that we want to cover for purposes of the grant, what role did you play in introducing TEDs to the shrimping industry?

GG: In the early 1980s, Ralph Rayburn, who at that time was executive director of the Texas Shrimp Association and, by the way, was a friend, came to me and indicated that the industry needed to get involved with TEDs. He asked me personally if I would get involved in some

educational outreach efforts regarding these. At that time, no information, very little knowledge of these existed on the Texas coast. I submitted a grant to the Gulf and South Atlantic Fisheries Foundation. They actually supplied me with travel, a small amount of compensation for the fishermen, and gear. What I did was actually take the early TEDs, the old National Marine Fisheries Service TEDs, placed them on boats, and actually went offshore and fished with the industry with these gears. I was very active in that in the middle [19]80s, collected data regarding shrimp loss, that was always a major concern with TEDs. That was always the big fear of fisherman, how much shrimp are we going to lose with these things? I spent quite a bit of time offshore on various boats, pulling these devices, and more or less demonstrating them. They were the big bulky pieces of gear, weren't popular, but I put them on a number of boats and went offshore. Very importantly, what happened to turn the tide was industry just was having a hard time accepting the devices. They were huge and very bulky on deck. I had one particular boat to pull them for several years. In fact, we got them to make a smaller one, NMFS, National Marine Fisheries Service. Unfortunately, [laughter] we drowned the turtle in it. Actually, no it was the big device. It was their big device we drowned the turtle. Yes. I am, "Boy, that kind of upset some of us." It was a tagged Ridley turtle. It was caught right between Galveston and Palacios, on the beach there. I actually killed a turtle in it. That was pretty disconcerting for all the work that we've done. Anyhow, overall, the East Coast, very importantly, there was a big move to look at a different type of device. One that would be much more simple. It was very strange or very funny because I was right this time. I had met with one environmental meeting in New Orleans regarding industry and sea turtles. I had made a statement to the environmentalist, "Hey, I think that the industry is pulling turtle excluder devices, and they just don't know it." [laughter] They're pulling a type of device that we call a cannonball shooter or a jellyfish excluder. There are times when jellyfish just get enormously thick where we can't pull the net. They clogged it up rapidly. The industry, being the innovators that they are, had developed some gears that had bars in it. Little grids that would take the jellyballs and exclude them out of the net and allow them to go into those areas of high concentration and continue to fish. Even though these would probably loss shrimp and they kind of felt like they were, well, it was either use these or no shrimp at all because you're not going to be able to with the gear. We had a device over here in Texas called the Matagorda. We named it the Matagorda TED. It was a PVC device made of grids that was being used. That interests me in looking at it. I thought if it was developed just right, I think it would get rid of a sea turtle. Over at Georgia, my close cohort, Dave Harrington, who is now dead, was involved in the same type of activities as I. We got to talk and he said, "They use the grid over here to get rid of jellyballs." You got to understand that in Georgia in the South Atlantic versus Texas. At that time – and it probably still is, I think I'm safe to say, a dramatic difference is sea turtle densities. I liked it. One thing I didn't indicate to you, I think, is a question way down on the list as my background, is I shrimped quite a bit. I worked my way through college on a shrimp boat. I married a shrimper's daughter. When I went to work for the university as – that was probably one of the reasons it got my foot in the door was because of my experience. Even after I went to work for the university, which was in 1970, I rode a lot of boats, doing a lot of gear work, doing a lot of efforts for turtles or even a consideration.

SSD: Which university was that, sorry?

GG: Texas A&M, that's where I'm with. Texas A&M University. I think if my memory serves

me correctly, and I've said this for many years, I only had remember encountering three sea turtles in my entire life.

SSD: That was shrimping a lot.

GG: A lot of shrimping. Now, I need to emphasize that there's a difference in turtle density between deep water and shallow water and species. Quite a bit about work was done out of deep water but I did spend a good amount of time too on the beach. I think that probably as I look back over my life, I've spent about five total years straight – five to six on the water, just to give you an idea. So, I've got a little bit of experience.

SSD: So, where are they more dense?

GG: They're more dense in the South Atlantic. Well, I told you I've seen three sea turtles in my life. This is going to gel for you here in a minute. I'm leading up to something. Dave Harrington over in Georgia, where those fishermen were actually losing shrimp because of sea turtles.

SSD: How did that work?

GG: They clogged up the nets, get in there, and make the nets quit fishing. They were huge. They were also a larger sea turtle, more of a larger sea turtle called the loggerhead was more abundant in Georgia than Texas. Mr. Harrington and I, we debated over the phone, we're very close friends, in fact, he was my mentor. I was like, "We think industry are pulling some gears just to get rid of sea turtles that might be adapted." Gosh, all my dates have run together. I'd have to go back to get along. It's in the middle [19]80s, I think. We got some grant money and University of Georgia had a Georgia Bulldog, a research vessel. It was rigged for shrimping. We went to an area called Cape Canaveral, extremely dense with sea turtles. We could catch in one net forty turtles a day in that channel.

SSD: That is when you were just shrimping?

GG: Yes, ma'am. There are people there that shrimp that channel. But they were attracted to a channel that cut there. I never saw boat fishes. High bycatch, but those sea turtles like that area. We do that. So, what we did was we invited fishermen from around the Gulf with different ideas to come and ride the Georgia Bulldog and put their gear in the water. I brought the Matagorda TED. Harrington had what was called the Georgia Jumper, which to this day still is the prototype gear. [laughter]

SSD: What it is called again?

GG: Georgia Jumper.

SSD: Georgia Jumper.

GG: They modified it, but that's the one that's stuck . We were perspicacious enough to invite

some environmentalists from Greenpeace and other organizations to come get on the boat and see what we were doing. Because we knew that even if the fishermen had a solution, would that be credible? So, what we did was we got groups of people together, we invited National Marine Fisheries Service. They came with their TED. What you basically do is called pair towing. You put a naked net, and that with no hole in it. Do you understand? The old type of net with no device. On the other side of the boat – on one side, you pull that and then on the other side of the boat, you pull up a piece of gear that's got the TED in it. So, you're able to easily scientifically document and statistically analyze data because you don't have any turtles, you call it the control, versus what you excluding. We were able to show that the industry gear got rid of turtles. It wasn't nearly as bulky. Not only did it get rid of turtles, it got rid of bycatch as well. It's very high bycatch area and with fish.

SSD: What other kinds of things were being bycatch?

GG: In the South Atlantic, huge stingrays and stuff. It's the same thing in Texas, but the South Atlantic has got a huge ray. It's bigger than the ones we have over here. They create havoc. Sharks, we get all kinds of things go out of those TEDs. We still say today that a turtle excluder device doesn't just get rid of turtles. It's what we call a BRD, that's a fish device. It also gets rid of fish. Let's get back to the focus point here. The big point is if we got industry active in trying to develop gear. There's a pride thing involved here, and they showed. They already came and said, "Number one, the whole [inaudible] gear was nobody liked it. I probably liked it better than anybody because it got rid of fish. But when it killed the turtle, I've turned against it. That was because you could adjust the opening now with how much pressure. It was a trap door there. We weren't trying to kill turtles. We were trying to save shrimp. We had that trapdoor just as where we thought it was right and a turtle got in there and drowned. But the big thing was that we would show that there was an alternative and that there was industry using it. In the South Atlantic, they were almost forced to pull something like that because it wasn't just jellyballs and the big rays, I forgot to mention horseshoe crabs. Horseshoe crabs was also a major problem to the South Atlantic fishermen. I should say because of that problem, initially, TEDs were more palatable in the South Atlantic than they were in the Gulf of Mexico.

SSD: I see.

GG: Anyhow, for the next two decades, I have spent various efforts and tried to develop TEDs while I'm still getting outreach on the recent changes. I went all over the Gulf States and tried to educate fishermen on the new openings and designs and things like that. This has been a dynamic process.

SSD: What are the recent changes?

GG: Much larger hole. We have gone from a hole that was around twenty-eight to thirty inches to a hole now that is seventy-one inches.

SSD: That is a lot.

GG: A lot of big difference.

SSD: That is a big difference.

GG: So, if you could imagine a hole in your net where you could take your hands and hold up to make an opening, where there's a hole, there's got a flap over it, but you can spread it out seventy-one inches. So, that's one of the promises it had. The industry has received indictment on TEDs because the early holes probably weren't big enough. It was apparent that we were getting rid of a lot of the juvenile and subadults, but the very biologically valuable large adults in the loggerheads weren't getting out. Now, here in Texas, our concern was another turtle. That's the Atlantic Kemp's ridley sea turtle. It's the smallest of all sea turtles. So, we probably didn't really have a major concern there about the holes. I also want to tell you we did catch a few loggerheads but nothing like in the South Atlantic.

SSD: We do have a few loggerheads offshore?

GG: Sure, we do. Sure, we do. Absolutely. But our big turtle over here is the Kemp's ridley.

SSD: Just in ballpark figure, what were the sizes of nets that you all were pulling in your tests when you put, say, one on one side with no hole and one on the other side with a TED?

GG: I think we were probably pulling nets that were probably around forty-five, fifty across at length. Yes. I think that's probably it. Right now, we're pulling nets on the average here at the Gulf of Mexico of somewhere around, I would guess, forty-eight, fifty feet. We pulled four of them.

SSD: Four fifty-foot nets. Is that on the test boat?

GG: No, that's what the industry uses.

SSD: Oh, that is what the industry uses.

GG: Normally, we speak about test boat is about a forty-foot net.

SSD: So, these shrimpers are out in the Gulf. They are kind of offshore rather than inshore?

GG: No, it depends on the species or the shrimp you fish. In Georgia, there are nearshore fishery. Nearshore, they all got a saddle land hardly in Georgia. In Texas, we fished the same type of shrimp, the white shrimp that Georgia does, which is a nearshore off the beach, up to say, mainly sixty feet of water. But then we fish another major and probably a larger fishery for us in Texas is the brown shrimp. The brown shrimp, once they emigrate offshore from their nursery habitats, they're found in some places a hundred miles offshore. We often catch those in depths of 180, 240 feet and deeper.

SSD: So, the same kind of boat can shrimp nearshore and a hundred miles offshore?

GG: You asked a very good question. You have some huge vessels fishing nearshore. But

mixed with that, you also have small vessels that go out on a daily or one-or two-day trip. Offshore, you have mainly all big vessels. So, there's a mixture inshore. It's mainly big vessels offshore.

SSD: Is there a difference in the kind of TED they are regulated to use depending on the size of the boat or the other size of the net that...

GG: Yes, they're here. You could get by in the inshore waters right now with a slightly smaller grid.

SSD: Well, can you think of anything else that you wanted to say in regard to question one about introducing TEDs to the...

GG: Well, you'd also need to know that I have had many grants where I have been sent throughout the United States to actually disseminate information. One of the things that was very important that we found – and it took us a long time to get to this point. It's so funny or so strange how little bitty nuances can make such a difference. If you would look at netting, netting runs at different directions. If you look at the knot in netting, you can pull it in one direction, it fishes differently than if you pull it in another direction. We found that the flaps on the TEDs, they had to be aligned with the knot just right. Actually, the Australians discovered this. It's very important that flap keeps the hole closed until a turtle comes and pushes it up or a large object. Only after the Australian showed us and they came up with it, and we started showing the fishermen if they put the knot one way, the flap will keep the hole closed so that the shrimp won't escape but a turtle could get out. But if you put it the other way, the flap stays open. We didn't know this.

SSD: They lose their shrimp?

GG: Lose some of their shrimp. It makes a difference. It really makes a difference. Little stuff. That's just one example of stuff that we could take out in the field and give to the fishermen.

SSD: It sounds like it really keeps evolving?

GG: It continues to evolve. It's dynamic.

SSD: Anything else on number one?

GG: I think that's probably it. [laughter] That's enough. I was very active in this as you can tell.

SSD: Well, let us move to number two then. How were TEDs viewed in the early days? I think you touched on that somewhere.

GG: Oh, boy. [laughter] In the South Atlantic, they were viewed much more favorably. In the Gulf of Mexico, they were reviewed. They were viewed with a significant amount of fear. Fear that they were going to lose so many shrimp. Fear that they were going to be dangerous to use. Fear that you're going to constantly have to work with them and the expenses. The fishermen

were absolutely afraid of them. Remember that fear sometimes interprets it to anger.

SSD: How did you know? How did you get that feedback from the industry? Were you there with them and seeing it firsthand?

GG: I wasn't just seeing it firsthand. I was receiving it firsthand.

SSD: Well, tell me about some of those happenings. Can you paint us a picture of one of those events?

GG: To be fair, there were a number of fishermen that were open-minded and wanted to work with me. I had the advantage over your average sea grant specialist because I had come from the industry. I had been very successful with some various projects up until the time of introduction to TEDs, so I had been able to gain the fishermen's respect. I don't want this to sound as if I'm bragging, but it's very important. I was publishing a book at that time, where the fishermen actually gave me their private information.

SSD: [laughter] That is like somebody giving you their intellectual property.

GG: That is exactly right. That book contained 12,000 locations from Brownsville to the mouth of the Mississippi River of locations where if you pulled your net right here, you're going to tear it up.

SSD: That is amazing. Why do you think they were willing to share that?

GG: It was very basic. I already broke the ice with the industry. That was a major hump. That was my first major project. What happened was a few fishermen gave me their readings. They were very secretive of them. I'd go to the next fisherman, I'd say, "Hollis Forrester gave me his data," and "I'll give you Hollis' data if you'll give me your data." You see what I'm saying?

SSD: Yes.

GG: I would sit there for hours. Remember, these are the early [19]70s, [19]73, [19]74. I'd sit there for hours with a pencil and write numbers down. Then I'd take those numbers and I would go back and I'd copy and give that fisherman's numbers to Hollis. You see, it snowballed. It took a couple of fishermen to work with me. I need to convince all of them because nobody gains anything by their competitor tearing up a net. If there were good fishing locations where this is a special little spot where I get shrimp, no, I couldn't have done that. What I was doing was cataloging bad models. So, fishermen already knew me. I got the respect there. Dozens and dozens and dozens of fishermen had given me their data. I had fishermen that trust me and would work with me. Oh, my goodness, I forgot something very important.

SSD: What is that?

GG: But I'll go back later to go back to this. But remind me that I had this important statement. Anyhow, some of the fishermen would work with me. Other fishermen would just chew me out.

When the TED wars took place, the Sea Grant told me not to go in to work. I was working at that time in Galveston at the National Marine Fisheries Service laboratory in the office. Sea Grant told me they get death threats.

SSD: At the lab?

GG: At me.

SSD: Oh, against you?

GG: Yes.

SSD: They actually – oh.

GG: I had a couple of close fishermen come to me and say, "Men, you're a good guy. We like you, but you better be careful." There's talks about violence.

SSD: Really astounding. Were you...

GG: Yes, there's talks about violence.

SSD: Were you afraid for your life?

GG: No, I wasn't. I went to work. I refused to back down from that. Now, you call me foolhardy, but they had the barricade. I don't know if anybody has mentioned a shrimp barricades to you yet.

SSD: It is just a mention, but I really do not know...

GG: Texas had a barricade. All the fishermen joined together and went into mass civil – not all the fishermen, many fishermen got together and went into mass civil disobedience. They had blocked...

SSD: They barricaded the harbor?

GG: Barricaded the harbors. At that time, I was divorced. I had two young children. They wanted to go offshore fishing and the harbor was barricaded in Freeport. I pulled up to a boat and I said, "Hey, I want to get through. I want to take my kids fishing." A shrimper looked at me and said, "Get yourself off by here."

SSD: Did they know who you were?

GG: Yes. They knew me. So, I just gave you an idea. I took my kids. I'm probably the only person that broke the barricade.

SSD: [laughter] That is really ironic.

GG: I had my little kids in the boat. You call me foolhardy if you want, but my kids want to go fishing. I promised on that weekend. We went offshore. They let us back in too. So, I had a degree of respect. Do you understand what I'm saying?

SSD: Yes.

GG: I still had. Look, I hate to make this statement but this is the truth, okay?

SSD: Yes.

GG: At that time, there was concerned about maybe some of the Asian Americans. I think that was all baloney. But I had some respected fishermen come to me and tell me to watch out.

SSD: Because the Asian American fishermen then...

GG: Didn't understand me and they thought that I was the one responsible for all of this and all. Then I refused. I would not back down. That was baloney. That was baloney.

SSD: Why do you think that they in particular were concerned about the TEDs?

GG: I don't know. I don't know. I mean, everybody was, don't get me wrong. Can I go back and talk very briefly about some other educational experiences?

SSD: You can go back and talk about anything you want to –

GG: These are very important –

SSD: – for as long as you want to.

GG: – because I missed two important points in this.

SSD: Let us get them in there.

GG: One of the things that I did for education – and I thought about it when I used the name Hollis Forrester, is later on as TEDs started getting into water, we're trying to get them introduced, we've got the new fishermen versions out there, is I hired expert fishermen that I had worked with and knew how to make the damn things work. I set them up and down the coast. So, it wasn't just Gary Graham, I used elite fishermen just to have an idea of information.

SSD: Were they people who were known by their...

GG: Absolutely. These were known guys. They respected me and I respected them.

SSD: You think the other fishermen were willing to listen to them?

GG: He called help from time to time.

SSD: Really?

GG: The classical thing was – I'll never forget, one of our tough fisherman in Freeport was given me the dickens about the TED losing shrimp and [inaudible] after and Hollis straighten it out. When they came back in, in two nights, they had not lost any shrimp. They had fished it equal.

SSD: So, maybe it was just a matter of adjustment?

GG: Adjustment and things like it. It's a learning curve. I'm dealing with this right now with a new type of trial door, but it's a learning curve. We were learning too. Don't get me wrong, had I had all this knowledge I have now, had I had that in 1989, it would have made things easier. It was futuristic for us. This is trial and error.

SSD: Yes. You said there were...

GG: Second...

SSD: Yes? Two things?

GG: Here's another thing that happened in the introduction of TEDs that was negative. This set me off big time. We started looking at a type of TED called a soft TED, which is no longer legal. But at that time, they were very popular. There was a major problem down at Brownsville. They were getting up on a piece of bottom there where they were catching pin shells. You know what a pin shell is?

SSD: No.

GG: You ever heard of a big angel wing? It's a big shell. Looks like angel wing when you spread it open.

SSD: Yes.

GG: They were getting that there and blocking the traditional TED that we were trying to show, the Georgia Jumper. They were clogging it up and the water was being redirected out of the hole. So, I sent Hollis to Brownsville with this new called the Morrison TED.

SSD: Morrison TED.

GG: Morrison TED. It is not legal anymore. But at that time, it was very popular. Later on, it gained a lot of popularity that we had to decertify it. But anyhow, sent him down there and it took some skill to install one of these. It's webbing inside the net and went offshore with this fisherman. By golly, showed that it would be able to fish more effectively in that type of habitat, that little certain area where the shrimp were at that time. When we came back into port, I wasn't there. But when they came back into port, there were television cameras. They blindsided my

man with indictments like Texas A&M is actually going out and pull an illegal TEDs just to make us think that we can make them work, you understand what I'm saying, or solve our problems. This TED they're using is not illegal at all. Well, I'll tell you my fisherman did a very good job. He kept his mouth shut. He wouldn't ever say anything. But they really set him up, set me up, and it hit the news.

SSD: So, the accusation was that the National Marine Fisheries Service...

GG: No, Texas A&M.

SSD: Texas A&M, they were not being honest about their data?

GG: They weren't being honest. They weren't being honest. I know the fishermen. I know both the fishermen that really were behind that.

SSD: So, there were some fishermen who did not want to use TEDs, who alerted the media lied to them about what Texas A&M was doing?

GG: Yes. I got blasted off TV around the Texas coast. I still think somewhere I've got a copy of that.

SSD: That would be interesting to archive.

GG: Well, I'll get it to you. If I can find it, I'll get it to you.

SSD: Well, that would be wonderful.

GG: I've got to clean out my barn. I got a bunch of VCR tapes, and they're stacked up that's in my way. If I can find it, I'll give it to you.

SSD: That would be fabulous.

GG: Brings back very bad memories. Let me go on and insert this back in case I forget. That fisherman, who Hollis went out with and was part of this conspiracy, told me ten years ago, "Hey, how about losing any shrimp with TEDs?"

SSD: Meaning, he...

GG: Stop working. That's pretty important to me.

SSD: He was not losing any shrimp?

GG: No, he adopted them. He's living with them. There's no problem. But more or less, back in those early days, it was a problem.

SSD: Yes, I interviewed a shrimper in Biloxi who believes that the TED he is using actually

increases his shrimp hole because it decreases bycatch.

GG: It can without a doubt. There's another side of that coin too.

SSD: Sure.

GG: You can get TEDs into certain pieces of bottom. Even today we can't make them not lose shrimp when you start getting into heavy seaweed concentrations or when you get into what we called soft jelly.

SSD: What is soft jelly?

GG: Oh, God, how do I explain it? It's a type of jellyfish. The one that we were excluding was a cannonball. It's got a firmness to it. It can be redirected. The soft jelly has got consistency of jelly almost. It's a little tougher. They clogged up all the knotting and all the holes in your TED. It changes the water flow and bags up. It doesn't escape out and it's just horrible.

SSD: Does it not escape out the TED?

GG: No. This is real small jelly. Yes.

SSD: So, it clogs up the TED as well as the net?

GG: It clogs up the whole net. Then the water starts flowing out of the escape panel of the TED.

SSD: Does it then render the TED not working?

GG: No, the TED would still work for a sea turtle.

SSD: Good. That is good. I am glad.

GG: It will work for a sea turtle. Yes. But now sometimes when a TED won't work is like the recent hurricane efforts, problems off Louisiana. You get mixed up in there to clog up the hole. Yes.

SSD: When the hurricanes leave big debris?

GG: Yes, debris.

SSD: Is there anything else you can think of to add to how TEDs were viewed in the early days?

GG: Captain (Michael Elrod?) who's deceased, boat the Sea Tiger with the old NMFS TED. It was actually his boat we killed that turtle off. Michael Elrod stood above everybody at that fishing port where he fished out of and those TEDs helped for two years. He pulled them away before anybody, but he would consider it.

SSD: Why do you think he did that?

GG: Because of bycatch. The old NMFS TED, that old box had an effective finfish excluding element to it.

SSD: Finfish?

GG: Yes.

SSD: What is a finfish?

GG: Finfish, fish, croaker –

SSD: Any fish that has fin?

GG: \neg is a, yes, finfish. Yes. Fish. We would regularly get rid of about twenty-five, thirty percent of the bycatch. He liked that. Twenty-one days on his boat, pulled out a TED on one side and on the standard net on the other side. We had ten pounds difference.

SSD: In shrimp?

GG: In shrimp. That was a calm water and clean bottom. That's very important.

SSD: But what is the difference in bycatch in that same pull?

GG: So, on TED, it's twenty-five, thirty percent. I took that same device off the Port Arthur, placed it on a boat, and the seaweed was bad. We had over ninety percent shrimp loss. I couldn't do anything about it.

SSD: Do you know why it worked?

GG: It clogged up the net.

SSD: The seaweed clogged up the net?

GG: Yes. Back in those days that one of the things that made that NMFS TED so effective, it had wires in the back of it that held in the water. That made fish turned and swim away from it and go out to some escape holes. We pulled that over there. That piece of bottom there, that was seaweed hooked up those wires and all the shrimp went out the escape holes with the fish. How embarrassing. There was nothing I could do. I took the other wires out. We still lost shrimp. It wasn't as much but very ineffective.

SSD: So, how do you solve that problem?

GG: I haven't been able to do it yet. That's why that fisherman that says he makes money with the TED, he probably does. But we also got to remember – and I tell this to the

environmentalists all the time, you got to give fisherman credit. Because at times, he's losing money because he's pulling those TEDs. There are certain types of bottom that's going to cost you money. When you get soft jelly or you get seaweed.

SSD: Is there any way to know where that is going to be and avoid it when you are shrimping?

GG: People do avoid. People turn right around and try to leave it, but there's certain times of the year – are you a beach person?

SSD: I grew up in Gulfport, Mississippi.

GG: Did you ever see times when the Sargassum seaweed came in? Does it come in in big masses on the beach sometimes?

SSD: I think the barrier islands keep it out.

GG: Oh, that's right. I wasn't thinking that. Yes. Well, see, there are times when we get that huge masses of Sargassum seaweed come in, it becomes waterlogged. Oh, God, you can't outrun this. It gets screw with it. Then if you've got a little forty-five or fifty-foot boat, you're not going to run off Louisiana like we do in these big boats, like Texas go to Louisiana, stuff like that.

SSD: This particular shrimper was an inshore shrimper?

GG: No, ma'am. He was a Gulf shrimper, and that was on his grounds.

SSD: I am sorry I was talking about the guy who told me in brief, he is an inshore shrimper in Biloxi.

GG: Sure.

SSD: He says he never has any seaweed. They all know now where all the debris is. It gets all computerized. They really share it so they can avoid debris, particularly since Hurricane Katrina.

GG: Well, you see, I don't do that anymore. He's doing exactly what I told you I started out doing. Nowadays, because of modern technology, there's no need in obviating the need for me to go make these books. Because now, fishermen are so modern. They take computer chips and they swap them around. So, they just put me where I could go do other things. [laughter]

SSD: Anything else you want to add to number two? How TEDs were viewed in the early days?

GG: Just overall, basically, they were just tremendous threat in the Gulf of Mexico. It was different in the South Atlantic. I keep going to stress that.

SSD: Right, because they saw more turtles in their nets there.

GG: Turtles and huge stingrays and more jellyballs. Then the horseshoe crabs.

SSD: Well, going on to number three, how are TEDs viewed today by the shrimping industry?

GG: Most of them accept it. Some fishermen tell me that if they were to outlaw TEDs, I mean, make them where they work necessary, they'd still pull them. In fact, I had a fisherman in Louisiana tell me that just recently.

SSD: Now, why would they want to do that?

GG: Because of debris. Get rid of the big items like the big rays and things like that. Let it go.

SSD: Do you think that they are more popular accepted today than initially, or is it just about the same?

GG: Absolutely, no question about it. But you got to understand too, our knowledge has increased. The fishermen now have more tools to correct a problem. When they see your TED starts losing shrimp, they have more tools.

SSD: Can you think of some examples and how they work?

GG: Well, for one thing, I told you about the flaps. We didn't know about the flaps and how important those were. One of the biggest problems in the end, not the little fishermen that you're talking to down in the bay there but offshore when these big boats with a huge six, seven, 800 horsepower pulling these TEDs and they get pieces of debris and stuff like that, it changes the angle where that TEDs being pulled. As that angle becomes more and more acute, it lays down, it allows shrimp to escape. We have learned to beat these up. Keep that angle steady. That angle is very important. We've learned more about flotation. We have new types of netting. We can put that gradient to actually firm it up. Just a number of things like that. There's little lines that we can tie on there to hold the TED at a proper angle.

SSD: So, there is ongoing education all the time?

GG: I have what – over in my workshop, what is the worst TED in the world. [laughter] It was given to me by a Louisiana fishermen after I'd given him some good right TEDs and said, "Take this around and show people. Don't ever use this."

SSD: Now, what is it like?

GG: It's a little bitty grid, minimum-sized grid. You understand that what we have found now is we were intimidated. At first, we thought, the smallest TED we could use, the better off we're going to be. The minimum size is twenty-eight inches around, let's go with that. But what we found is, it's better to use a big TED, a fifty-inch TED offshore, forty-eight inch. That is because your opening, you have more space in that net. Say, if you've got a piece of plastic on the grid, which is just awful. A piece of plastic on that grid redirects the water right out of the escape hole. But if you got a big grid, maybe get a piece of plastic on it, there's still a lot of room for the water to move through the net, which still catches the shrimp. You see what I'm saying?

SSD: Yes. Well, I am thinking that the shrimp cannot go through where the plastic is if...

GG: Well, that's it, if the water blew, we'd turn to go right out the hole.

SSD: They just go with the flow of the water.

GG: Flow of the water. See? Another thing is that the larger your grid is, the more stable the angle will be retained. It's stronger. So, that's just some examples. As a side, I'm going to tell you something that nobody is ever going to tell you. TEDs help keep offshore dumping of trash to a minimum in the shrimp industry.

SSD: How did they do that?

GG: I'm so ashamed of this because I did it too as a kid. We're better educated now. When you're offshore for thirty, forty-five days, can you imagine all the garbage generated on a boat, and you're on a very cramped boat quarters? It's so easy to just to put everything in a plastic garbage bag and throw it overboard. We used to do that and never think a second thing about it.

SSD: Because the ocean seems so big.

GG: The ocean seems so big. Now, there's an ethical thing that, I mean, I would never do that. But some fishermen even have to go a step further saying, "If I throw this garbage back over and it sinks, it's got to go into somebody's net, clog up the TED, and it might be mine." Never heard that. You'll never hear that from another interviewer, I bet. [laughter] I guarantee you. That is not just that. Now, fishermen bring their garbage in because they're forced to.

SSD: Good.

GG: Yes. I mean, they're forced to. You'll see a boat that comes in and they'll just start taking garbage bag after garbage bag off.

SSD: Well, putting it in the ocean is killing the thing that feeds them.

GG: Well, that's true. But you understand there was a lot of difference back in the [19]60s and the [19]70s versus now.

SSD: Do you think there are more fishing boats out in the ocean now than there were in the [19]60s?

GG: No.

SSD: Are there fewer?

GG: There are fewer.

SSD: Why is that?

GG: Economics. Economics is the big one and the hurricanes. I am very good in data. I'm involved in a project. I actually have some observers and all this stuff. Our biggest area of concern when it comes to another issue, red snapper, is the area between sixty and 180 feet.

SSD: Deep?

GG: That's fathom, ten to thirty fathom. That's where the small juvenile snapper exists. We had very good scientifically verifiable data as to how much effort was taking place in that ten to thirty fathom.

SSD: What do you mean by effort?

GG: How much shrimping took place? How many days were they pulling? How many were there nets? How much shrimping was taking place? Yes. Shrimping effort. For 2001 to 2003, we had where the guideline was established. This is your baseline, 2001, 2003. Now, we go back and we look at the effort today in 2009 data, seventy-eight percent less to eighty percent.

SSD: Of small juvenile snapper being caught?

GG: No, ma'am, less effort. Less fishing days, less nets, fewer boats. We have much fewer boats now that we have ever had. That's shown in the National Marine Fisheries Service records in active permits. It's abated significantly.

SSD: Is that good news, you think?

GG: Absolutely.

SSD: For the record, can you explain why that is good news?

GG: It has increased catch per unit effort. In other words, we're catching more shrimp per boat now. That's the only thing that's keeping the industry alive.

SSD: I see.

GG: It's the pie. Cutting how big is the slice of the pie. The slice of the pie is getting larger now that there are fewer boats. The slice of the pie almost has to be larger because of the economic conditions of the industry.

SSD: Do you think they are taking as many shrimp as they were in total?

GG: No. We are now below maximum biological yield.

SSD: So, that gives the shrimp a chance to kind of...

GG: I am very strong about this. We never were in problems with shrimp.

SSD: We were not overfishing shrimp?

GG: No. There's two kinds of overfishing. There's recruit overfishing, that's a bad one. That means you're not getting enough babies in, and that never did happen. There's a growth in overfishing which means that you're taking shrimp before they get to their maximum size. Yes, that probably has been taken place. It takes place in Louisiana without a doubt. It was taken place to a big degree in Texas. Now, the shrimp are getting larger before they are harvested.

SSD: Do you think that the decrease in total number of shrimp being taken helps the turtles because it just means that fewer turtles are being taken also?

GG: You might say that, but I think it's very minor. We're using these TEDs now and they're working.

SSD: So, do you all still go out on the boats and collect data?

GG: I have an observer out right now. I'm not doing it. I'm an old man now. I have young people out doing it.

SSD: Do you think – yes?

GG: I have been very active with the Gulf and South Atlantic Fisheries Foundation. We have an industry bycatch – I mean, an industry observer program that collect data on shrimp effort, red snapper bycatch, bycatch exclusion devices regarding how effective are they and taking industries ideas and trying to see if they'll work and collect scientifically verifiable data. In [19]97, we did work with the [inaudible]. That means we went out on selected various boats and then we'll go out and fish without TEDs and see how many turtles we could catch.

SSD: Did you do something to minimize the chances that they would drown?

GG: Yes, ma'am. We limited tow time.

SSD: Now, the foundation, is that a nonprofit, non-governmental?

GG: Yes, it is nonprofit, non-governmental.

SSD: Do you think chances are good that we will continue to collect data and make sure turtles are making a comeback.

GG: Absolutely.

SSD: Good. Is there anything else that you want to add to how TEDs are viewed today by the shrimping industry?

GG: Well, the shrimping industry I think is more acceptable level. They're not as intimidated. I'm doing this with the bycatch reduction device. I'm going to Brownsville tomorrow with the type of very intimidating bycatch reduction device. That is effective in getting rid of fish, but it is scary to look at. The word I'm using is emboldened. The industry has become an emboldened. We have emboldened the industry through the years by building up their confidence to use them and look at them and that sort of thing.

SSD: Well, let us move on to number four, which you have also touched on with the barricades and all of that stuff. But there are different kinds of challenges. What are the challenges – were the challenges faced in developing?

GG: Before we go to that, there was another educational effort that I thought was very funny then and I forgot to mention it. You asked me for a second. Thank God, I'm so sorry I left this out.

SSD: That is okay.

GG: I'm sorry we're out of order.

SSD: It does not have to be in order. Do not worry about that.

GG: This is what I did. One of the biggest rebels against TEDs was Tee John Mialjevich.

SSD: I have heard that name.

GG: Yes. Tee John led the charge. He was from Louisiana. [laughter] What I did, it was just kind of strange. You just got to get the word out and I would do TED workshops up and down the coast back in those tumultuous years. Tee John would get up after I made my workshop and try to get fishermen the final, and join his association and everything. So, it's actually really funny. I was trying to show how to use the gear and then Tee John would say, "Let's fight." It turned around, sometimes Tee John would have a campaign to try to get the fishermen together to fight. Then they invite me to come show them how to use TEDs. It doesn't make sense, but it worked. I wanted to mention that because that's kind of unique, I think. What was number four?

SSD: Let me see. What were the challenges faced in developing TED?

GG: The first challenge we had was trying to get NMFS convinced that what the industry had was going to work. That was the challenge there because NMFS had their piece of gear out there. It was already in place. But they were cool. After the Cape Canaveral trip that I told you about – and don't get me wrong, there was also pressure from some of the environmental organization, say, "You need to look at the industry's ideas." That was one of the first challenge. The second challenge that we had, and it still exists among a handful of fishermen is this protocol that's being used to certify TED. They're using captively reared turtles that are placed in a bag and immersed into water and taken out of the bag by divers that are on the net. They set them down on a messenger line, a cable down to the net that's being dragged. The turtle is taken out and then released into the net and some fishermen say, "Wait a minute, this isn't a good test."

SSD: Why is that? For the record.

GG: You'll see some sea turtles just go to the side of the net and hang out. Don't even swim to the back and we don't think a real sea turtle would do that.

SSD: They are inexperienced in that environment.

GG: Well, they've been raised in little tanks.

SSD: Sure.

GG: To the credit of National Marine Fisheries Service, to their credit, they've made enormous strides in taking turtles and conditioning them, letting them get a little older, a little larger in size, and all that. But they're still a lot of heartburn.

SSD: Yes. It does not seem like they would – that if the captively raised sea turtle would be anything like the wild sea turtle.

GG: One of the things that was argued was, remember I told you the Morrison TED, that was a soft TED. There was another TED that we were using now that was really gaining – and it's called the Andrews TED that was really gaining momentum there before they certify it. It was basically a net within a net. It actually had big meshes and shrimp would sweep through the meshes. But the sea turtle would be directed out of the hole. These captively reared sea turtles would actually, when you turn them loose, you'd see they'll just get up next to the meshes, wouldn't fight, or anything. You had to exclude a certain number of these sea turtles in order for them to go ahead to be a ninety percent level, if I'm not mistaken, ninety or ninety-five and never could achieve that. A lot of people said, "Hey, this test is actually not fair." A wild sea turtle wouldn't act like this. I don't know what happened. I do know that we were at one time – yes, I know what happened. At one time, we were certifying TEDs in Cape Canaveral. Remember, I told you, he gets forty sea turtles a day in one net. It doesn't take you very long to be able to statistically gauge whether or not a particular trial is or TED is effective. But what happened was, it was one year we went over there and there was some real strange conditions. I don't know if some of the sea turtles were sick or what but it killed a couple of them and in short tows. At that particular time of the year, there wasn't a fun time for National Marine Fisheries Service. Because that same year, they've taken a bunch of sea turtles to (Paramount City?) to certify them. They put them in a pot and it was cold. Oh, they started killing one another.

SSD: Good grief.

GG: Yes. You don't hear much about that. But yes, and so, there's a lot of problems right there. They called us off of the certification out there. We killed, that was it. I think it's the political nature that was pretty hot there.

SSD: What is the problem with using wild turtles to do it? If they are so dense in the Cape Canaveral area, could not they be caught?

GG: I've also said that. I've often said that they're even more abundant now than what they used to be. So, that's one of my biggest issues. I think that the captively reared sea turtle program has a definite place. I think it's important to be able to look at them and see how they react or someone reacts and all that. I'm not saying cancel that, but I'm saying let's give some weight to wild sea turtles.

SSD: If you compare the behavior of the two, I bet you would come up with some differences.

GG: Well, I believe you would too. Now, here's what's happening, here's what we have technology to do now. We can put cameras on nets. We can see what's going on in that net while we're dragging. If you're getting clear water or a water just got a little bit of clarity, you could put the camera down there. You could tell if a turtle is getting caught up in the TED. If he's not getting out, you can stop and pick up your nets. See, what I'm saying?

SSD: Yes.

GG: So, we've made some best improvements in technology. But that's one of the developments for the loss of soft TED, that soft TED, that Andrews TED, by the way, was the very best biological tool as far as exclusion of finfish has ever been introduced yet and had a seventy-eight percent bycatch reduction.

SSD: Now, why was the Andrews TED decertified?

GG: Because of little turtles were being caught. Remember, I told you they get up in there and they just lay against the webbing and not swim out.

SSD: Those were the captively reared?

GG: They captively reared for exam.

SSD: Any other challenges that you can think of?

GG: Expense. Anytime you start doing comparisons and stuff with the sea turtles or using boats is an incredible amount of money. It takes an incredible amount of money.

SSD: It is not getting any cheaper either. [laughter]

GG: No, you're right.

SSD: No.

GG: Good point.

SSD: We talked about the barricades, the death threats, anything else? Any other challenges that come to mind?

GG: Actually, I had an easier time than most people. I had the easier time than most folks that went down the docks with the gear.

SSD: Do you think that is because you were a shrimper?

GG: Yes. I made that book that the fisherman loved. I introduced the four nets. I'd be able to make money with a different kind of fishing raised. I had already established myself as a good guy, all right?

SSD: Yes, that is great. The fifth question is somewhat different than the fourth question. We have hit on probably most of it. But I will just ask you if you have anything to add to it. The fifth question is, what were the challenges faced in getting the shrimping industry to use TEDs?

GG: I think I'm pretty good.

SSD: I am sure. Number six is how did the early TED models compared to later models?

GG: Men, I've kind of addressed that a little bit. Now, our later models are much larger. We have found that larger grid is probably more efficient. Now, we have a much larger hole. We discussed that and that's allowing the escape of these large adult turtles, especially the adult loggerheads.

SSD: I cannot remember if you talked about why the soft TED? I think that was the Morrison TED. It was decertified.

GG: Same reason. They could not pass that captively reared sea turtle program.

SSD: Boy, that seems like a major flaw in the study to me. [laughter]

GG: Well, one of the problems that you have – and I've tried to be objective is weeks ago, we've debated this so long obviously. I think they're wearing me down finally. But one of the concerns was, when you start installing the soft webbing, it's got to be placed in that net just right. How do we know that's been placed in the net just right?

SSD: You have to check everyone, would you not?

GG: Yes. My statement is this, you have trained installers. Then with that installer, he has got to have me trained and certified by the government. Then when he puts that device in the net, he has to put a tag on it with his code or whatever showing that he did it. That has an expiration date. That has to be brought back in and checked every six months or a year or whatever you decide.

SSD: That is right, creating new jobs.

GG: That would be my idea.

SSD: We need new jobs.

GG: Yes. That's my idea, but it hasn't ever gotten very far.

SSD: Too bad. Sounds like a good one. You have also talked some about number seven, describe your experience with protests against TED regulation. Is there anything else that comes to mind when you think about that?

GG: Not really. I can tell you this, one of the concerns and this even happened – by the way, I was on the Academy of Science panel in 1990, that did the final. They got down to the point is industry killing the TEDs or how important is the industry in the overall recovery of sea turtles? I was on that National Academy panel. One of the concerns I had – and I still remember this, and I still grit my teeth a little bit, is that there was a broad statement that was used all over the place by the environmental community. It was published by a friend of mine. It said that the shrimp industry captures 48,000 sea turtles a year, plus or minus 48,000. [laughter] I think that's right. I think out of that 48,000, I forget what number it was, a fisherman or a scientists? They hated that statement. I hated that statement.

SSD: Well, by capture is do they assume that those turtles die?

GG: There was a certain percentage – I could reach over and grab a book and tell you, "I think they were saying we were killing somewhere around twelve, 13,000, something like that."

SSD: Do you think that is accurate?

GG: I don't know. Back then I just don't know. I did agree that the shrimp industry was a major culprit.

SSD: Somebody sent to me last week was (Andy Kimmerer?). He said if it is shrimping season, there are shrimp boats, trawling, and there were dead turtles washing up on shore then you can be sure that shrimpers are killing turtles. What do you think about that?

GG: I think it's a smoking gun. But at the same time, the sea turtles get just as active as the same time of the year the shrimp are.

SSD: Well, is there anything else about number seven that comes to mind?

GG: No, there's none.

SSD: What about number eight? Have you ever been involved in enforcing compliance regarding the use of TEDs?

GG: No, ma'am. One thing that I have done to take a special page is that never get involved in enforcement.

SSD: Why is that?

GG: Because I don't think an educator ought to be involved in enforcement. The only thing that I have done with enforcement is I have trained some of our local [inaudible]. Bycatch reduction devices and TEDs, proper – I've collaborated with National Marine Fisheries Service and done workshops for them.

SSD: Is that so that when those enforcement officials go aboard boats, they know what to look for?

GG: They know what to look for. Yes, ma'am.

SSD: Well, let us move to number nine. Do you know how compliance regarding the use of TEDs has changed over the years?

GG: I think it's gotten substantially better. In fact, I think the Coast Guard publishes these now. There's a ninety-nine percent compliance.

SSD: That is fabulous.

GG: Yes.

SSD: Do you know how the enforcement of the use of TEDs has changed over the years?

GG: Yes, ma'am. It's become much more active and much more focused.

SSD: So, they are looking for compliance more now?

GG: Yes, ma'am. Coast Guard has become much more involved in our state, not in Louisiana, but for sure in Texas.

SSD: In Texas.

GG: Our state enforcement officers would become much more involved as well. I think you can say the same thing for Mississippi. It's pretty painful to be caught with a violation, I can tell you that much.

SSD: What are some of the examples of penalties?

GG: The worst I've ever heard is a boat down in Texas, in Palacios, they got \$100,000 fine and lost something like \$70,000 worth of shrimp and was also forced not to fish for a certain period of time if they allow that to be broken up through several years.

SSD: Well, it sounds like it could put you out of business.

GG: Well, that was a pretty absolute worst case I've ever heard. At one time, I know they put

people in jail. I know this captain that was on that boat went to jail, but there was, I think, some warrants out, stuff like that.

SSD: Well, that is good news for sea turtles.

GG: Yes.

SSD: I am glad. Number 11, you have touched on also how does your agency engage with other agencies involved with enforcement of the use of TEDs? You said you did some training. Is there anything else that...

GG: That's about it. That's about it. I've sat on a lot of panels. I collaborate with National Marine Fisheries Service, on all those sea turtle studies. We're talking about those things that TEDs are going to Paramount City in the Clearwater. That's where that's done, by the way, those certification trials. I'll sometimes work with them. At one time, we had committees where we'd set their review gear and decide whether or not TED should be allowed. But nowadays, it's pretty cut and dried. There's not a need for it.

SSD: Number twelve is a big old general question. We have touched on in many ways already, but there might be something else that comes to mind. So, I will just go ahead and ask it. How have TEDs affected the shrimp industry?

GG: TEDs may have called a few of the weaker people out of the industry. But I don't think the effects would have met nearly as significant as it was initially feared by industry. So, I think they've added cost. I think that's stuff that you don't hear much about but a good TED nowadays, at least the ones that I would use, would be over \$300 a piece.

SSD: Would that work on just about any net?

GG: Yes. Oh, yes. To start out with, I need about six to eight of them. Then they have to be maintained. Don't kid yourself, there's a cost and there is at times a loss. I don't think industry gets credit for that.

SSD: Sometimes a loss.

GG: An unavoidable loss.

SSD: Number thirteen, how TEDs affected the sea turtle population?

GG: Affected in a very positive manner.

SSD: Good.

GG: To give you just some ideas, do you remember I told you I've seen three sea turtles in my life?

SSD: Yes.

GG: We called it a trawl. That was because there weren't many of them around. In 1997, I coordinated an effort with the Gulf and South Atlantic Fisheries Foundation where we took boats. We put observers on boats and allowed them to take their TEDs out. We controlled the amount of tow times that they could go. Significantly, inshore, off the Cameron, Louisiana, in ten days, we caught four sea turtles. Off of Sargent, we caught in ten days – I think it was eight days, we caught off four off Cameron. In ten days, we caught eight sea turtles off Sargent.

SSD: That was Texas?

GG: Yes, ma'am. That's right, I'm sorry. Sargent is a little bitty port in Texas, down by Bay City, off of Palacios. Offshore, we got amounts of time – I think it was something like we call it 8,000 net hours. We just described the net hour as a hundred feet of net pull of one hour. I think if I recall that study, it was over 8,000. We caught, I think, only twenty-three turtles. No, I'm sorry, only about seven or eight turtles in all that time. I might be off a couple of turtles. But when we came into inshore, we saw a big [inaudible].

SSD: Is that right?

GG: Yes. There's probably more now than there was. We even caught a sea turtle off of Aransas Pass Jetty, so we tagged and released. It went up on the Mexican beaches and lays these eggs.

SSD: Where are those jetties?

GG: Jetties are off of Aransas Pass, Texas near Corpus Christi. But now, in the middle [19]80s, we were counting the nest of ridley sea turtles in Mexico. That's the primary nesting habitat. What we found was is that more population of sea turtles had gotten down to only around – and I don't remember the exact number, but let's just say it went far from 750. It was in the 700s. That's how many nests a year. Some scientists actually expressed a concern that there's no way. There's not enough window. We don't think it's going to be able to come back. Last year, we had over 18,000.

SSD: 18,000 nests in Mexico?

GG: Yes, ma'am.

SSD: That is great.

GG: I'd like to emphasize that all of these success is not due to TEDs, but a big portion is.

SSD: What are some of the other pressures that have been...

GG: Protection of the nesting habitat. The beautiful thing about that is industry has been hugely responsible for contributing to that program down in Mexico. They have about four wheelers for people to patrol the beaches. They even built a house out there, drilled a well for the biologists.

It contributed significantly to the protection of those beaches.

SSD: How does the money actually move from the industry into buying the four wheelers?

GG: Gladys Porter Zoo is a big part of that. There are people that work there that are very close with the Mexican government and do studies down there. Yes, ma'am?

SSD: Did you say it was a zoo?

GG: Gladys Porter Zoo.

SSD: Gladys Porter Zoo, and that is in Mexico?

GG: No, ma'am. It's in Brownsville.

SSD: Oh, it is in Texas?

GG: Yes.

SSD: I am going to Google that and find out more about it.

GG: Yes, do that. Do that. That's one of the four. I've gone down there with them.

SSD: It sounds like fun. I am thinking I would like to volunteer.

GG: If you ever want to go down there, let me know, I mean that. I can get you in. I can get you down to those beaches.

SSD: That would be a blast.

GG: I went down two years ago for just Aqaba press day, educational day. They brought in children and stuff at the Gulf of Mexico, flew in on a helicopter, and they had a turtle release that evening. So, they're actually gathered. This has reached a point now where they cannot keep up. At one time, they were bringing in, digging up the nests, bring to the romantic place. There have been an enclosure where they would guard them. Then as turtles hatch, they want to make sure they made it to the water. There's just so many, now, they can't do it. They're still doing the enclosure bit. The need for [inaudible] and I don't have the exact numbers on this. But there's over a hundred nests in Texas now. It's not even part of that 18,000.

SSD: Actually, I think it might have been Tom McIlwain in Mississippi here who told...

GG: Oh, Tom, you're getting around. You can talk to all my buddies.

SSD: I think he told me that when he was growing up, he knew that the turtles were nesting –sea turtles were nesting. Those close and short – not in short, there is closed barrier islands.

GG: Yes, ma'am. We came across that in the Academy of Sciences. It was documented. Dr. Pat Burchfield needs to be recognized. He is the man at the Gladys Porter Zoo. Write that down, Dr. Pat Burchfield. He is the man that goes down into Mexico and does that. He is a leader, loved by the Mexicans, and by us as well. He's a dynamic individual.

SSD: So, those people in Mexico who probably love to eat sea turtles, are they still pretty receptive to having the scientists come in and not let them gather the eggs and eat them?

GG: What they have done – and this is interesting. The people that were gathered – Rancho Nuevo is one of the big sea turtle nesting areas, okay?

SSD: Yes.

GG: There's other little towns and communities. There's another little community. I'm trying to remember the name of it. What we did was, those people that were collecting those eggs, they created a [inaudible] to train them into making potteries and some red lobsters. Some of these people are actually buying stuff from them. They put them into restaurants, various folks like that. So, what you're doing is a very unique program. You're re-educating them and give them something else to do where they don't have to rely on the sea turtle eggs.

SSD: That is fabulous. That is very insightful for somebody who thinks about doing that.

GG: Well, that's what the industry did. They were in on that with Pat Burchfield.

SSD: The shrimpers really would like to have the heat taken off of them as the only culprits, I guess. So, they want to support some of these other ways.

GG: Absolutely.

SSD: Anything else you would like to say about the TEDs effect on the sea turtle population?

GG: It's been very positive here. The loggerhead sea turtle, all of a sudden, we don't know what's happened. But they're not rebounding. From the NMFS, they're not rebounding. Remember, I gave you these beautiful numbers about the exponential growth of Kemp's Atlantic ridley turtles. The antithesis is that of the loggerhead. That seems to be declining over in the South Atlantic.

SSD: Where are they?

GG: We don't know why.

SSD: Where do they build their nest on the Atlantic coast?

GG: Florida is a huge one. Florida, Georgia, South Carolina, those three states are big. I think North Carolina to a degree, South Carolina, Georgia, and Florida.

SSD: That is not a very big nesting area, is it?

GG: It's the second largest population of loggerhead sea turtles only to Oman.

SSD: Oman.

GG: Oman.

SSD: Then I guess it is big.

GG: It is. We were doing a negative turtle studies. This is the dilemma. It has me totally (knot plus?). We go out and we check these. We drag these nets without TEDs off the South Atlantic. We catch more sea turtles now than we ever have, much more. If we use that as an indicator, we're okay. But if we use a number of nests, we're in trouble. Isn't that strange?

SSD: Yes. Well, the nests are where the new populations come from.

GG: One of the thoughts is remember we had to increase the hole size of that thing, maybe we were killing the older turtles. Maybe what we have out there are a number of turtles that are going to be adults and got to inundate these beaches someday.

SSD: But they are not ready to nest yet.

GG: They have not reached sexual maturity. We got our fingers crossed. That's what we're hoping for.

SSD: Give those babies some hormones.

GG: Yes. So, that's what we're wanting now. See, down in Mexico, the little Kemp's ridley we found ten to twelve years. They're ready to go. They've reached sexual maturity. We're afraid that all these loggerheads, it might be thirty, forty years. There's a gap there. I need to tell you that it looks like the loggerhead sea turtle might be gone to endangered species, going from threatened to endangered. I don't know if any of these scientists have told you that.

SSD: If it does, will there be more hope for it, you think?

GG: No, ma'am. I don't think there's anything. If anything, at least raise some more money for the research to protect them. But I don't know if it's going to be that big a difference in what we're already doing. Actually, we're at a point right now with the Kemp's that we might delist it.

SSD: Look what happened to the wolves.

GG: Yes.

SSD: They delisted them and now, people like that are...

GG: Oh, yes. You read your last National Geographic, didn't you?

SSD: I actually do not get National Geographic.

GG: Well, I see there was a big article there. The Kemp's, we're thinking, "Well, we could bring it from endangered down to threatened here pretty quick." I just have some new stuff I haven't read on the computer. But at one time, we were saying, once we had 10,000 nested females.

SSD: They would be delisted?

GG: Yes, they'd be delisted. But the problem is that if that doesn't make any difference, whether it's threatened or endangered, you still got deals. You are still going to have to do the same thing you're doing it. So...

SSD: It will not be open season for Kemp's ridleys just because they move a notch on the scale? It seems like there ought to be some protection for them even if they are taken off the scales.

GG: Oh, there will be. There will be. I mean, my gosh, there's protection for sharks, there's protection for red snapper. Yes.

SSD: Good. Well, number fourteen is a question that I thought was interesting. I mean, I know why I think sea turtles are important. But I wanted to just get on the record why the people who have worked so hard to make sure they do not go extinct think they are important? Why do you think sea turtles are important?

GG: I think we have ethical responsibility to living things. Secondly, I think that organisms are just like the rivet in an airplane wing. You might get by losing one rivet here, two rivets there, but how many rivets you're going to lose before everything comes apart?

SSD: Yes.

GG: So, that's kind of my thoughts on it.

SSD: Have you ever read Chief Seattle's response to the president? It was written in 1854.

GG: I've heard about it but never read it until now.

SSD: I have to send you a copy of it electronically. One of the things he said is that all creatures are connected and whatever befalls the creatures will befall man. If extinction comes to too many species on earth, then it is probably going to come to us.

GG: Well, it's definitely the rivets. Yes.

SSD: That is exactly what you said. Number fifteen, the penalty for netting sea turtles. We talked about the guy who lost his boat in this.

GG: Oh, yes. He lost his boat. But he was a rich man. He had a big fleet. But he lost some money. He's got a lot of problems there. But I don't really know the penalties nowadays. I'm sorry to tell you, I don't know what it is. I do know that you could not just have to pay a price, you could lose your shrimp on our boat. You understand, in Texas, we make long trips thirty, forty-five days offshore. So, yes. My God, it's devastating if you'd lost the thirty days' worth of catch.

SSD: Well, now, the next question, sixteen, is where did you grow up? If I had been interviewing you just for the University of Southern Mississippi, that is where we would have started. Because we believe that it is interesting to document some of your early life that in years to come is going to be important to researchers. If you have time and are willing to, can you tell me a little bit about your growing up years?

GG: Yes, ma'am. I was raised in the Middle East. I went to the Middle East when I was four years old. I was raised in the middle of – where he had the Saudi Arabian Desert pump station. I had a private tutor. At the age of 11, I had my choice to come back to the U.S. or to go to Switzerland to school. I chose to come back to live with my grandmother. My grandfather worked for oil at the time. He was a supervisor of oil field. He had cattle and I became very interested in cattle.

SSD: Was that in Texas?

GG: In Texas, right here in West Columbia. As I got older, I worked on ranches and decided that what I wanted to be was a cowboy. I got a degree in range management planning and thinking that I was going to go off and manage grasslands on one of our national parks or national lands. That's what I wanted to do. I'm kind of a loner. I got on my horse and be out by myself and just got the life I wanted. Then I got introduced to shrimping.

SSD: How did you get introduced to shrimping?

GG: An old fisherman needed a son. I lost my daddy when I in my first semester of college and an old fisherman needed a son. He took me under his wing. I married his daughter. He was a hardcore dude, but he taught me a lot. I think God wanted me to be here because my deal is how many fishermen went to Princeton. This man had gone to Princeton.

SSD: The old fisherman had gone to Princeton?

GG: Yes. Yes, he'd gone to Princeton.

SSD: That is amazing.

GG: That's pretty amazing. He did tremendous amount of research. When I was just starting that [inaudible] on the boat, I thought that's what all shrimpers did. I mean, he had scales out there. He was doing tests and stuff. I was way in shrimp. Besides doing it and here I am at sixty-three years old, and I'm still doing the same thing. So, I think God kind of had plans for me. But that man took me. He was hard to work with, but he taught me and he trained me.

Other fishermen took me in and train me. I worked my way through college. It got kind of tough when I lost my dad in financial aid, everything else. I got after all the water, and I wanted to quit college then. I'd already gone so far with my studies. I'm going to be a cowboy. [laughter] That didn't work. When I got out of A&M, I went off and did a quick job as a National Guard. This is when they started all this outreach stuff. A&M got word if there was a guy like me around that had been out on the boats a lot and had a college degree. So, I made an agreement I'd go back to college and get a masters in fisheries, and they hired me to do this. So, that's a long story short, I'm married. I married the fisherman's daughter. We took a sabbatical for about ten years and we're back together.

SSD: Oh, fabulous. [laughter] You just needed a break. [laughter]

GG: We built a beautiful home out on some property on a river. I'm working eighty percent for Texas A&M now, not quite full-time. I'm retired and still have a tremendous amount of passion and zest.

SSD: Good for you. That kind of explains why you chose your career path?

GG: Yes, ma'am.

SSD: We have talked about your title and your current position. But just thinking about what if somebody reads this in a hundred years or 200 years and you wanted to paint a picture of a typical day for you? What is a typical day at work and at home?

GG: I can't. It can't be typical. I don't have a typical day.

SSD: Well, can you just choose one? Pick one out and tell us about it?

GG: Well, tomorrow, I'm going to Brownsville. I will have to get there in time for a 3:00 p.m. meeting. At that meeting, we're going to discuss some sort of program where the industry down there, the shrimpers, that are doing all this environmental stuff can become certified, saying, "You're good guys. You all are using good, especially bycatch reduction devices. You use some [inaudible] that we're doing and that isn't quite as destructive. You're using these new kinds of TEDs. You're doing the right kind of things. We think that you're environmentally responsible and some of you, if you'll make the quality of shrimp, maintain that. We think that we can certify you to market your shrimp to people that want to buy environmental products. So, that's my day tomorrow. But in addition to that, I'm taking down some very intimidating bycatch reduction devices. I'm hand-picking industry people and asking them to install them. I'm going to show them how to put them in their nets. I'm going to ask several people to take these devices and put them into one of their nets and take them offshore and objectively evaluate them. Supposedly, by the data, these get rid of more fish than anything else. I'm going to be doing that. My key has always been, fisherman will do your work for you. If those things work and it can be endorsed, it is more for one fisherman I'm looking for. His name is Pitufu, which means smurf in Spanish. If I get Pitufu to put it in and take it, if it works and it looks like he's getting a lot of fish, you're creating less work for him, he'll get on that radio and he'll start speaking in Spanish to the other Hispanics. Before I know it, I'll have them calling me and say, "How about

this piece of gear, Pitufo?" You got one for me?

SSD: No.

GG: A nap with kids. That's my day tomorrow.

SSD: Very interesting.

GG: I'll drive 300 miles and do all of that.

SSD: Well, thank you for sharing that. Number twenty is what kinds of turtles are found in the Gulf of Mexico?

GG: All five.

SSD: Now, that would be Kemp's ridley?

GG: You're going to give me a test now. Kemp's ridley, loggerhead, and greens.

SSD: Hawksbill?

GG: Hawksbill and the big baby, leatherback.

SSD: Leatherback. So, all five kinds of sea turtles are found in the Gulf of Mexico?

GG: That's right.

SSD: Number twenty-one, I have read that some sea turtles are capable of anaerobic respiration, which is respiration without oxygen. So, why does that not prevent the sea turtles from drowning in the net?

GG: I don't know. [laughter] That's not my area. Can I tell you that, I think it's all right to say this, at some early studies that were run here years ago, we took (thalidomide?) ridley that means...

SSD: One with no flippers?

GG: That's right, deformed flippers, put it in at that and I forget how long you said they drugged it, two, two and a half hours. Picked it up and it was still flopping around just great. That same day, he took a healthy loggerhead and put it in a net, drugged it. When it was at forty-five minutes or an hour, it came up just dead as it can be. I don't know.

SSD: Just like people, I guess, if they are stressed, it affects them in a different way.

GG: I don't know. It's not my area. I've been around a lot of biologists and blood samples and stuff and checking out lactic acids and stuff from turtles that have been drugged up, but I have

none. That's not my area.

SSD: Well, do you think that bottom trawling harms the ecosystem of the Gulf of Mexico?

GG: I don't think so. I don't think it's that significant in the Gulf. I think it can be in other areas. If you're talking about mythic impacts, I don't think so. The reason being is that we have a lot of structure and the structure that we do have, we've already discussed this, is fishermen avoid it. So, you're not dragging nets into coral and things like that. You're dragging nets on soft, muddy bottom, and all hard sand. Quite frankly, I think episodic events impact that bottom disadvantage of trawl door.

SSD: What is an example of an episodic event?

GG: A hurricane and the bay systems, a hard blow, and a cold front. In fact, that's already been shown into a Sea Grant study, that was performed in Galveston.

SSD: What does the hard blowing cold front do to the Gulf bottom?

GG: It stirs up. I'm talking about the bay now, it stirs up.

SSD: The bay.

GG: It creates a bunch of wind, stirs it up, and stuff like that. Yes.

SSD: Do you know of any alternatives in addition to TEDs that might mitigate harm done to turtles by shrimping?

GG: Repeat that. I'm sorry.

SSD: Are there other alternatives in addition to TEDs that might be sure that the harm done to turtles by shrimping is lessened?

GG: Oh, I can't take another alternative.

SSD: Do you know about other methods of catching shrimp besides bottom trawling?

GG: Louisiana uses what's called the butterfly net. That's pretty effective in catching small shrimp as they emigrate around in the bay.

SSD: Is it easier on sea turtles than the trawl farm.

GG: I would imagine they would be. There are no TEDs though in those things. But I think they pick them up fairly rapidly.

SSD: So, that would be why it is the short tow time?

GG: Yes. Then there's a cast net fishery. Fifty percent of the shrimp that are harvested in South Carolina are taken by cast nets.

SSD: Fifty percent.

GG: Yes.

SSD: So, with the cast net, they are not really in that net for very long, are they not?

GG: No, seconds. Shrimp traps up to this point have been pretty frustrating to a number of us. We have not come up with any kind of method to trap shrimp effectively.

SSD: Let me just look over these questions and see if there is anything we have not covered. I do not know if you know anything about the dead zone in the Gulf of Mexico. Do you know what that refers to?

GG: Yes.

SSD: What is it and why is it there?

GG: I think I'm the first person that maybe ever officially reported it. Remember, I just mentioned Hollis Forrester?

SSD: Yes.

GG: I have a radio on my office, so I could communicate with the shrimp fishermen outdoor. He called me up totally disconcerted. I think that was in the early [19]80s and said he was dragging his net around and couldn't catch nothing. It was a biological desert. I called up the National Marine Fisheries Service and told them what was going on. It was right at that area of the dead zone.

SSD: Do you know why it is there?

GG: Yes. It's what? Nitrification. It's got heavy blooms there. It uses up the oxygen.

SSD: What is making the heavy algae bloom there? Is there any funny...

GG: Nitrification.

SSD: What is that again? I do not think I know that word.

GG: Putting various fertilizers of high nitrogen, phosphorus, potassium, coming from farming and coming from discharges from industry and sewage, that sort of thing is coming down the Mississippi River.

SSD: What was the word, something "fication?"

GG: Nitrification.

SSD: Nitrification. Nitrogen. Nitrification, I have never heard that before.

GG: Well, I think it's more of some of the other I think probably leave for some of these organisms. Phosphorus is more important but that's what is from, from the farm runoff. I think we're dumping a lot of nutrients into water with our sewage systems as well.

SSD: Does anyone know if the dead zone is enlarging?

GG: I think it changes from time to time. That's the hurricanes broke up a couple of years ago.

SSD: So, the hurricane acts to dilute it.

GG: Yes, it'll break it up.

SSD: Do we know of any effects that the dead zone is having on sea turtles?

GG: I've heard this and I don't think there's any proof for it. But I think what it is, is some people say it creates a barrier and isolate some off Louisiana coast sometimes.

SSD: They will not swim through it?

GG: They won't swim through it or there's no food therefore to feed in. They'll swim through it because their air breathers, but there's no food. I don't know whether that's true. But I've heard that, but this is not in my area.

SSD: What are the living marine sources found in the Gulf of Mexico? Is it a very diverse group or is it a narrow group?

GG: Very diverse.

SSD: What about sea vegetation on the sea floor of the Gulf of Mexico, is there...

GG: Not much.

SSD: Not much.

GG: Not much. You get more off of Florida.

SSD: Off of Florida.

GG: Yes. But use stuff like that if you want to call it vegetation.

SSD: Then in California, there are the kelp forests. We do not have anything like that.

GG: Remember, I mentioned to you the Sargassum seaweed and stuff. You do get some, that's what your hawksbill turtles are feeding off coral, growth on corals stuff. Our green turtles are feeding on vegetation. They're vegetative eaters, but that's more in the estuary system.

SSD: What do Kemp's ridleys eat?

GG: [inaudible] they are opportunistic feeders. They do like crabs. They're big blue crab eater, that's we understand.

SSD: Do they eat vegetation also?

GG: No.

SSD: No, just protein.

GG: Not to my knowledge. Not to my knowledge.

SSD: That is great. I had not asked that question before. Do you know what happens to bycatch that die when shrimpers net.

GG: Yes, ma'am. I've seen it happen.

SSD: What happens to it?

GG: When you're offshore and you go get ready to dispose of your bycatches like feeding the hogs, massive schools of fish come up.

SSD: Really?

GG: Yes, ma'am. This thing that vegetate that bycatch.

SSD: It does not go to waste then?

GG: No, ma'am.

SSD: Is that not great?

GG: That's great. But I tell the fishermen there, everybody says that but I don't think the good Lord meant for a four-inch red snapper to be taken off the bottom and fed to a pelagic fish.

SSD: So, the different zones where they exists is an unnatural...

GG: You understand what I'm saying?

SSD: Okay.

GG: So, I think you got to be careful with that.

SSD: Well, for the record, can you tell us what the pelagic zone is?

GG: Well, I'm just talking about surface fish.

SSD: Surface?

GG: Yes, ma'am. We'll have massive quantities of sharks and king mackerel and [inaudible] blackfin tuna. The sharks get to feeding so bad that they wet you. They get you wet. They splash so much if the water is up on the deck.

SSD: So, those little red snappers are in the bottom zone?

GG: No, they're benthic, they're in the bottom.

SSD: The benthic zone.

GG: Yes.

SSD: So, they would not have those natural predators down where they are?

GG: Not those. They're going to have those predators all right but not those particular species. That's what I tried to tell the shrimp fishermen, "Hey, wait a minute, yes, you're right to get consumable. But is not what supposed to happen to that fish? Is that natural?"

SSD: It might throw things off-kilter?

GG: Yes, ma'am.

SSD: A lot of the research we do, we are looking for lessons learned. What comes to mind when I ask you what lessons have been learned from using TEDs?

GG: Well, for me, I'm more in education. Some of the things that I have learned is, for example, getting with the agent community, which is a very important element of our fishery. I've learned to go to the churches. One of the mistakes that I've made within the Asian community is do not – my thoughts are, I always try to schedule programs, educational programs, when they're both obviously in. I mean, that's pretty fundamental. Well, we had during the Chinese New Year, don't have a meeting for the Asian Americans during the Chinese New Year.

SSD: They will not come?

GG: They won't come. Yes. No. No, that's some of the lessons that I can think of right. [laughter] Very rapidly that I can think of there.

SSD: So, I guess we could broaden it by saying be attentive to their culture?

GG: That's right. This is not a lesson, but it's just something that panned out for me is the utilization of elite fishermen in helping disseminate information.

SSD: How would you define elite fishermen?

GG: Fishermen that have respect. They're leaders and they have the skills. If you will put those people in the field and supervise them, they can be effective educators.

SSD: Well, the last question that we like to ask in our interviews is this one. Is there anything you would like to put on this record that we have not talked about?

GG: I'm really, with my cancer condition right now, [laughter] a little fatigued. But I can't think of anything else that I can add to it.

SSD: Well, I hope you get better really quick, Gary. I hope that the cancer goes away and never shows up again. I want to thank you for giving us this interview.

GG: I do have one thing. Sea turtles are not just located off the United States coast. One of the things that I would like to see is more international cooperation and concern. I've just learned that Mexico now has been indicted for not using TEDs. We thought they were. Now, they can no longer send their shrimp here based on the law. It's good that they can't send their shrimp, but I'd really like to see a more protective of the sea turtles.

SSD: Do you think that banning their shrimp in the U.S. will motivate them to?

GG: Yes.

SSD: Good.

GG: They did the (Honduras?) as well.

SSD: Because I guess we are a big market.

GG: Yes, we are. But that was one thing I wanted to mention. Yes. I would hope by then in the years to come that everybody does an equal task in trying to conserve the turtles.

SSD: Everybody have that...

GG: Responsibility. Yes. But that's about all I could think of.

SSD: Well, thank you so much for the interview.

GG: Thank you.

SSD: I am going to be sending you a release form. I will also be sending you a CD, a recording of the interview for you to use personally, however you would want to.

GG: I appreciate it.

SSD: Thank you so much.

GG: You take care. Bye-bye.

SSD: Bye.

[end of transcript]