

MARITIME AND SEAFOOD INDUSTRY MUSEUM  
AND  
UNIVERSITY OF SOUTHERN MISSISSIPPI

AN INTERVIEW WITH DAVID BURRAGE  
FOR THE  
TURTLE EXCLUDER DEVICE ORAL HISTORY PROJECT

INTERVIEW CONDUCTED BY  
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BILOXI, MISSISSIPPI  
MARCH 4, 2010

TRANSCRIPT BY  
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This is an interview for the Maritime and Seafood Industry Museum and the University of Southern Mississippi. The interview is with David Burrage.

Stephanie Skull-DeArme: Did I pronounce it right?

DB: That's right.

SS: Is it Doctor Burrage?

DB: No.

SS: No, okay.

DB: No, I work for a living. [laughter]

SS: It is taking place on Thursday, March 4 2010, at 2:00PM in Biloxi, Mississippi. I am the interviewer Stephanie Skull-DeArme.

SS: First, I'd like to thank you, Dave, for taking time to talk with me today. I'd like to get some background information about you. That's what we usually do in our oral history interviews. So, I'm going to ask you for the record. Could you state your name, please?

DB: Yeah. David Burrage, but everybody calls me Dave.

SS: Okay. For the record in case all the labels are lost or damaged sometime in the future? How do you spell your name?

DB: D-A-V-I-D B-U-R-R-A-G-E.

SS: Okay, and when were you born?

DB: January 7, 1953.

SS: Where were you born in Hampton, Virginia.

SS: Okay. At the Center for Oral History, we usually like to start with something more personal that we're going to start with today and talk about your childhood. But since this is for the grant on Turtle Excluder Devices [TEDs], we're just going to jump right into the questions that they need answered first. Then if we have time, we'll go back. We'd like to know some things about you personally. So, the first question is, what role did you play in introducing TEDs to the shrimping industry?

DB: I'm with Sea Grant Extension Program, and I, I have counterparts throughout all of the coastal and Great Lakes states. There's, there's a person that does what I do, located in each

coastal county or Parish, and we are usually affiliated with the extension service of our respective universities. And as such, our primary mission is that of education. So, when we knew these TED regulations were imminent, we thought we'd be doing a service for the fishing industry by making sure, first of all, that they were aware of these upcoming regulations. And second of all, giving them a little bit of what we knew, at the time, to be technical knowledge related to Turtle Excluder Devices. So, I guess, the point is, we were non-regulatory, we're all about education.

SS: What would be some examples of the technical knowledge that would be helpful to them?

DB: Well, first, how we would we would show these folks based on what we had learned about the relative few devices that were certified. That means that the agency that was charged with implementing these regulations had actually tested these devices to find out that they did, in fact, allow turtles to escape from the trawl.

But it wasn't a one size fits all. Because fishermen, although they use trawl gear, they use a variety of different types of nets. They use flat nets and balloon nets and two seam trawls, and is there's a lot of different gear that's being used. In order for these devices to work properly, they had to be installed correctly, and that varied depending upon the type and size of net that you were putting them in.

We did some demonstration projects, where we would actually go around with an actual TED. You know, first of all, let folks see what they look like, and then tell them how these things needed to be put in a trawl. The important thing from the fishermen's perspective was not so much, gee, how is the turtle going to get out, but how am I going to keep the shrimp from getting out?

SS: U-hum.

DB: Because essentially, we were putting a hole in their net. And they had been taught ever since they were old enough to go shrimping that a hole in the net is something to be fixed. We don't like holes in our nets.

SS: Right. So that was pretty hands on, you went out to the piers?

DB: We have to. Fishermen, as a group, they don't go to meetings. If we would schedule a workshop, and unless we were giving away exorbitant door prizes or something along those lines, we just found it better for us to go where they were. So, we spent a lot of time on the docks. We did have some small, I want to call them like townhall type meetings. But basically, what if we could get two or three fishermen together at a time, in a net shop, or someplace like that? We take advantage of those opportunities. But by and large, most all of that work is down on the docks, where the boats are and just talking to the fishermen. You know, where they are.

SS: Do you have a ballpark estimate in your head about how many field instructions like that you did? Just a ballpark figure.

DB: In the early days. I'm guessing the average was about twenty to thirty a week?

SS: Gosh.

DB: You have to realize that from -- no one else, even with the exception of the National Marine Fishery Service Harvesting Systems Branch, besides Sea Grant, was really involved in this technology transfer operation. So, at the time, this was back in the late '80s, early '90s, the industry was a lot larger than it is now. And, of course, we were concentrating on the big offshore boats, because when the TED regulations first went into effect, they were only required in federal waters.

These were the early days. The state regulators didn't want to go up against the political opposition they saw the potential for. No one knew at that time, really, where these turtles were. So, in other words, where did you have a higher likelihood of encountering a turtle during trawling operations? We know now that there's just a good likelihood, if not even a larger likelihood, for some certain species of turtles to catch them in shore, in state waters, than it is offshore.

SS: What about the Kemp's Ridley?

DB: The Kemp's Ridley, see fishermen [ricotta]. They didn't know one turtle from another. A lot of them would tell you, and I had to believe, a lot of them would tell you, that I've been shrimping all my life, and I have never caught a sea turtle. For some folks that was probably true. Now, that on his face that may have been sort of a testament to the fact that sea turtles were few in number they were, they were indeed, in trouble. But, but other fishermen had caught turtles, and that they knew about them. But, the average fisherman didn't know a Kemp's Ridley from any of the other four species that we have of concern in our area here.

SS: Which are what?

DB: Well, we have the most common is a loggerhead. We have hawksbill, the green turtle, Kemp's Ridley and the big one, the leatherback. The leatherback gets to be big. When fishermen caught one of those they knew it. In fact, several years into the TED regulations, they came out with some modifications to those regulations to make the escape opening large enough to accommodate these larger turtles. They're two or three times bigger than the other turtles.

SS: How big do leatherbacks get?

DB: They get up to about 1500 pounds and about seven or eight feet long.

SS: As compared to the Kemp's Ridley?

DB: The Kemp's Ridley's a small turtle. 150 pounds, or so, would be a large Kemp's Ridley. The green turtles and the leatherbacks, I mean, loggerheads, get to be about 300 pounds. The hawksbill about that same size. The Kemp's Ridley is a small turtle. Relatively small compared to the other ones.

SS: Yeah, compared to 1500 pounds. Seven feet long, or wide did you say?

DB: No, long. Yeah, that's a big turtle. I've seen them offshore. And, you know, their head is about twice the size of a basketball.

SS: Good grief.

DB: Yeah, they're huge. Fishermen, when they catch one, I've had them tell me, they said, yeah, we've caught one of those before. We had all we could do to get that thing up on the deck so we could get it out of the net.

SS: Good grief, I can't even imagine maneuvering one of those around. Do they know when they've got it, does it cause such a drag?

DB: No, the shrimp trawl gear when you think about it, each one of the, and I'm talking now about the offshore boats. Each one of the actual doors that spreads the nets, each one of those weighs on the order of about 800 to 900 pounds, and there's two of those on each net. Plus, the drag of all the chain that weights the nets down plus, the drag of all the webbing.

Typically, and we've done some measurements along these lines, so we know what the force is that it takes to pull those nets through the water. Your causing about 4500 pounds of drag on each side of the boat. So as 9000 pounds, not quite five tons that you're pulling even when the nets are empty. That's just the weight of what these boats are pulling. So, my guess is a savvy captain would know when something large like that entered the net.

Usually there's a vibration that comes up in the towing cable. Typically, they would have thought, oh no, I've caught a log, or something along those lines. They would know. They would know when they catch something that large.

SS: Is that cause for them to pull the net up? Are they motivated to do that in terms of their catch?

DB: Well, when you mean when something like that happens?

SS: Right?

DB: When something like that happens, their immediate thought is, gee, I've got something in that net that I better look into it. Even though they might have only been towing for thirty minutes when they normally tow about three hours. They're going to pick the rigs up and look at it, mainly because if it was in fact a log or something along those lines, then that net's not working. You see, they've got something in there that is keeping that net from catching shrimps; that the sooner I attend to this, the better. That's the way they think about it.

SS: So, a turtle that big is kind of a self-correcting problem because they would pull the net up before the turtle would drown?

DB: If they knew it was in there, and you know, that some of these guys, they've got a turtle that size could get drowned in a net. Here's a scenario: When these guys, when the shrimp is being produced, are being produced at a pretty high number in the middle of the season, a lot of these offshore boats do work around the clock. Well, that savvy captain needs to go sleep sometime.

SS: Right.

DB: So, what he will normally do is he'll set a course, and he'll say, he'll tell one of the deckhands: look, steer along this line right here, don't hit, don't go over here, over there because there's stuff on the bottom they can catch, and wake me up in two or three hours-and turn it over. So that person may not be as attuned to the boat and definitive, they could catch something then and not be aware of. Like I say, some of these big offshore oil rigs, it's possible. When I mentioned a 1500-pound turtle, that's, they can get that big. But it's much more likely to catch a 700 to 800-pound turtle.

SS: Might not classify for action.

DB: Exactly right. In that case, they might not know that they even have it.

SS: How long would it take a turtle to drown?

DB: This is speculation, but because that the turtle is probably under some degree of stress when they encountered the net. But we do know, that turtles can stay submerged for twelve hours, or so, at a time. They actually sleep underwater. They'd now normally, they come to the surface and take a breath every hour or so, 40 minutes, an hour or so. But they can actually sleep and they can stay submerge for long periods of time. But you don't know how long it's been since the turtle has taken a breath. And then again, you know that I can't think like a turtle. But I would imagine that if they have any sort of survival reflex at all, that they're in some sort of stress when they encounter that net. That's going to speed the metabolism up just like it would you and I. So whatever oxygen that they had in their systems will probably be depleted that much faster.

SS: What's the difference in an offshore, and I don't know if it is, what do you call the other boat an inshore boat? What's the difference?

DB: Well, in most of the shrimp producing states, there are regulations that are put in place by the states that strictly pertain to state-controlled waters. Now, in Mississippi, for example, that's all of Mississippi Sound out to about a mile south of the Barrier Islands. Off of Louisiana, it's all the inshore bays into a line about three miles offshore. Texas and Florida Gulf Coast are sort of unique. They have a nine-mile state management area.

SS: Wow.

DB: Well, it's back to the cannon shot rule back in the days when Spain owned Florida and Texas. The deal was three leagues. Three leagues are roughly nine miles. The reason they came up with three leagues; that's about as far as a cannonball would shoot. So, that's how they knew

that we could protect that far if we had to. So that's where the difference date, it harkens back way back to the days of the Spanish.

But anyway, the states in their state waters typically manage the fishery to maximize employment. And in order to do that, what they do is they limit the size of the gear that can be used in state waters. For example: in Mississippi, and in Alabama, and in most of Louisiana, the inshore fishermen can use two nets. And they can only be, they could use one net of fifty feet. But most all of them use two nets of twenty-five feet, that's twenty-five feet across the head rope. That's the largest gear that they can use. On the other hand, the offshore boats, the boats that work out in federal waters. First of all, they have such a large draft, ten to twelve feet.

SS: What's a draft?

DB: How much how much water it takes to float the boat before they hit the bottom.

SS: Okay.

DB: These large offshore shrimp boats, when they're full of fuel, and they're just sitting there in the water, it takes twelve feet of water to float them. Otherwise, they're sitting on the bottom. So, they can't work up in the shallow inshore waters anyway. And even if they could, most of them use four larger nets at a time. They're anywhere from four thirty-fives up to four sixty-foot nets. That's the gear that they use. So, they wouldn't even be allowed to use that gear in state waters. So, there's sort of a separation there. Plus, the small boats, there's weather considerations. Where they didn't want to get too far offshore in the rough water, and that type of thing.

SS: What would be your estimation of the maximum size of a small boat?

DB: What I call a small boat would be probably up to fifty or sixty feet. And, more likely along the lines, and somewhere between, forty and forty-five.

SS: Okay.

DB: That's the inshore, that's the size, typical size of the inshore fleet. In Mississippi and in Alabama, we sell three classes of licenses for shrimpers: boats thirty feet and less, boats thirty to forty-five feet, and then boats greater than forty-five feet. There's three tier licenses and the price go up accordingly with the size of the boat. And we've been doing it like that for as long as I can remember.

SS: That's a shrimping license?

DB: Yeah, that's the shrimp boat.

SS: Okay.

DB: Shrimp boat license.

SS: Where do the fees go that come from licenses?

[long pause]

DB: I think most all of that, and I'm not sure on this. This is something when you talk to the folks at Department of Marine, I think most of the license fees go to the state general fund.

SS: Okay.

DB: It's not like it goes to fund the organization that issues the licenses.

SS: Do you have any idea just to estimate what those three licenses would cost? [pause] It's okay, because it can be Googled.

DB: Yeah.

SS: That's not a problem.

DB: I've got a booklet right around the corner. It's got the prices in there, but they're not very expensive.

SS: Okay. Well, I pulled you way off --

DB: Well, yes. [laughing]

SS: -- the track of where we started and I wish I could remember what we were --. We were talking about the sizes of turtles, and we talked about how turtles drown. Our original question had to do with introducing TEDs to the shrimping industry. Is there anything else that stands out in your head about introducing those to the fishing industry? Like, for example: when you would go down to the docks and the piers, what was the feeling? And, how were you welcomed, or not, welcomed by the fishermen, there?

DB: Remember how the Greeks used to kill the messenger with the bad news?

SS: Yes. [laughing]

DB: Well, to say that this whole requirement for the use of these TEDs was much unloved by the fishermen is an understatement. So, we had to be very careful to make sure that they understood that we were not a regulatory individual. We didn't want to go down there and say, hey, I'm from the government. I'm here to help. We identified ourselves as working with the university and try to --. A lot of times we would talk about a lot of other things before this, the subject of these turtle regulations.

SS: What, for example?



DB: Oh, just how and when have you been doing? When was the last trip you made? Did you do fairly good? There's a lot of things fishermen talk about. Whether the grass is bad out on the ground, or whether they can't find any shrimp, or --.

SS: So, was that to kind of break the ice?

DB: Well, yeah, sort of. We didn't just go down there and jump on a boat and say, hey, Captain, I want to talk to you about these Turtle Excluder Devices. That's just not the way. And, it wasn't as bad here. But some of the folks that do what I do over in Louisiana, which was probably the hotbed of animosity about these Turtle Excluder Devices. Some of the agents over there either got not so politely asked to leave, or a couple of them got tossed off the docks. I mean, there was some bad, bad blood.

SS: Wow.

DB: But you have to remember back in the late '80s, in the early '90s. I think the first round of TED requirements were all in place by, I think, 1992. But you have to remember back in those days, the industry in general, not only shrimpers but fishermen of all stripes, were not anywhere near as regulated as they are today. So, while a lot of it may have been about the Turtle Excluder Devices, at least a good percentage of this was about the fact that the government is coming in to my business. It was like if the government told me what color to paint my boat, that's sort of the attitude they had. What business is it of the government?

Because fishermen by and large, were fishermen. Because, they didn't like to punch a clock, they didn't like working for a boss, they like to be made or broken upon the decisions that they made. They, by in large, had this sense of freedom.

We didn't have the regulatory regime that folks have to operate under now in place back then. So that was part of it. And then, there was some organized industry uprisings. They had blockades where they blocked the channels with their boats and the heavy big protest meetings. I think a few of them marched on Washington. But that didn't happen as much here in Mississippi. But I'll tell you what did happen.

We were sort of in the middle of this that a few of the savvy fishermen realized that, regardless of all of these protests and regardless of all this collective bargaining, that these regulations weren't going to go away. We were going to have to pull these Turtle Excluder Devices. If we've got to pull something that will keep the shrimp in the net and get the turtle out of the net, it's probably a good thing for the industry itself, as opposed to the regulatory agency.

You have to remember the very first TED that was ever developed, when the TED regulations came about, was developed by the National Marine Fisheries Service. It was a huge box shaped contraption and that is what they had come up with. So, some of the industry members, they had developed these devices in the past. They weren't designed to get rid of turtles. But they got to thinking that why wouldn't this work to get rid of turtles? What they designed these devices for was to allow them to work in areas where there was a large bloom of these Cannonball jellyfish.

SS: Oh.

DB: The shrimp were there, but they would get so many of the jellies that would just fill the net up. So, they devised this grid, which would basically the jellyfish would hit it and go up to the top of the net, and the shrimp would go through. Now they knew they were losing a little bit of the shrimp, but at least they could still work. Where folks that weren't using something like this weren't. So, the industry, some of the industry members, seeing that the writing on the wall and saying well, gee, regardless of what we do, we're going to have to pull these things, started working with the agency to see if they could build a better mousetrap.

Well, at that time, a lot of the other fishermen said, oh, so and so, he sold out. There was a couple of instances where their boats got sabotaged, and stuff, by the fishermen that just said, yeah, you're selling us down the river. You shouldn't be cooperating with those folks, and it was still, still fight. To this day, you won't find a fisherman that enjoys the fact that he has to use one of these TEDs because they just do add a whole new wrinkle into the shrimping operations. It's just one more thing that they've got to worry about. Because if they're not working properly, if they twist up, or if they get blocked with debris, which is plenty of that out there on the shrimping ground, they can cause them to lose their catch. And even if they're working properly, we know that there's a certain percentage of the shrimp that goes out in addition to anything else that would go out of the nets. Also, because they had these great big grids in their nets, they lost out on the marketable fish that they used to catch in conjunction with their shrimping operations because the large fish would go out just like a turtle.

SS: What would those be?

DB: Things like redfish and black drum and anything, anything, a fish large of flounder. In fact, they even developed a special TED that had a little slit about that wide and the bottom was called flounder TED was allowed the flounder to go through the bottom of the net.

SS: And flounders are a very flat fish.

DB: Flat fish.

SS: For the record.

DB: Yeah.

SS: When they bought licenses did that allow them to take these? I guess what you would think of as bycatch because they're not shrimp.

DB: Yeah, they're allowed to keep and market that. For example: if you go down on the docks now and buy shrimp, a lot of the boats will also have finfish that they've kept. The smaller ones that can get through the TED. Things like what we call Brown mullet, what are really known as Gulf Kingfish. Depends on where you are. It's one of those deals if you're on the East Coast they're Whiting.

SS: Wow.

DB: If you're over in Texas it's a Sea mullet. Here we call them Brown mullet but the real name for them is Gulf Kingfish. It's a real good eating fish. They typically catch them as part of the bycatch. That's part of the bycatch they save.

SS: I grew up down here. I've never known their real name was Gulf Kingfish.

DB: Yeah.

SS: I remember all my life seeing them jump.

DB: Yeah. Now, you're thinking about –

SS: Oh, is this different?

DB: -- those are Mullock mullet.

SS: Okay.

DB: That's the ones like when you see the guys throwing the nets catching them up.

SS: Yeah.

DB: That's a Striped mullet.

SS: Okay.

DB: But in fact, this thing called the Brown mullet is not really a mullet at all. But that's just what the locals call them. If you went down to the boat and said, I'd like some Gulf Kingfish, they wouldn't know what you're talking. [laughter]

SS: Right. Yeah.

DB: But that's the actual name for them.

SS: So which one is the mullet that's known as Biloxi Bacon?

DB: That's the Jumping mullet.

SS: The Jumping mullet?

DB: Right, the Striped mullet. The one that jumps.

SS: Okay, not the Brown mullet.

DB: Yeah.

SS: This is good to know, because I have to get my culture right. Okay, so there was some shrimp loss. So we had some savvy shrimpers who knew this is the law. There's no escaping it. I'm going to try to work with the creators of the device and maximize the benefits for me.

DB: Yeah.

SS: So, did that? Would you say that's slowly become what most fishermen think?

DB: Well, I think one of the watershed moments in the early days of the TEDs was that. The Sea Grant folks, the folks that do what I do over in Georgia, they have their own research vessel, shrimp boat.

SS: Oh.

DB: They spent a lot of time working in conjunction with members of the industry, and the members of the National Marine Fisheries Service, who were charged with implementing this law, and taking ideas from the industry and making sure they worked. Here's the way that they made sure they worked: If, in order to know if a device got rid of turtles, or turtles were able to get out of the device, they went where the turtles were. To this day, when they were, of course they're not testing new devices anymore, but to this day, you can go to that Port Canaveral channel over off of the other side of Orlando, near just south of Cape Canaveral; during certain times of the year the turtles are so thick that we were making one-hour tows.

The way we were testing these, this gear, was we would pull on one side of the vessel a net with no TED. And then on the other side of the vessel, we would put the TED that we were trying to see whether it worked or not in it. So, we were testing the TED net against a standard trawl with no TED in it. And we made one hour drags because in the event if we did catch a turtle, we figured, okay, a one hour drag that turtle is going to be okay.

SS: Right.

DB: Even if we caught him sooner we put the nets down, they can live an hour in the net.

SS: Right.

DB: But it wouldn't be and I had seen on a couple of occasions in a one hour drag, on one side of the --, without the TED, we pick up in an hour and there'd be eight turtles in that one net. That's, I mean, when you'd be dragging along, you could look out and, every once in a while, you see a head come up when they came up to breath. They were just thick.

SS: Yeah.

DB: So that's where they went to certify TEDs. The thought being, gee, I caught eight here. There's none here.

SS: So, you caught eight without the TEDs?

DB: That's a high number, but we would always would catch one, or two, or three, there were just so many turtles, and you wouldn't catch them.

SS: In the TEDs?

DB: The inference was the TED must be working.

SS: Right.

DB: Because, why is this side catching them, this side's not catching them? Then, there were other things that were done. Proof of concept where we would go where there weren't turtles, and we would take turtles with us. But, we would go in water where we could film under water. Off of Panama City is where all that work occurred.

SS: You couldn't film in the Canaveral channel?

DB: No. The water's too murky.

SS: Too murky?

DB: Too murky.

SS: Okay.

DB: So, you had to go. Typically, when you find areas where you could get visibility enough to film, there's no turtles there.

SS: Because there's probably no nutrients.

DB: Yeah. I don't know what the reason, but it's just, there's also no shrimp there. It's clear water. So, we knew that the reason the turtles were in that Canaveral area, that's one of the prime nesting beaches on the East Coast there. So, but anyway, back to this watershed event. This fella by the name of Sinky Boone, who you're going to talk to, came up with this device they called the Georgia Jumper. Now this Georgia Jumper, as opposed to this box shaped device with the big trap door, and heavy as a -- was a single, oval shaped grid, that went in the net. It was originally designed going back to what I talked to about before to get rid of Cannonball jellyfish.

SS: Right.

DB: But they said, well, we'll just make this opening a little bit bigger where turtle can get out of it. So, this device, because it was simpler, because it was developed by a member of the industry, as opposed to the regulatory agency, fishermen said, well, gee, if I got to pull one, I

think I'll use that one. So that was the first, and that was to this day, most of the TEDs that are in use are some variation of that design.

There's been some tweaking along the way we have one that Noah Saunders makes called the Super Shooter. That was his, but basically, that was a modification of that Georgia Jumper design. It had some bend-back in the bottom bars on it and they use an accelerator funnel, which is a piece of webbing that goes in front of the net. It increases the water flow. The thought being that the shrimp would be shot back past the openings in the TED, those sorts of modifications.

So, when the industry came up with its own design, and then there were some other designs that came about, inshore water after that. One of which didn't have any metal in it. One of the things that fishermen were concerned about with this big square box type TED that they had first been shown, that was developed by NIMS, is that when you pick up these nets, typically the boat's rocking, it's out in the water and those bags are swinging back and forth. They said, boy if that hit somebody upside the head that could really hurt. This was a safety issue. In rough weather that thing is going to be hard to handle on deck. The other, the Georgia Jumper, while yes, it was still a piece of metal swinging around up there in netting wasn't anywhere as much as the NIMS' TED. I'll call it, as Metro and everybody calls it still.

So, there was time the law went into effect and a few fishermen got caught, word got out that, hey, these guys are serious. This shouldn't cost a lot of money if we get caught without these things we need. So, the industry work with Sea Grant and the National Marine Fisheries Service to help refine these TEDs.

SS: U-hum.

DB: To help, the industry's main concern was, okay, fine, I'll put something in there that gets rid of turtles for you. But at the same time, don't ask me to lose ten, fifteen, twenty percent of my shrimp catch. We need to look at these things. Not only can they get rid of turtles, but how much shrimp are we losing by using these. And we did some actual evaluations.

We knew we had four, five different styles of TEDs. It turns out that whether the TED is installed, where it was called what they call a bottom shooter. In other words, the grid is at a forty-five, fifty-degree angle, facing downwards, that when the turtle encounters it, it would go out the bottom of the net, or you take that same TED and flip it around 180-degrees, so that it becomes what they call a top shooter. That makes a big difference in terms of shrimp retention. We also learned that, and of course, this was way, before bycatch became such a hot issue, that if you use these TEDs in the top shooting configuration that they got rid of also a lot of the finfish.

SS: Was that --

DB: Unwanted finfish.

SS: Unwanted. So that was a good thing.

DB: Yeah. That was good. This is the types of things we learned by comparing the nets against what we call naked net is what they used to call it. That is a net with no [inaudible].

SS: Okay.

DB: At one time, we were able to get permission to do that. We had to make short tows, and all that stuff. It wasn't just the folks over on the East Coast but I had a couple of projects here where I was testing TEDs against naked nets, and we were keeping track of things. Total catch, the species of fish that were caught, we were keeping track of the shrimp production, and we were working with the industry under real world conditions. In other words, they were out, they kept the shrimp, it was just like they were shrimping.

SS: Oh.

DB: Only, they had this piece of gear that they were evaluating. Back in those days, we would typically give the guy \$250 bucks a day to offset him for the fact that: First of all, we were on the boat, that was another mouth to feed. Second of all, he might have some downtime associated with making shorter tows. And also, if we had to tweak, we had to make some changes in the gear, we had things weren't working just right. So that was time that the nets were up being worked on and not in the water fishing. So, we gave the fishermen \$250 bucks a day to sort of offset that. That was the going rate.

SS: Did sorting out the fish and making records take any significant amount of time?

DB: Yeah, that was uh. I got what we would do when I was on the boat by myself. We have observers now that that's what they do that they're paid to do this.

SS: Hmm.

DB: What I would do is on every other tow. On one tow, I would just get a total. How much everything weighed. How much was the shrimp, against, on this side. How much everything weighed, how much was the shrimp. On the next tow, I would take a sub sample. Usually that's about, a five, one of these five-gallon buckets and you just kind of just wade into the pile of stuff on the deck and you take a random sample.

SS: U-hum.

DB: And you set that aside.

SS: U-hum.

DB: And you do the same thing on both sides of the pile.

SS: Because there's no TED in it.

DB: Right.

SS: TED.

DB: And then the two piles that come out of the net when they tripped the net on the deck are separated and you take a sample. And the reason that we would do that only every other tow is because by the time the next one came to be counted, weighed, measured, stuff like that, you were just about finished with the first.

SS: Okay.

DB: That's how long it took to do that.

SS: It wasn't really downtime for the shrimper?

DB: No.

SS: Because you were still towing in?

DB: He was still shrimping. We took the sample, and he was shrimping. But we were back there saying this is this, this is how big it is. There was an actual protocol form that we filled out of twenty species of interest that we, and that was, --

SS: Wow.

DB: -- and there was an actual TED protocol that later evolved into a bird protocol bycatch reduction device. But everyone's, so everybody that was doing this type of research was all doing it the same way. So, the results were directly comparable.

SS: Right, yeah.

DB: So, folks that were doing this over in Texas, and folks that were doing this in Georgia, and folks that were doing it here, we were all using the same methodology.

SS: Right?

DB: And that's a --

SS: Was it usual to have twenty different species?

DB: Oh, [laughter] the dif -- in the Gulf --

SS: [laughter] Was that a yes or a no?

DB: Well, get ready.

SS: Okay.



DB: I work with those boats on the East Coast. And, yes, we would have sometimes large amounts of bycatch, but typically, that would be six or seven species. Here in the Gulf, it's not unusual to have 100 different species in a trawl, in a ramp, because we just have such a high species diversity in the Gulf.

SS: Okay, so that would be the reason?

DB: Yeah. But there was twenty that were picked out that first of all, they knew that they were going to catch these in every catch. Some of the twenty had economic importance in other fisheries, either directed commercial fisheries, or recreational fisheries. For example: three of the species were red snapper, which is the big driver now in the birds, or red drum, which everybody knows here as red fish, spotted seatrout, the most popular recreational species that was in the list. There was a reason they picked the twenty that we looked at.

SS: Because of economics.

DB: Yeah, mostly and because not all of us had the degree of knowledge of, that it was. We knew what a spot was, and we knew what a croaker was, and we knew what a catfish was, but it was nice, in many cases to be able to send all these other fish to 'other fish unclassified'.

SS: Right.

DB: There was actually a category [laughter] that we saved them then we waited. Because, gosh, there was there's so many different species, you have to be —.

SS: It wouldn't, you wouldn't have had time to count them all.

DB: Right, you didn't have, we didn't really have the time to by ourselves. In fact, in the new bird protocols when they have one observer on the boat, he only samples about every third catch. Those guys are now making, they can make longer drags. See, we were restricted to one hour drags because we had a net with no TED in it --

SS: Right.

DB: -- in the event we caught a turtle. But, the guys that are doing the work nowadays on this bycatch, all of these nets have TEDs in them. So, they're not restricted on their tow-times. These fishermen are fishing like they normally would fish.

SS: Okay.

DB: The average tow-time is three hours, sometimes a little longer. It depends. They use these little small TED, what they call a try net. It's a test net. And they usually fish that every fifteen minutes or every half an hour. And if they look at that little test net and they see there's a lot of fish in it, they said well maybe we better pick up.

SS: Okay.

DB: The net's probably getting full.

SS: Is the test net small enough that a person could just reach down and pick it up or does it require --

DB: It usually comes up on a winch.

SS: Okay.

DB: But they're limited in size to sixteen feet and most of ours here can only be twelve feet so they're small nets. They're kind of a miniaturized version of a shrimp trawl. They typically pull them off the side of the boat. They usually ride in front of the main gear. And there's several reasons why the fishermen use them. They also, if they pull that thing up and see there's a bunch of shrimp in there, you'll think, oh gee, I might want to turn around and go back through there again.

SS: Very interesting, yeah.

DB: So.

SS: Just for the record, would you define bycatch?

DB: Well, bycatch is any of the non-target species that are harvest, harvested for which are not retained for sale and that includes regulatory discards. For example: if I'm out snapper fishing, and I'm talking about now commercial snapper fishing, but it's the same goes for recreational, and I catch a fish that's too small to keep.

SS: Okay.

DB: There's a minimum size limit and I put that fish back, that's a bycatch. That's a regulatory discard.

SS: Okay, you might catch that on a line?

DB: Yeah, that's right, that's bycatch, too.

SS: Okay.

DB: So, it's the non-target species, which are harvested incidental to fishing operations.

SS: Do they live?

DB: In some fisheries, yes. There are some species I don't think you could kill if you left them on the street for three days. [laughter] That come up on the shrimp trawl. But the short answer to your question, most of the stuff in the shrimp fishery, at least, goes back overboard. It's dead.

SS: It's dead?

DB: Yeah. Most everything by the time it's out of the water on the deck, by the time the guys go through everything on the deck to pick the shrimp out, the money catch, that stuff typically shoveled back over--dead.

Now, a lot of people think that's wasted, but I would, only a small percentage of what goes back over the side of the boat ever gets to the bottom. I can take you on a boat anywhere in this Gulf, and porpoise follow, bottlenose dolphin, come porpoise follow shrimp boats. They know the sound of the engines when the engines slow down, when they get ready to pick up. All of a sudden, there they are right around the back of the boat. That's just one. Pelicans and seabirds are the same way. They know the sound of a diesel engine. They'll be sitting on the water back behind the boat. When that boat slows down to start to pick up, here comes the birds, [laughter] because they know that lunch is coming. Free lunch.

SS: Nonhuman intelligence.

DB: Oh yeah. This is, and is interesting. Here we go off on another tangent.

SS: Good.

DB: I have seen pods. You know, we have a lot of bottlenose dolphin in the Gulf. Typically, they have family groups we call pods. Pods in certain areas. I know they're intelligent animals because they learn these behaviors and they pass them on. I have seen them taking flounder and throwing them to one another across the surface of the water like a frisbee and catch them--playing catch. Another one. Another bad habit. I'd say bad habit but they were just being playful. If you got over in the western part of the Sound on the other side of the Cat Island channel, there was a group of dolphins over there that had a bad habit of grabbing the lazy line.

Now the lazy line, when you get ready to pick the net out of the water, the doors come up to the end of the outbreak. And then there's this line that's attached to the trawl that essentially pulls the bag of the trawl back up towards the side of the boat where it could be picked up. That line is called a lazy line. And what you do is you take that and, it's usually a lot of weight there, more than a man can lift, and you put it on the winch. But in order to get it from the winch, you have to bring it up the side of the boat, and it's pretty hard to pull. But you'll be walking along pulling that lazy line and all of a sudden, it'll get yanked out of your hand. [laughter] And you won't know what happened. In some cases, it'll pull you back and knock you down. It's those because typically they use floating line, polypropylene line, so it won't go up, it won't get down into the propeller of the boat. It's bright yellow and the dolphin, it's just something for them to play with.

SS: They're just playing.

DB: They're just playing but they grab that line. I've got film that we've taken underwater that I can show you of the dolphin while the trawl is being pulled. They had these bycatch reduction devices called fish eyes, was the most popular one we use. And of the dolphin swimming right along with the trawl with his nose right next to where that bycatch reduction device was [laughter] because he knew there was going to be a fish coming out of there. And he was right there when the fish came out. He was right there to grab it. We've got actual video footage of that.

SS: That's great. That's hilarious.

DB: So.

SS: Yeah, actually, the shrimper that I interviewed said they're quite a nuisance.

DB: Well, they bite holes in the nets. Particularly when you have a situation where the fish are just small enough to not be able to get all the way out of the size of the meshes but get what we call gilled in the webbing. So about that much of their head is sticking out the side of the trawl.

SS: So, their gills have caught them. They can't back up but they can't get out either.

DB: Yeah, they're kind of stuck in there. They call it being gilled the webbing. Sometimes you run across a certain run of fish that just seem to be, it's a real pod. Well, what happens is the porpoise comes along, or bottlenose dolphin, bites that head, and in the process bites a little hole in the net. So, you get porpoise bites. About every two or three drags, depending on how bad it gets, you got to stop, deck the gear and go through and sew these holes in the net.

SS: That's got to be a nuisance.

DB: They are. And of course, fishermen, that they're another species that's protected. They're protected under the Marine Mammal Act, so you can't harass them. You can't, that just suck the fact that they have to live with.

SS: Right.

DB: But they cause problems. Besides being playful, they do, they cause extra work for the fishermen.

SS: That seems like a terrifically sharp tooth that can bite through the net.

DB: Oh, yeah.

SS: I mean those nets are strong.

DB: Yeah.

SS: Wow.

DB: Yeah. They get porpoise bites. And well it's a big animal too.

SS: Yeah.

DB: He's grabbing, he's pulling that fish out.

SS: Yeah.

DB: It's a lot of weight it gets there. But they do, they get blocked. You ask any fisherman about fixing the porpoise bite. That's just a fact of life. That's with or without TEDs. That's something that they've always had to deal with.

SS: Right. Yeah. Even without a TED, they're going to be biting holes in the nets.

DB: And then what bycatch that does get back to the bottom, there's crabs, there's other things. We call it kind of recycling.

SS: Yeah.

DB: It does seem like a waste. But a lot of folks have the misconception that the trawl fishery has a big impact on their sport fish. That's not really the case. Again, having been on those studies, where we actually, we pulled hundreds of [dried] eggs and we kept track. I could count in a thirty-day trip; I could count on two hands the number of speckled trout we caught, for example. Usually, when they're big enough they can get out of the way of the net. And, or red fish. Now, the fish that's of the big concern, and here we're getting away a little bit from turtles.

SS: That's okay.

DB: We were talking about bycatch, is the red snapper.

SS: Okay.

DB: The problem with the red snapper is when it's between zero years old and one maybe as much as two, zero and two-year old fish primarily zero to one-year age fish. They are about the same size. And they are on the same grounds that the shrimp are in the in the brown shrimp fishery.

SS: Okay.

DB: Typically, off of western part of the Gulf off of Texas. They do get caught in the shrimp fishery. Problem with red snapper is it's overfished.

SS: Okay.

DB: Where the red snapper stocks are in trouble and there are severe limits on the directed fishery; both the people that go out there and catch red snapper for a living, and also, the recreational folks who go out there and catch them because, they like to catch them. They're good to eat.

SS: U-hum.

DB: That's the fish in the Gulf that's driving this whole bycatch issue.

SS: Hmm.

DB: There are other species that we catch that we may, but in years upon, for example, in years upon years upon years of studies like this that were done in say, for example, Louisiana, Corky Perret can tell you about this.

SS: Okay.

DB: Back when we had five times the amount of boats that we have now in the shrimp fishery; if you look over time at the production of things like: menhaden, and croaker, and spot, and white trout, they remain constant. In other words, the shrimp fishery was not taking too many of those out.

SS: Right.

DB: The only species of real concern is the red snapper in the Gulf, in terms of bycatch. Of course, it's a less of an issue these days because the economics and the industry has got the industry down now to way below fighting weight. Just to give you an example, --

SS: Now is that the shrimp industry or the red snapper?

DB: Shrimp industry.

SS: Okay, shrimp industry.

DB: Shrimp industry. What really killed them was 2008 season when diesel fuel prices went north of four dollars a gallon. You remember when, what you were paying to put gas in your automobile well they will have the same. Difference is they're putting 15,000 gallons on at a time.

SS: They're losing money when they go out.

DB: And they come back in. Last year was the worst I've seen since I can remember it in terms of the price that they're getting for their catch.

SS: Well, I was told it's fifty cents a pound.

DB: Well, last year is something that we never saw before until last year with what they were getting for the catch. Usually there's a there's a price structure that goes along with a count size of the shrimp. Smaller shrimp bring less money, and then the larger shrimp. Shrimp are usually sold, like in five count increments. When I say five counting increments; in other words, you would sell a 16/20. That means there's somewhere between sixteen and twenty shrimp in a pound. That's a pretty good, that's a pretty large size shrimp. As opposed to a 40/50 which there would be forty or fifty shrimp. By Mississippi law, we can't open our season until they get to be thirty-eight shrimp to the pound. But, last year off of Texas, when the boats came in unload it didn't make any difference, which if they had under fifteen shrimp, which are about as long as this eight-inch envelope here. That's a big, big shrimp.

SS: Yeah.

DB: Right on down to 21/25s, 26/30s. They were all bringing fifty-five cents, fifty-five cents. Now when you and I went to the grocery store to buy these shrimp, we didn't pay fifty-five cents.

SS: No.

DB: So, for that, for a lot of reasons, the economics and industry there are a whole lot fewer boats in the fishery now. The last count that I got, back when they first did the estimates of what the impact that the shrimp fishery was having on the red snapper populations, again, the red snapper driving the bycatch issue. They said, well, there's 5500 boats. And the way they got the extrapolations at the impact they would go out on a boat where they would count the red snapper that were caught. And they would multiply that by 5500 times and all of a sudden, the Gulf shrimp industry was catching fifteen million red snapper.

SS: Do you think that was an accurate way to measure it?

DB: But they didn't know. The law requires them to use the best available science. And at that time, that's the only estimates they could get was go on some sample boats and then extrapolate that by the effort in the fishery. We've since refined that a lot. Because we put a lot of money into studies, showing where the shrimpers that were involved here with a study, that we have what we call electronic logbooks on seventy-four boats in Mississippi and Alabama. We know exactly where they are at any given time working.

SS: Oh, okay.

DB: That's to get a more precise effort. The way effort estimates were done in the old days was when the boat came in to unload, the guy, the port agent would come to that fishermen. And he would say, "Boy, Captain that's a nice catch you got there where'd you catch those?" Okay, first of all, fishermen aren't going to tell you where they catch their catch. Or if they were going to be helpful, they would probably tell you where they just came from, which they might have spent the last two nights working south to Horn Island.

SS: U-hum.

DB: Although they might have been out for thirty days, and they've been, and most of the catch might have happened over off of the Florida Panhandle.

SS: Which is their intellectual property.

DB: Yeah, right. But, so all of a sudden, the port agent, he says okay, he's got 150,000 pounds of shrimp on here and he caught them ten miles south of Horn Island. He's writing it down as gospel.

SS: Yeah.

DB: Then all of a sudden ten miles south of Horn Island was the hotspot for, you know. It although wouldn't be so. They weren't good estimates of where the effort was coming from.

SS: Right.

DB: So, what were we talking about? The --

SS: Well, we were talking about 2009 being really bad.

DB: Oh, yeah, yeah, yeah. So now, the boats that fish in the offshore waters, they have to have a license. They have to have a federal permit to allow them to shrimp. And last count, there are 1200 boats in the Gulf with those permits. Now, last year, only nine hundred or so of those 1200 that have permits actually reported any landings from the Gulf exclusive economic zone, Federal waters in the Gulf.

SS: Okay.

DB: So, you say what have become of the other 300 boats; didn't have, didn't report, any landings? Some guys are still holding on to these permits. Because when they issued these moratorium permits, when they started being licensed, you either had to get a license based upon your history in the fishery, or you couldn't get one.

SS: Yeah.

DB: So, they got them all thinking that maybe things are going to turn around.

SS: Right.

DB: And they're not going to be making them anymore. This might be valuable at some time in the future.

SS: Yeah.

DB: So, they bought them on a speculative basis.



SS: Okay.

DB: Some of them did. Some of them have to have them. Of course, so 900 boats are working out the offshore fleet, big boats, the Gulf boats, working out there now. Compare that to the what I just told you fifty-five, 6,500 boats, and whatever their impact was on the bycatch. 900 boats have to be a whole lot smaller. So, the impact on the bycatch went down just as a kind of a side item to the fact that the actual number of boats in the fishery went down. For reasons that had nothing to do with bycatch, it has mostly to do with the economy.

SS: I hear that Katrina had a little bit to do with it.

DB: Yeah, well, the guys, it was kind of interesting. The year after Katrina, the guys that could work, whose boats weren't destroyed, and could get ice, and all the other things that came with. That was the high, the actual resource was there. That was a high production year. The fisheries biologists will tell you is because of that increase in edge effect with all of that influx of water over the marshland and all the resulted detritus that just provided all sorts of great conditions for the actual crop.

SS: Really.

DB: A shrimp to grow. There was plenty, plenty, plenty shrimp.

SS: Hmm.

DB: But like I say a lot of guys were still trying to figure out how to get their boat out of the tree. More importantly, there are entire communities over in Louisiana who only exist because of the fact that there's a fishing industry there.

SS: U-hum.

DB: And that was it. That's their sole source of livelihood. And when they lost their ice stocks, they lost their places for the boats to unload and tie, that affected a lot of folks. So, it certainly all the, not only Katrina; Rita, Gustaf, Ike.

SS: Right.

DB: We've had a bunch. Ivan, you know.

SS: Yeah.

DB: Ivan was more east of us. We only got, of course, after Katrina, what else was comparable. But in a year, if we didn't have Katrina, if you remember a month later, Rita, that was a pretty bad storm. In any other year, we would be talking about that one as opposed to Katrina. Of course, we had Katrina and that obliterated everything. So, we had, yeah, that hasn't helped. But the big factor in the downturn in the industry are the economics and most of that's their boats all operated on about a three percent margin. If everything went just right.

SS: Now, what do you mean by that?

DB: That means that's their profit margin. By the time they strip off the costs. The boat payments, what they had to pay the crew, the groceries, the ice, whatever they had to have to make the trip, and that if everything went just right, they were making three percent profit. This is on the offshore boats.

SS: Okay.

DB: That doesn't include if you go out there and you catch something that you didn't know was there and tear up a net, that's if everything went right. So, they're operating on a narrow margin anyway.

SS: Right.

DB: A big percentage of that operating cost is tied up in fuel.

SS: Right.

DB: It takes a lot of fuel to pull these nets. So, when those diesel fuel prices went high, and then at the same time the dockside prices were going down, a lot of guys said, hey, it's just not worth it for me. And I just, I can't I can't do this anymore.

SS: Right.

DB: Now. The boats that are left now are the guys that could do everything themselves. There's no more calling the net shop, or calling the marine mechanic and spending money to have someone else come fix something on your boat. You better know how to do that yourself.

SS: Wow.

DB: The two extremes of what are left are guys that are making it by going out and fishing locally. And, say, going out at night. And coming back the next day. They might have two or three hundred pounds of shrimp. Instead of selling it to the processor or the factory, where they might get the fifty cents we talked about; actually nowadays, the price is about a buck and a quarter this time a year. But still, they take that same shrimp and they sell it to the guy that comes down there with his cooler for two dollars and fifty cents or three dollars. That's a good deal for the guy with the cooler because he would be paying five or six bucks for that same shrimp at a fish market or in the grocery store. And it's a good deal for the fisherman. So, he's getting a premium for his catch. And a lot of times when you go down there in the mornings to buy your shrimp, some of the shrimp are still jumping around. That's how fresh they are. And so that's great. But these big boats, these big gulf boats, they're freezer boats. They stay out a month at a time. When they come back to the dock, they've got 80,000 pounds of shrimp.

SS: Right.

DB: They can't sell it that way, they have to take the factory price. And they're making it on economies of scale, because they can produce so much. Those are the two extremes. The early days, when we had ice boats where guys would go out and make a week or so, and load the hole with ice, and he'd go make a week trip. Well, he's kind of caught in the middle there. He's got too much shrimp, 4,000 or 5,000 pounds he might produce.

SS: Yeah.

DB: To sell twenty or thirty pounds at a time to the guy with the cooler, he's got to take the factory price too. But he's not making, catching, the amount of shrimp. He still has about the same operating expenses as those guys who wonders on their larger boats. So, I'd like to say this, the industry has gone from a period right prior to when the TEDs came to be required, almost no regulation, to more and more and more regulation. Now, folks will say well, you know, the way things are in the fishery right now, it might be a good thing. Because we've always known that the fishery was what we call over capitalized. I mean, there were too many boats in even the fishery, to catch the amount of shrimp that were caught every year. The amount of shrimp that caught remains relatively constant. And if you have more boats fishing for them, that means everybody's slice of the pie is that much smaller.

SS: U-hum.

DB: Because there were no restrictions that there are now, they're at if I wanted to go get in a shrimp business, I just go get me a license, and get me a boat, and go shrimping.

SS: U-hum.

DB: And that's what we saw a lot of cases where, for example, when there was a downturn in the offshore oil industry over in Louisiana and guys got laid off from working on the rigs, that type of thing. They didn't know much else to do. They lived in a waterfront neighborhood and they had neighbors that had boats and they said well spot me a boat and I'll go shrimping.

SS: Yeah.

DB: See, so there was no control over that.

SS: Right.

DB: And there's really no control over that now in Mississippi in state waters. But there is that license I told you, you have to have. If you don't have one, you can't get one now. You can buy somebody else's –

SS: Ah.

DB: -- it can be transferred, --

SS: Okay.

DB: -- but you can't buy a new one.

SS: Okay.

DB: In federal waters. There's a lot of guys in Mississippi that never shrimp in federal waters.

SS: U-hum.

DB: They work in Mississippi sound. In short, they never even thought about buying that license.

SS: Right.

DB: But there's been some talk about perhaps going to some form of what we call a limited access privilege in Mississippi. The idea being, let's get the guys in it that have another job, that are just doing this part time as a hobby, if you will. Let's leave it to the guys that are dependent upon it to make a living.

SS: U-hum.

DB: So, let's let them, let's have some sort of criteria where you show me that you've had landings in this fishery, and that's pretty easy to track. And, show me your tax returns that show the bulk of your income came from this and we're going to give you that license.

SS: Right.

DB: Okay. And go through a round of doing that.

SS: U-hum.

DB: And then, let the folks that qualify for the fishery stay in it. Then don't issue any more licenses so that when this guy, he retires from the industry or he dies, that license might be transferable to his family. But if he doesn't, it goes with the boat if he sells his boat. Someone else gets that license, but there's that's not an increase. It's just kind of a lateral transfer. Kind of cap effort. And that would make the folks that are still dependent upon the industry. But you know, you're talking about fishermen. You're talking about, no one can tell me that I can't go fishing. It's an uphill climb from a political perspective to try to implement a program like that.

SS: Yeah, u-hum. [long pause] Yeah, it wouldn't be very popular among the fishermen. But I doubt that anybody else would care.

DB: Well, it would be. It would be popular among the ones that are in it now.

SS: Sure.

DB: But the general public with some guy was saying, well, gee, I've worked for the city all my life driving the trash truck. I always thought that when I get, when I retire, I'm gonna get me a boat and I'm gonna go shrimping. Now I'm not gonna be able to do that.

SS: Yeah.

DB: People that know what's going on in the industry, I can't, as an advisor to the industry, can't advocate to anyone to get into the shrimp business. Knowing what I know about the state of it right now.

SS: Well, I don't see diesel fuel going anywhere, but up.

DB: Yeah. Or any gasoline too.

SS: Right, yeah.

DB: Some of the other projects that we work on, for example, is of making these guys work more efficient. There're several ways that we're looking at in doing that. One of them is with the use of these new high-tech webbing fibers in the nets that are less drag, easier to pull. That's why I told you, when I was telling you earlier, I knew how much pounds of pressure were on those nets because we actually measure that.

SS: Yeah.

DB: We need to know what that is so when we put the new netting on and see what the reduction is.

SS: Right.

DB: We have ways of measuring that and we use what's called a dynamometer. We actually measured the tension on the trawl cables. There're some new door designs that are more popular in the western Gulf than they are here. But the actual board that holds the shrimp trawl open, it's been the same, been unchanged since the early 1900s. You're looking at something that can save fuel by being more aerodynamically efficient. Anything the guys can do to save operating costs, and since the bulk of the operating costs is fuel, that's what we're looking at.

SS: Right.

DB: That and we are also looking at somehow creating a specialty market for what we produce in the Gulf and I'll include the South Atlantic. Let's say in the warm water shrimp fishery.

SS: Okay.

DB: You think for a minute only eight percent of the shrimp that are consumed in this country are caught domestically. The other ninety-two percent is imported. Now shrimp is the number

one consumed seafood commodity even ahead of “Charlie the Tuna,” canned tuna fish, it's a lot of the reason for that is it's so cheap now. If we can somehow say that this Gulf shrimp, you want this Gulf shrimp. You don't want that stuff coming in here, and imported, grown in a pond.

SS: Right.

DB: Segregate this Gulf shrimp out as something along the same lines as the way they did Angus beef.

SS: Make it desirable.

DB: Angus beef is a good example.

SS: Okay.

DB: Angus beef commands the price differential because it's supposedly a much better product. In fact, savvy people can taste the difference in flavor between wild caught shrimp and one of these pond room shrimp things. But that's folks that live along the immediate coasts. You've talked to the average housewife in Nebraska they're not going to be able to tell the difference. They don't even know that there's three or four different species of shrimp that we catch.

SS: But there's a safety issue isn't there? I mean, what are those pond raised shrimp from around the, halfway, around the globe been raised on? Where they fed cows with mad cow disease? What are the antibiotics that they're given?

DB: Well, that's so in fact, they've had some problems with the product from China to the point that most all of that's under automatic detention right now, with this, these nitrofurans and these chloramphenicols, which are antibiotics that are considered adulterated food additives in this country, which are used routinely in. When they culture these shrimp in ponds, they put them in artificially crowded conditions.

SS: Yeah.

DB: So, they, as a prophylactic measure, use these antibiotics because they know that these shrimp are already stressed anyway. Any sort of disease can immediately wipe out this crop overnight. But the problem is the FDA who's charged with inspecting our food supply and for the eight there's no way they can even look at one percent of total foods covered.

SS: Because what poundage are we talking about?

DB: Yeah, gosh. Just talking about shrimp now. Not all the other things that are on their plate.

SS: Yeah.

DB: Pardon the pun. [laughter] They have to look at just shrimp. We are importing close to two billion pounds.

SS: Hey, we could create some jobs.

DB: Two billion pounds.

SS: We could create some jobs, shrimp inspectors. I'm saying.

DB: Yeah. That's what they're competing with.

SS: Wow. Now, what is automatic detention?

DB: That means that there have there been a couple of instances where folks have, for some reason or other, tested these products and found these banned substances in them. They know they can't check every one of them. They said, okay, just to be on the safe side, we're going to check these for a while. We're going to blanket check these, but only after someone check for. The other thing that we're fighting is --, I tell you the bad things about imports. In many cases, those guys that are producing that imported product they don't have the late labor costs. They've got people that are willing to work for the equivalent US dollars to three dollars a week occasionally.

SS: That's practically slave labor.

DB: Yeah.

SS: In fact, sometimes they do kidnap people and force them to work.

DB: And they don't have the environmental regime that we operate under with terms of getting permits.

SS: So, they're polluting like crazy.

DB: Sometimes they do produce a superior product. And when I say that, we're our own worst enemy.

SS: What in the heck? Superior, how?

DB: When they come in, there's no broken pieces.

SS: Ah, okay.

DB: It's all finger pads like this. And here's the restaurant owner, and here's what he's faced with. He buys the standard size sold in this country for institutional, say, here's a five-pound box of shrimp. Let's say he buys a five-pound box of shrimp that are 40/50s. Okay? And they come, this one comes from the US. This is an import, right? He opens that box from the US. This shrimp that's supposed to count 40/50 is closer to fifty, if not fifty-one, fifty-two. So, he's getting less. He's getting a smaller shrimp than what he thinks he's buying. Then he thaws this product

out. And he notices there some broken pieces in there and there's not there's not much uniformity. I mean, there's just markedly some smaller ones and some bigger ones when they were all supposed to be sort of the same size.

Then there's so much of this ingredient called sodium tripolyphosphate which is, which is an ingredient that's added for as drip loss. Our packers, processors, God bless them; they think if a little bit's good, a lot of it must be better. There's so much of this in there that by the time he bought a five-pound box, Tommy thaws his shrimp out, it might weigh four and a half pounds. Okay? Then, when he's supposed to get, when he cooks his shrimp it's supposed to go, and supposed to lose thirty percent, or so, of its size in moisture loss. When he cooks it. Alright? It loses fifty percent of its size because it's got so much tripolyphosphate in there that cooks out in moisture loss. Okay?

SS: Yeah.

DB: That's all he does. Then he opens this box of imported product, and he's got 40/50s. These shrimp are counting closer to forty. I'm supposed to be five pounds. But when I thought about it I got five point two pounds here.

SS: Hmm.

DB: When I cooked these shrimp they only lost twenty-seven percent of their weight in [driple]. because I didn't have a --

SS: Yeah.

DB: So, what am I gonna buy next time? You see?

SS: Yeah.

DB: That's what we're fighting.

SS: Yeah.

DB: And our industry thinks that they're making money by short weights and adding these additives to help by water, stuff like that. They're really in the long run, they're killing themselves.

SS: Right?

DB: So --

SS: Because they can't compete.

DB: Until we fix the product, the problem that shrimp are being marketed. They are sold as a luxury item. Most of the time when people eat shrimp, it's usually in a restaurant. Even though



you can go to Popeyes now and get popcorn shrimp. You go anywhere and get shrimp these days and so cheap. By and large, shrimp are still viewed as with a sort of a panache. It is, sort of a kind of upscale item. In today's economy, this is one of the things I can probably don't have to worry about buying for my family. That's the, from the market, the consumers' perspective. Yet it's still being sold as a commodity in five pound boxes.

SS: Hmm.

DB: Loss and traded that [inaudible].

SS: Hmm.

DB: Until we can start selling this as a premium product, that is, in some way, even if it's only in a perceived way, better than this important product that may have been grown underneath a chicken coop that has all these antibiotics added that we don't know about, that haven't, aren't being tested for. But we know that this came out of the wild blue sea. It's nice, natural, or whatever, however they want to put the spin on it.

SS: Right.

DB: Then by that methodism, get a little bit better price because it's just like they get a better price for the Angus beef.

SS: Right.

DB: That's the two things us in the education business are looking at in terms of the shrimp industry right now. First, see what we can do about reducing the operating costs with finding gear that's more fuel efficient. And second, seeing what we can do on the marketing end about perhaps getting them a better price for their domestically produced product.

SS: It's kind of an image.

DB: Yeah. In the past there have been some grocery stores: H-E-B, which is a chain of stores over in Texas kind of like our [Dell Tamps] and Kroger's and stuff that's called H-E-B groceries. And they even had an ad where they show the actual boat in the store and picture of the actual boat and there was this big thing of shrimp. This is the boat that caught these shrimp. This is the boat we bought these shrimp from.

SS: Interesting. It had an English name on the boat.

DB: Yeah, yeah. Yeah.

SS: Very interesting. Okay, would you believe it's 3:30? [laughter]

DB: We got sidetracked.

SS: But it's great. Sidetracks are important in oral histories, but we've touched on some of these questions. But just to go to question number two, and maybe reiterate, or make a stronger point about how, how were TEDs viewed in the early days?

DB: Fishermen did not like the fact that they were going to have to pull TEDs. We had, in fact, here in Mississippi we had a big rally and had a lot of political representatives. I think at that time it was: Gene Taylor was at that time a freshman congressman. Trent Lott, those types, the US congressional delegation. Not to mention all of the other local politicians. There was about 2,000 people. In fact, they set up the meeting and they had to reschedule it because they couldn't find a place big enough for the folks to meet and it ended up having it at the Coast Convention Coliseum and Convention Center.

SS: Yeah.

DB: To house these people. The whole purpose was that to fight these TED regulations.

SS: U-hum.

DB: That was about the most organized and [prociferous] protest that I can remember. But all the fishermen were griping. I'm not gonna pull these TEDs. I've never caught a turtle, these things are gonna cost me money, and they're dangerous. Blah blah blah blah blah. The government can't come in and tell me how to run my business. But there, I was aware, and I knew there was some, another area, there was some bigger problems. Where they actually, I'd say in Louisiana was probably the hotbed.

You'll hear this name as you look further into this issue. This guy's name was Tejon Majalovich and don't ask me to spell that. [laughter] But just remember Tejon, and it's that M-A-J-A-L-O-V-I-C-H, I think. You'll hear that. If you mentioned to any of these fishermen, anybody that's had anything to do with a TED mentioned Tejon. Because he was the spearhead, the guru, that the fishermen were looking to; that he was going to keep them from pulling TEDs. He was going to use his political wheel. Oh, he was a, he was a Oral Roberts type. You know what I mean?

SS: Yeah.

DB: He was a good orator. He got those fishermen riled up. He said, we were going to march on Washington. We vote too. We're going to keep these guys, you keep the government from pushing this. Some of that, trickled over here because we're so close geographically and a lot of our fishermen, also shrimp in Louisiana.

SS: They're all related. [laughter]

DB: Yeah. He's the one that, he was sort of the big thorn in the side of the National Marine Fishery Service.

SS: Ah.

DB: Who was caught between a rock and a hard place, National Marine Fishery Service was the ones that were charged with implementing these regulations, because they were the ones that had to enforce the Endangered Species Act as it pertained to marine fisheries. And that's the whole thing that was driving this because all of the sea turtles were endangered species.

SS: All the sea turtles?

DB: All of them.

SS: Okay.

DB: Are endangered species. Short answer is: fishermen, it took a long time for them to, in fact, they still hate them.

SS: They still hate them.

DB: Yeah. They still hate them. [laughter]

SS: Yeah.

DB: It's just a necessary evil, but they just don't like the fact that they've got to use these TEDs.

SS: Maybe now it's more routine.

DB: Well, --

SS: It's hated, but routine.

DB: Like we just talked about earlier, they got bigger problems on their --, right now, they're worried about the turtles.

SS: Being diesel fuel?

DB: To being the state of the economy.

SS: Other bycatch.

DB: The economy right now and the shrimp fisheries, --

SS: Right.

DB: -- their big worry. There everybody sits. Everybody's got to pull in terms of [scooter vice]. They figure everybody's on equal footing.

SS: Yeah.

DB: It's not like this guy's got an advantage over me.

SS: If this guy loses the shrimp on his pole, maybe I'll get them on my pole. [laughter]

DB: Yeah.

SS: We've probably touched on the two: the fact you just said how TEDs are viewed today by the shrimping industry. And we've talked about the challenges faced in developing TEDs, which is question number four. Does anything else come to mind when you think about the challenges faced in developing TEDs, anything other than what we've talked about already?

DB: Well, first of all, in order to certify the TEDs, we had to go to where the turtles were in high enough numbers. That made logistics of getting a new TED certified kind of problematic because we had to be in that location and kind of awful Port Canaveral channel during the time of year. It turns out that that time of year often coincided with the time of year that the fisherman whose ideas were being tested in developing these TEDs would normally be making a living. These fishermen were given up their time and expertise and given time up off the water for the good of the industry.

SS: Wow.

DB: That's where your Sinky Boones, and your Sonny Morrisons, and Noah Saunders, although he wasn't a fisherman, he was one--they would all try to build a better mousetrap. These guys were sort of industry leaders, if you will, and that they knew that the TED regulations were here to stay. Okay, if this is going to be the case, we got to live with this. Let's find something that works as best as we can. Then lose shrimp while we're protecting these turtles.

SS: What time of year was that that the turtles are --

DB: Usually May. April, May, June.

SS: Yeah, prime.

DB: Yeah, that's when our shrimp season opens up. May, June here, for example.

SS: Right. Anything else come to mind besides having to go to where the turtles were?

DB: Well, that, of course was getting the vessel time and getting actual, making sure everybody's schedules meet. Even though, we have credibility, we being Sea Grant, the law stipulated that someone from the regulatory agency had to be there to witness what was going on. Like I said, it was it was a joint collaboration. Sea Grant, the industry, the National Marine Fishery Service were the three big players in developing these TEDs.

SS: So, getting all those people together was a logistical nightmare.

DB: That was getting a TED certified. In other words, it had to get rid of so many [inaudible]. Then we had problems later on where the small turtles, that is the immature sizes of all turtles in the smaller Kemp's Ridleys were getting caught in the actual excluder devices.

SS: Aww.

DB: They had to modify those devices, so that the small turtles could get out. And then later on, they came up and they said, well, nothing we have in place now will get rid of one of these big leatherback turtles.

SS: Yeah.

DB: Leatherback turtles started to be showing up in some of the trawls. They had to modify those TEDs. Every time you make a change in something, well, there are several ways you can change it. And you know what works best. The National Marine Fishery Service has always had the philosophy that we're going to look at two or three things. Make sure that they all work from a turtle exclusion perspective, and then let the industry decide on which one that it wants to use.

SS: Yeah.

DB: That's what they've done with these new bycatch reduction devices. Same thing. There's two or three of them that are certified that they can use in the Gulf, and the fishermen, let them see. The fishery off of Mississippi is not the same as the fishery off [inaudible]. We're fishing for the same species. The bottom is different. You got a soft mud bottom off of Texas. You got over off Alabama you got a hard, sandy bottom--that's different. The currents are different. The bycatch composition is different. Here, we've got that mouth of that Mississippi river that when you get freshwater, and all the stuff that comes with the freshwater. So, what might work for me here in Mississippi might not work for you over there in Texas.

SS: Right.

DB: So, that's why they're given options.

SS: There had to be some choice.

DB: Yeah. That was the problems initially and it was get something that the fishermen could live with. In terms of operational character, it's safety too.

SS: Safety, yeah. Number five, what were the challenges faced in getting the shrimping industry to use TEDs? Do feel like we've covered that?

DB: Yeah. In every fishing port, there's one or two guys that consistently do well.

SS: Hmm.

DB: Every year they got a break, although they'll tell you that they're losing money. No, I never have met a fisherman yet to tell me that he's making a lot of money. But his house is paid for, [laughter] his wife doesn't work, and every year he's driving a brand-new pickup truck. So, something must be going right for him. All right. But in every report, there's one or two of those guys.

SS: Yeah

DB: The term the fisheries people use is highliners.

SS: Highliners?

DB: Highliners. These are the alpha. If you will, alpha fishermen.

SS: Yeah.

DB: Okay. The way to get the other fishermen to fall in line, --

SS: Ah.

DB: -- you target these alpha fishermen.

SS: Hmm.

DB: You get them to adopt this technology, and you don't have to target the other ones. Because what will happen is this guy will come in and he's got a big catch. And he's doing really well. They'll have to look up and that rigging and they'll see this thing that they don't recognize up there. Then they'll say, what is that you using there, Captain Tom? Then all of a sudden, a week later, [laughter] Captain Louie's got one too.

SS: Yeah.

DB: And a week after that, Captain Steve's got one. That's how, that's the way. That's the approach that we use when we were trying to introduce the TEDs in there.

SS: U-hum.

DB: Let's get one or two of these good fishermen that everybody, all the other fishermen look up to. Let's get them on board and get them using a device that works. Then maybe these other guys; we can't be there all the time. They talk to these guys on a radio all the time, and stuff, and let that sort of trickle that way.

SS: Right.

DB: That worked. But it didn't work at first. At very first, the same fishermen that knew that they were eventually, whatever they were doing, was going to help the industry in general, were the targets of a lot of criticism. The other fishman said gee, you sold out. You're one of them.

SS: Yeah.

DB: As it turned out, if these guys hadn't done the actual field testing, if you will, the beta testing of some of these devices that eventually ended up being adopted and used, then the transition of getting these guys to be able to use these things effectively, that when I say effectively, I mean, in other words, without losing the shrimp would have taken a whole lot longer.

SS: What do you think motivated those alpha fishermen to initially use the TEDs?

DB: They knew that the Endangered Species Act was not going to change and that turtle were endangered. They knew that. This had been discussed that the option was to shut the fishery down.

SS: Wow.

DB: You can't shrimp. In fact, they even did that. Not because of people not using TEDs but as things got more refined in knowledge as to where the turtles were at certain times a year. There was a time of year even though TEDs were still required. There was a time of year within a certain depth area off of Texas that they completely there was no trawling allowed.

SS: I see.

DB: TEDs or no TEDs.

SS: U-hum.

DB: The turtles were so thick, that we know that turtles are here. You're going to have to give up this area for this two, three-month period until these turtles can come in and nest. They had special closures of areas. But the other fishermen knew fish, these alpha fishermen, these ones that started this thing, they knew the alternative laws that the agency could say, okay, if you don't pull these TEDs, you don't shrimp.

SS: Right. No license.

DB: So, there was sort of the, there was sort of the motivation.

SS: I guess so. [laughter] That would do it.

DB: Yeah.

SS: That's an important piece of knowledge.

DB: Yeah.

SS: Just something that arises when I hear you talk about the nesting areas. Do hatchlings show up in shrimp trawls?

DB: It's interesting that you would mention that because, in addition, we knew that yes, shrimp was caught in trawls. We didn't know the extent of the impact. We certainly didn't think it was as high as the original estimates that the National Marine Fishery Service. Actually, it wasn't a National Marine Fishery Service. The National Marine Fishery Service was reacting to a lawsuit that was brought by the Center for Marine Conservation to say, hey, you guys are in charge of enforcing this Endangered Species Act. These shrimpers are killing turtles. You need to do something.

SS: Okay.

DB: I mean, NIMS didn't just decide to work on turtle excluder devices, because they thought this was the good thing to do. I mean, there was more incentive behind that. At that time, I think NIMS was involved in about 70 different lawsuits throughout the [inaudible].

SS: Wow.

DB: No one really knew from the time that these turtles were hatchlings to where they spent their first years of their life. No one knew.

SS: Right.

DB: We have a lot of turtle biologists and stuff. In addition to the shrimp trawl taking turtles, we knew that down there on the beaches in Mexico, people went down there during the sea turtle nesting season and harvested those eggs. That was food.

SS: Yeah.

DB: We knew that was occurring. So, we, being the editorial way, the industry, and this is something that the industry could be proud of. The industry, I'm talking about the shrimp fishery, they helped support with dollars and equipment donations, and that type of thing. The program that was in place between the Mexican officials and the US Fish and Wildlife Service down on Rancho Nuevo, which is the beach in Mexico, were all these Kemp's Ridleys nest. They only nest in one or two areas. Gulf wide and that happens to be the one.

SS: Okay.

DB: They had a program you got to want to get to this place, okay? I mean, --

SS: Wow.



DB: -- it is it is remote.

SS: Okay.

DB: So, the industry helped. For example, the guys would go down there and sleep in tents on the beach to protect these sea turtle nests from human poachers. From what I know, that now the industry would help pay for the folks that went down there and did this.

SS: Okay, so you've got a remote location. Who are the people who are eating the eggs? Are they natives?

DB: Yeah.

SS: Who live in this remote location?

DB: Yeah. Those people who --

SS: Okay.

DB: -- live down there. Yeah.

SS: Well, so they just come up to someone in a tent who says no, you can't have those eggs, and they say, okay?

DB: Well, the Fish and Wildlife Service, what they would do is, and I learned this as well. I used to think that sea turtle came in, dug a nest. They say, turn around, left. It turns out that this sea turtle, same sea turtle might lay two or three nests. One turtle. What the Fish and Wildlife Service people were doing was, they were, in some cases, putting barriers in situ of like chicken wire around the nest.

SS: U-hum.

DB: Not only for the two-legged poachers, but poor sea turtle, they got a lot of gauntlet to run through. Seabirds, those little ghost crabs on the beaches, there's a lot of things. Raccoons that dig up the eggs, a lot of things besides humans that prey upon sea turtle eggs and baby sea turtles. And then when they finally get to the water, fish, pelicans, gulls, you name it.

SS: On the way to the water?

DB: Yeah, right. So, they would do one of two things they would protect the nest on site, or in some cases, they would dig up the nest. And they would take them into the buildings and incubate these nests under controlled conditions.

SS: Yeah.

DB: So, the industry, for example, the Texas Shrimp Association, paid to buy these guys a couple of these four wheeled ATVs, so they can more easily go up and down the beach and patrol a larger stretch of beach. They also paid to build a building, which nothing but a concrete block building, no AC, no running water but it was better than the tents. [laughter] It was college kids and [inaudible] like that down there that we're saving the sea turtles. There were a lot of folks that had motivation.

SS: U-hum, yeah.

DB: And that's the type of folks, and it was a joint program. So the bottom line is that the Kemp's Ridley has really come back. Anyone will tell you that. In fact, fishermen tell me now, they catch turtles.

SS: Because there are more of them.

DB: There are more of them. They say, yeah, they won't catch him in their big nets, because they got TEDs. From time to time, one of them will show up in that try net that little small test trawler.

SS: Yeah.

DB: They'll say, you know, Dave, we never used to see turtles, but now we catch them. I'll catch two or three a year.

SS: Yeah. Have you heard of shrimpers giving resuscitation?

SS: Well, I know what a lot of the guys will do that they know about a sea turtle. Usually if you catch him in a tri-net they haven't been in that net long enough because they usually fish that net every half hour or so.

SS: U-hum.

DB: But what they will do, what a lot of fishermen will do depending on how many boats are working in an area, typically when they find shrimp there's going to be several boats working in an area. Usually this shrimping takes place at night. So, it's not an issue of the turtle laying there in the sun. They'll find some place on the deck where they can leave that turtle. And every once a while they'll hit him with the deck hose keep him wet.

SS: Oh.

DB: Yeah.

SS: Yeah.

DB: Keep him moist. And when they get away somewhat from these other boats, then they'll put the turtle back overboard. The thought being that if I put him over right here, he might get caught again.

SS: Yeah.

DB: So, yeah, the fishermen are pretty conscientious about that.

SS: Yeah.

DB: Usually they know that if the turtle appears to be somewhat listless, they know that they usually say, well just lift up his hind end a little bit and let him just sit there for a while. They know this.

SS: Yeah.

DB: They don't know, because they've been told that they just lore or something.

SS: Right.

DB: They know, they say, well, you know it seems like if I do this, he seemed like he's alright. When I see him back there crawling around all over the deck I know, it's time to let him go.  
[laughter]

SS: Right.

DB: Yeah.

SS: Frank Parker told me if he gets one that seems to be dead. He'll just turn him over and press on him with his foot. And he can see water come out of the nose. And he's had several of them resuscitate using that method.

DB: The recommended way to do that; first of all, that was a relatively small turtle. The ones we were catching over at Canaveral, one person wouldn't flip one of those over by himself.  
[laughter] Not to mention, I had one of them latch on to my foot one time just being careless. We caught so many turtles, they were walking around them on deck all day. You just don't think about it. I had deck boot on, but they can bite pretty hard. You know, they eat crabs and stuff like that. But anyway, if you can just lift up the hind end, if they're like that.

SS: Yeah.

DB: Same principle. Water runs downhill.

SS: Yeah.

DB: As it turns out, most shrimp boats decks have a kind of a natural arch to them. The reason for that is that when they dumped the catch it all kind of funnels to a certain area where it can be worked.

SS: Yeah.

DB: So, you just put the turtle back up in the corner in the shade. Outside of the bulwarks. Out of the way. Where he's not going to get in and just let him sit there. And then when you look around, and he's crawled down here, you know he's okay. Yeah.

SS: So, you don't want him in the sun because they dry out? They get too hot?

DB: Yeah. You don't want them to get hot in the hot sun.

SS: Even though they're reptiles and they're cold blooded.

DB: Yeah. But during the time of year, when shrimp season occurs, --

SS: It's very hot.

DB: -- it's hot. Plus, most all of those decks are painted white. The reason for that is they work at night, they have to have a nice surface that those bright lights will reflect also, so they can see what they're doing when they're picking through the catch. And at night is not so critical.

SS: No sun.

DB: They keep them moist.

SS: Yeah.

DB: They hit them with a deck hose. That deck hose runs continuously. If they happen to catch them in the daytime, for example, during white shrimp season, they work in the daytime, --

SS: U-hum.

DB: -- and that typically starts in August, one of the hottest times here.

SS: Yeah.

DB: By the same token, a lot of these boats also have for their own comfort, if you look during the summertime, they've got these tarps that they put over the work deck in the back to keep the sun off the crew.

SS: Right.

DB: They use those too, all that helps.

SS: U-hum.

DB: They know to keep them, try to keep them in the shade and cool down and stuff. Because usually the water they've come out of is eighty-five degrees anyway.

SS: U-hum.

DB: We've caught some at the early part of the season when the water temperature was seventy-five. I've caught turtles out here while working with these guys, shrimping. It's more of a cognitive experience these days and that just tells me they're coming back.

SS: This is worrisome now I hope this doesn't happen with the turtles that thing that's happening with the wolves having been on the endangered species list and as soon as they recovered, they're starting to be hunted down to extinction again.

DB: Yeah, I saw that they were –

SS: That's insane.

DB: -- having limited harvest order.

SS: It's just crazy.

DB: Look at this, the alligators were endangered species and now they have a harvest in Florida and Louisiana. You can buy tags and you can go harvest evidently, the carrying capacity of the ecosystem, no words. I'm not a big hunter. But if we didn't have a deer season, every year, we'd have problems.

SS: Starving, sick.

DB: Too many deer, sick, starving deer, interactions with agricultural producers with the deer company.

SS: [inaudible], uhum.

DB: I don't think we'll ever have the turtles back to the point where, you know, back in the early part of this century. Well last century they harvested sea turtles. You could buy sea turtle meat. They had down in Key West to this day they have the turtle crowds where they used to harvest those things. Some of the old timer fishermen; you ask them, some of the old timer fishermen, have eaten those sea turtles.

SS: Oh, yeah.

DB: Yeah.

SS: Yeah.

DB: They'd sell them with the salts concoct. [laughter] You know, they'll tell you.

SS: Yeah.

DB: But I don't think that because turtles are so long lived and it takes them so long to get to the point where they can reproduce, we're just now really seeing the benefits of all this stuff that took place two decades ago.

SS: How old does a female Ridleys?

DB: They tell me that they can become sexually mature at about age ten.

SS: Ten years.

DB: As early as ten.

SS: Wow.

DB: Yeah.

SS: As early as?

DB: Yeah.

SS: Could take longer.

DB: Yeah, oh yeah.

SS: Like with cats, it's – [laughter]

DB: Yeah, I know. [laughter]

SS: It's within hours. [laughter]

DB: Yeah, right. Yeah. [laughter]

SS: But ten years.

DB: Yeah, I know.

SS: Okay.

DB: The interesting thing about turtles is that they range. [Off], it's just like salmon. How did they know to come back to that 115 mile stretch of beach?

SS: Yeah.

DB: After being all over that Gulf.

SS: We just don't know, the ones who didn't make it back. [laughter]

DB: But how do they know?

SS: There's some that are out there just swimming in circles.

DB: These, as part of this program they tag --

SS: Oh yeah.

DB: -- these turtles, and they know that these turtles are coming back.

SS: Yeah.

DB: In fact, while we were doing that work certifying the TEDs we had turtle biologists on. Every time we, not every turtle, but they'd take sample blood and they'd tag these turtles.

SS: Yeah.

DB: It was interesting, one of the programs they had a satellite tag that was designed to these. They didn't have many of them, because they were at that time, they were really expensive. They would put it on the shell of the turtle, and they would keep a log of this turtle's travels.

SS: Wow.

DB: And after a specified period of time, which you can build into the tag, it breaks itself loose and floats to the surface; [laughter] transmits all its data to a satellite and you downlink it to your computer. So, you have a record over however long that you had the program set: three months, six months, whatever, of where this journal had been. Well, this one guy they were tracking and they were showing the destination of the turtle and all of a sudden, it left the coast of Louisiana and went to Minnesota. [laughter] They said, now wait a minute, sea turtles don't go to Minnesota. [laughter] What had happened was some people beachcombing had found this device that had washed up on the beach and they thought it was interesting, and they didn't know what it was, and they put it in their car and drove back home. They were tourists. [laughter] Yeah. But it was still transmitting data.

SS: I have this image of a little turtle on the highway.

DB: Yeah, right. [laughter] We used to hear stories like that all the time. There was scientific research going on at the same time as this we were learning more about.

SS: If you're going to save them, you need to know their habits.

DB: Yes.

SS: Yeah.

SB: So anyway, now the last. They're not to the point where they can be D listed. But they are orders of magnitude, more nests now. Every year, at any given time, they had like, on a day 40,000 turtles per day would arrive at this beach back in the heyday. Then it got down to where there were less than a thousand nesting females.

SS: That's a big drop.

DB: Now they have close to about, I think the last year's count fifteen, twenty-thousand nests.

SS: Now what was the first figure forty or four-hundred thousand?

DB: I want to say they had what they call these arribadas, A-R-R-I-B-A-D-A-S. I don't know what the total was, but they were counting 40,000 a day.

SS: Okay.

DB: I don't know if Larry Simpson is on your list to interview, but he can tell you that.

SS: Okay.

DB: He's with Gulf States Marine Fisheries Commission.

SS: I'll just make a note of his name, Larry Simpson. They actually gave me a list of who they wanted and are saying if you substitute anyone, you have to have our permission. So, I don't know if I have the latitude. Okay, Larry Simpson.

DB: Larry's been around a long time, he's the Executive Director of the Gulf States Marine Fisheries Commission.

SS: Okay.

DB: H 875-5912. I mean, if he had to, --

SS: And that's 228?

DB: Yeah, he's over in Ocean Springs.

SS: 8755912. Actually, there have been two deaths that I know of on my list. So, I do need to be looking at some other people.



DB: But anyway, all that stuff, that success story of the industry and the turtle stuff. He can give you much more detail about that than I can. [laughter]

SS: I was watching a television show about the sea. And there was a short blurb on the Chinese consumption of seafood. And there was a room as big as this room with tubs of turtles. And I think I would be very surprised if I learned that the Chinese are respecting the endangered categorization of any turtle. I think with a huge population like that that has to be fed, the turtle population's never going to come off the endangered species list.

DB: Well, this was an argument that was raised early on by the members of our US shrimp fishermen. Wait a minute, I got to compete in the marketplace, with product that's being produced in Mexico, Ecuador, Thailand. Those guys don't have to pull TEDs. There's no Endangered Species Act in Thailand. I'm competing with them and I'm at a disadvantage. So, they passed a law that if you wanted to export shrimp to this country, in your wild fishery you had to use TEDs. And these guys from the National Marine Fishery Service went to foreign countries to show these guys how to use TEDs and all this. Now, that's not to say as soon as they left town, the guys took them out of their nets.

SS: Who's enforcing it?

DB: Yeah, who's enfor --? But still, there was a provision that's mostly to assuage that the shrimpers' complaints that wait a minute, this guy, I go out and buy a product, a shrimp from Mexico the [Mexicans] don't have to pull these TEDs.

SS: It's kind of nominal, though, because you don't know how it's being enforced.

DB: Yeah.

SS: Well, but also with the Chinese, okay, if they're trawling for shrimp, they put a TED in there. But if they're trawling for turtles, which aren't going to be exported to us anyway. They're just plain catching them.

DB: And the other thing and it doesn't apply to pond produced, pond producer.

SS: Right.

DB: Who's to say that they then say, well, all this shrimp is pond produced. Even though it may, or [inaudible].

SS: Right. Yeah.

DB: When we start imposing these tariffs on these foreign countries, five countries that we impose tariffs on is part of a trade adjustment agreement. A couple of years ago, one of which was of course, was a big exporter to us was China.

SS: Right.

DB: Well, China is right next to Cambodia, right.

SS: U-hum.

DB: If you look in the history of shrimp imports, and you look at what came into this country from Cambodia, they average sending us about a million pounds of shrimp a year. All right. That was what the little country of Cambodia sent. But we put the embargo, put the tariffs on Chinese shrimp.

SS: Okay.

DB: And that same year, all of a sudden, we started getting 20 million pounds from Cambodia.

SS: Hmm.

DB: All this transshipment was occurring. You say Cambodia is not subject to the tariff. We'll just run this shrimp and a lot of that.

SS: Do we correct it then and say, okay, tariff on Cambodia?

DB: And then, unless they can prove it. Cambodia say, well, we just had a good year in shrimp.

SS: Right.

DB: We had a lot of shrimp. There's only so many places that enforcement folks can be.

SS: Yeah.

DB: The Chinese compared to the US per capita consumption of seafood of all types is about 16 pounds a year. Chinese is upwards of 50 pounds per person per year.

SS: Yeah.

DB: Say so they eat a lot more seafood than we do.

SS: Right.

DB: Of course, there's a lot more of them than there are --. [laughter]

SS: Exactly, yeah. I'm just thinking, gosh, we could create a lot of jobs for staggering economy by training enforcement officers on the high seas. I don't know that's, uhm --. Seems like a good idea to me. Well, let's look at our questions some more. [laughter] Let's see, we were talking about number five, the challenges in getting the shrimp industry to use TEDs. Number six is how did the early ten models compare to later models? We talked about those adjustments.

DB: Yeah.

SS: Is there anything else you want to say?

DB: No. First ones were big, bulky, and the second ones were simple. [laughter] That's kind of [this]. [laughter] In terms of fishing gear, the simpler it is, the better it is.

SS: Okay.

DB: Something that's big and complex, it's just much, that much more that could go wrong with it.

SS: Okay, and that much more to make it not feasible to shrimp in terms of what it costs to shrimp. You have also talked about number seven, describing your experience with protests against TED regulations. Is there anything else you want to say?

DB: I'd say, we, in speaking out specifically about Mississippi. Yeah, the folks didn't like it, but we didn't have any big protests like they did in some of the other Gulf states.

SS: Okay.

DB: Look, we didn't have them here locally. That's not to say that some of our folks didn't travel over there to participate in them.

SS: Yeah.

DB: But we just didn't have that here. The biggest thing that I remember was that big hearing I told you about that they organized, on behalf the fisherman, when everybody got up said, oh, this is going to put me in the poorhouse.

SS: U-hum.

DB: But that was the biggest thing that I remember.

SS: They were venting at that point.

DB: Yeah, that's exactly right.

SS: Yeah. Let them get it off their chest.

DB: That's exactly right.

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

DB: No, we are in the education business not the enforcement.

SS: Would you have knowledge of how compliance regarding the use of TEDs has changed over the years?

DB: All it took was a few guys to get caught, that were made examples of. Now, let me tell you, this is counted under the Endangered Species Act. There are provisions in there for penalties.

SS: Okay.

DB: Money penalties, and it may be some minor amount of jail time. But the money penalties are the ones. Civil penalties up to \$25,000 per incident. And criminal penalties up to \$50,000 per incident. That sounds like a lot of money. But think about this way. In addition to that, the enforcement agents are also allowed to confiscate the catch. Now you think about that for a minute, one of these big offshore Gulf boats that's got 80,000 pounds of shrimp in the hole, and losing all of that.

SS: Just not worth it is it.

DB: The word got out pretty quickly.

SS: Okay.

DB: There have been times since TEDs have been required when fishermen have legally been given what they call a TED vacation.

SS: Okay.

DB: That occurred right after the Hurricane Katrina, here. Where there was so much stuff that was washed out of the parts of people's houses, and everything. That if the TEDs were just getting blocked up, they couldn't work.

SS: So, the debris would go in the TED.

DB: And get blocked up.

SS: And they could stay open?

DB: Yeah, or just completely plug it so nothing could get past it.

SS: Okay. Yeah.

DB: In those cases, and this happened on a couple of other cases. A couple of years ago, remember when they had the big Mississippi River floods?

SS: Yes.

DB: The same thing off of the river over in Louisiana. All that stuff came floating down the river clogging up the fishing grounds. The fishermen are legally given permission to not use TEDs.

SS: Okay.

DB: But if they do, they have to limit their tow times to seventy-five minutes, depending on the water temperature. Seventy-five to ninety minutes or something.

SS: So, the turtles won't drown.

DB: Right, if they happen to get caught.

SS: Okay.

DB: And there are guys that are out there during those closures enforcing. They can see when the net goes into water and by God you better pick that thing up. Well, fishermen that's an option. They can keep the TEDs in.

SS: Okay.

DB: They also are allowed to take them out. If they do take them out, they have to pick up so often. That's a lot of work picking up one of these shrimp trawls.

SS: Now did you say about how long would the --?

DB: Usually the average tow is about three hours, three no more than five usually. Three to five hours, that's what a normal tow is. But it's a lot of work. You got to pull those doors up, you got to bring the lazy line in like I tell you, you got to winch, you got to lift bags up, you got to put the stuff on the deck, you got to put it all back overboard, send it back out and get it running. Guys don't like to pick up any more often than they really have to.

SS: Yeah.

DB: That being said, when they get an opportunity to work without a TED, they'll take the TEDs out in a heartbeat. [laughter] So, that's kind of the way they feel about it. Those TEDs right now. They don't like them.

SS: Yeah.

DB: They're using them but, by God, you know they're not happy about it.

SS: That touches on number ten, actually, also about how the enforcement of the use of TEDs has changed over the years.

DB: Yeah.

SS: Number eleven really doesn't apply because your agency is not involved with enforcement of TEDs.

DB: Yeah.

SS: But number twelve is a question that the museum is interested in knowing about how have TEDs affected the shrimp industry?

[long pause]

DB: The only thing that I can say is everybody has to have one. And they are, they're just an additional cost. I'm saying the average price for a TED ready to go, sewed in a net is about \$300. These boats that use four nets, that's \$1200 plus. You have to have spares because they can get bent or tore up. It's an additional expense for one thing. It's also an additional operational consideration in terms of there's one more thing that you have to check: make sure there's nothing in against those when you pick up against those TED bars, make sure the flap is not all messed up, make sure it's not in a twist, make sure there's not --. There's just one more thing you have to be worried about in your gear when you keep tracking things. Most everyone will agree that there is at least a little percentage of shrimp loss associated with it.

SS: Loss, what would you think?

DB: The rule of thumb has been about five percent.

SS: Okay.

DB: It all varies on where people work. The operating conditions. The boats that work offshore where the waves are bigger, and when they pick up, and the net tends to surge around more, and to push back against that opening. The rule of thumb three to five percent is what the fishermen know that they're probably losing that much shrimp.

SS: Yeah.

DB: So that's the impacts. The extra cost, the extra operational considerations, and the shrimp.

SS: Okay.

DB: That's the price that the shrimpers have paid to help protect the turtle.

SS: So, they're losing a little bit. But for example: Frank Parker mentioned to me, he's the shrimper, that sometimes debris would get into his net and drag along the bottom and create a big hole, and then he'd have much more than three to five percent loss. Whereas, the TED would keep the debris from going to the bottom of the net, and it would prevent a hole.

DB: Yeah.

SS: There's this strange kind of balancing that goes on.

DB: Off of Key West, they catch what they call these loggerhead sponges, in that particular area is a big sponge that grows on the bottom. They're heavy, it's like a giant wet sponge, [laughter] and they get caught in the net. Now when they started using them, and they would cause that problem because that bottom over there, like I mentioned before, over off towards the western part of the Gulf is hard shell bottom.

SS: Yeah.

DB: So that net with a lot of weight in it dragging across the bottom the braids can tear. That was a problem that the TEDs kind of helped with that because that sponge that didn't go back went out the top of the net, or in that case, the bottom of the net as it was taking [victimless] bottom shooters. But by the same token, in normal operating conditions when they --. Forgive me, if you got a piece of plastic, a plastic bag, which there's a lot, shrimpers already get paid extra for being the garbage men of the Gulf, because they pick up all the crap that people carelessly throw overboard. I mean, that was one of the categories. In fact, when we were doing those studies of when the species they had, we had a list in there for trash.

SS: Wow.

DB: Everything from beer cans to bottles. But anyway, a plastic bag, which is on the list, if he got across that TED thing, then one of the plastic garbage bags, then no shrimp are going through. That plastic bag wouldn't have hurt the net if it had gone on back into the net.

SS: Right, u-hum.

DB: For every instance, where you can say, yeah, this might have helped, you can also say, yeah, they cause. Fishermen will tell you that they are more a problem than they are a benefit.

SS: Well, of course, they'll tell you that. But if there were a way to really study it, you know, I mean, I'm not convinced it might turn out that it's increasing their shrimp catch.

DB: The fishermen, now, in fact, when we were looking at these BRDs, the bycatch reduction devices, we did show a little bit of an increase in shrimp catch, because of using it. Here's the reason why we theorize that that happened. You've got this net being pulled through the water held open by doors, when as you get a lot of fish in the net there's more drag this way. It will tend to cause these doors to close together more because they're pulling more weight than the spreading force the doors.

SS: Ah.

DB: So, when the doors become closer together, because of this weight that's pulling them closer together, they're not covering as much bottom, and therefore, potentially not producing as

much shrimp as a net that didn't have as much weight in it, where the doors can stay spread like they should be, as wide as they should be. That's our theory.

SS: They're not as heavy because the non-target species are flipping out, going out of the TED?

DB: Going out, yeah, going out. There are not many fish in there.

SS: Okay.

DB: The other benefit of using the bycatch reduction devices is you don't have all that extra weight of fish in there with the shrimp, crushing the shrimp into the bag and that trawl. So, you tend to have a better product when you don't have as much fish mixed in with the catch.

SS: Yeah.

DB: Not to mention, the deckhand doesn't have a big of a job going through all of that stuff on the deck to get the shrimp out when there's less of it to pick through.

SS: Right.

DB: So, there's a lot of proof.

SS: That sounds to me like a very strong argument.

DB: Most in the inshore fishery. Now, most every boat that I've ever been on that were looked at these bycatch reduction devices, because they are not to this day, they are not required in state waters.

SS: Really.

DB: Right. TEDs are but BRDs aren't.

SS: Okay.

DB: Again, because what's driving the BRD issue is the red snapper. We don't catch red snapper in our state waters. So, but every boat that I've been on, that works in inshore waters that we've looked at these things, just to see how they would perform in inshore waters. When I leave the boat, the guy says, can I get another one of those?

SS: Because you've improved their catch.

DB: That's it. Less work for them.

SS: Wow.



DB: The quality of their catch is better. And the most important thing is I've proven to them that is they're not losing shrimp because it's in their net.

SS: U-hum.

DB: It might be a different story for the offshore fleet because the inshore guys were in relatively calm water, relatively shallow water. Deep water for an inshore fisherman is 20 feet. Whereas these guys offshore work up to up to 200 feet or so. Maybe more. It's just in heavier sea conditions and all that. So, there's good and bad in all of these.

SS: Right, absolutely. Yeah.

DB: With the [bret] I'm telling you the rank and file fishermen will tell you that he's not happy with having to pull TEDs. To this day, even though they've been in place, the requirements have been in place since 1992. They still are alike.

SS: That's, yeah. Yeah. Number thirteen. How TEDs affect the sea turtle population. We know they're increasing.

DB: They're going to do what they're supposed to do. Between that and I think we got a lot of credit to enforcement efforts in other areas, it had nothing to do with the shrimp fishery. That program on the nesting beach is one big one, for example.

SS: I think, without taking care of the eggs and hatchlings, it would be pointless to do any of the other stuff.

DB: The other thing is like this cold snap we had is unusual cold weather that we had. There was, there's Colston turtles. There was a lot of them that had nothing to do with the fishery that died this year, just because the cold. Fifty-one that they counted along Texas beaches, that's the ones that they found. But they were able to rescue quite a few of them. And there again, the fishermen were helping with this, they might not have caught the sea turtle, but they would see this thing on the surface looking like it's not in good shape. And they would notify the authorities on the radio and then, they, we have teams here in Mississippi. They have bunches of them over in the Texas as big as their coasts are, that's all they do.

SS: I want that job.

DB: They're a response team.

SS: I want that job. It sounds like fun.

DB: Well, you talk to the folks at Moby Solangi group, the Institute for Marine Mammal Studies. They're the ones that handle the dolphins and there's a couple of other folks that handle the turtles.

SS: Wow.

DB: And nowadays we have manatees here too.

DB: Oh, that's great.

SS: Yeah. What is the cold time, cold stunned turtle? What does that mean?

DB: It's just too cold. It's just they are cold blooded creatures. And it just got too cold for their metabolism to process.

SS: Actually, in the water?

DB: Yeah.

SS: What do you think these big icebergs are going to do to the turtles?

DB: I don't know. But this was unusual set of certain circumstances.

SS: Yeah. Well, they say global warming is the harbinger of extreme weather patterns.

DB: Yeah.

SS: Not just necessarily always hot.

DB: Well, what we've got here of course is El Nino.

SS: And is that right?

DB: I'm a big fan of El Nino because when we have strong El Nino years we have very minimal tropical activity years.

SS: That's right.

DB: Even though I'll put up with a colder and wetter than normal winter, to not have to face hurricanes.

SS: Yeah.

DB: Yeah.

DB: Right.

DB: Okay, again, I'm not a sea turtle.

SS: I might ask you if you would schedule another interview just to talk about what you do here and what your Hurricane Katrina experience was. Did you live here during Camille?

DB: No.

SS: No?

DB: My wife did and my next-door neighbor said she was here during Camille.

SS: I was, I was.

DB: I asked her, my wife.

SS: Yeah.

DB: I asked her, I live on the water. I asked her are you going to leave? She says this house didn't get wet in Camille.

SS: So many people died because of that.

DB: You know where I rode the storm at?

SS: Where?

DB: Right here in this building, right where we're sitting. Well actually in my office.

SS: Was it bad here?

DB: This building is one of those buildings where they built off site and then bring it in and set up. These walls are ten-inch thick concrete.

SS: Wow.

DB: During the height of the storm, we could talk just like we're talking right now.

SS: Amazing. Like it was more expensive right? To build it like that.

DB: No.

SS: Not really?

DB: Not really. We did lose a piece of this metal roof. You see how the roof is that it came off about a twenty-foot section in the middle of the building did peel back.

SS: This reinforcement right here. No wonder you couldn't hear anything.

DB: Yeah, but I live three miles from here.

SS: Yeah.

DB: My ground floor elevation it's eighteen feet above sea level. I don't have to have flood insurance but I buy it because it's so cheap. And thank God I had it because we had about this much water in the house.

SS: Wow.

DB: That's were all of our damage came from. We had some wind, lot of wind damage but most everything was flood.

SS: Yeah.

DB: Man, those poor people. I can really see when these towns, when they got all that rainfall last year here and were flooded.

SS: Yeah.

DB: That's the worst damage in the world.

SS: Oh yeah.

DB: Everything, the carpet and the pad. In fact, I went back with ceramic tile floor.

SS: Yeah.

DB: I said I'm not doing this anymore.

SS: Yeah.

DB: All the insulation to the walls that has come out because all that mold and mildew; all of your kitchen cabinets, all of the doors.

SS: Wow.

DB: These doors, well this a wooden door, but the typical door that's in your house are those white doors like in your closets in your bedrooms They are made out of mason like. Ever see what they look like when they get wet. [laughter] Looks like a deck hand and fans out like a deck of cards. So, they all that had to be replaced. It cost me more money to rebuild my house than it did for me to build it to begin with--I built my house.

SS: Yeah.

DB: Part of that was the fact that we couldn't find anybody to do the work and the other part we couldn't get labor. But I was back in my house, living there, because I always lived there. It was

just, wasn't very pleasant when tire holes in the side of the wall and stuff. I mean, we had it that together enough. We had the family over for Thanksgiving that year.

SS: Yeah, about a month no, two months later.

DB: Yeah.

SS: About two months later.

DB: Two. And that was a lot of sweating.

SS: Sure.

DB: Doing most of ourselves.

SS: Yeah.

DB: That and I had to learn a little bit of Spanish. [laughter] If we didn't have the Mexicans, I don't know how we, this place would have gotten rebuilt.

SS: Oh, it would look a lot different.

DB: If you noticed and there's a lot of those folks who are Hispanic population went up, because those folks came here to work [inaudible]. And then stayed up. I've noticed that now you can't go into Walmart without everything's in English and Spanish. But the other thing I can tell you is all of our Mexican restaurants here on the coast have gotten an order of magnitude better.

DB: Great.

DB: [laughter] We got good, we got good Mexican food now.

SS: The real thing, it's authentic. [laughter]

DB: Yeah, really? That's actually exactly right.

SS: Yeah, yeah.

DB: But oh, yeah, we had a mess. Hopefully, we'll never see another one like that again, in our lifetime. I went through Georges and Elena.

SS: Yeah.

DB: Those were, in retrospect, sort of minor inconveniences, you can put a few shingles back on the roof.

SS: Yeah.

DB: That kind of stuff.

SS: Yeah. Just the sheer size of Katrina was probably its greatest danger. Because that meant sustained winds.

DB: Well, in the storm surge was unheralded.

SS: And it was high tide, right?

DB: It was unheralded, I mean, if you look down there in Biloxi where they've got the mark where Camille was and mark were Katrina was, but I can show you. In fact, I'm giving a talk. That's the reason I wasn't going to be here Monday, Tuesday, Wednesday. I'm going to the Gulf States Spring Meeting over Orange Beach, too. And one of the things I'd like to do is give a paper on artificial reefs here.

SS: Yeah.

DB: We have as one of our artificial reefs out there in about seventy to seventy-five feet of water, there is a 476-foot long Liberty ship that was sunk back in the early '70s. It doesn't really look like a ship what it looks like as a giant canoe because all the superstructure was taken off of it. But anyway, that's how big it is. It's 476 feet long. It's in seventy feet of water. Before the storm, it was oriented a little bit to the east of North. After the storm, it had turned sixty degrees. It turned in seventy feet depth of water, it had turned his whole ship sixty degrees around on the bottom and it was partially buried in the bottom.

SS: Just unbelievable.

DB: That's the power that was that far below the surface.

SS: Yeah. Yet, it's just so amazing, this is so amazing. We did a lot of Katrina interviews, and people, these frail human beings who held on to trees that survived, with all this wind and water rushing over them and past them.

DB: But in my house, you walk back in there, of course, I am three miles. I drive home from lunch every day.

SS: U-hum.

DB: So as soon as it got to the point where we could get out after the storm I said, well, I'm going to go take a look at my place.

SS: Right.

DB: It was tear jerking.

SS: Sure, it was. Sure.

DB: The refrigerator had floated off and I have an island in my kitchen that was lifted off, and that floodwaters, it actually bent steel doors that forced that water.

SS: Yeah.

DB: But on my mantel piece in my fireplace, the vases was still sitting.

SS: Unbelievable.

DB: You know, everything was above here. Everything there up. Everything up there was fine. Later down, we had dead fish flopping in the house. [laughter]

SS: Oh man. Yeah.

DB: It wasn't pretty.

SS: We interviewed some people for oh, what's that? Well, I'm thinking Biloxi Regional Hospital. That was quite a story but also in Bay St. Louis.

DB? Oh, yeah. I say ground zero over there.

SS: At the hospital in Bay St. Louis. I can't remember the name of it right now. They gave us rooms to do these interviews and they also showed us footage of the water that came into the hospital. Because they have surveillance cameras.

DB: Oh, yeah. And they survived, the cameras survived?

SS: Oh my God. Yeah. Oh, it's just you can't--it was incredible. It's just incredible. It looked like a movie site.

DB: You and I know, we were here. If you tried to convey the extent of the magnitude of that damage from that storm to people, words fail you. Pictures, news coverage, a picture can only get as wide as that camera angle lens will go. And that's it. I remember one of the most marking feelings that I got at the storm. We, University folks had FEMA tags.

SS: Really?

DB: So, we could, we could get into a lot of areas before they had gone through and search for bodies and stuff like that. And we knew that ground zero based on where the track of the eye was, was Bay St. Louis. I went over there and I went, guess that's the foot of Coleman Avenue on Bay, St. Louis. And I stood there and I looked as far as the eye could see, which is like a moonscape.

SS: Yeah.

DB: And the thing, the eerie thing was, you didn't even hear a bird tweeting, it was dead. Dead silence.

SS: All the animals were gone.

DB: It was almost like you were in a vacuum. You didn't hear any noise.

SS: Yeah.

DB: Usually after a storm. You hear chainsaws or something.

SS: Right.

DB: You didn't hear anything.

SS: Yeah.

DB: That was an eerie feeling. Like no signs of civilization. That was just so —.

SS: Yeah.

DB: That's the thing. Between getting our own houses back up and running, of course, we had a big job. And what we do here is getting the fishermen back in business.

SS: Right? All the infrastructure that was needed.

DB: We had stuff that we do for our jobs. Just because besides what I do here, we have a lot of folks here to deal with home health issues, which that was a big thing. We have family and consumer science department here, and mold remediation, you name it. How do you know? People call on you. How do I do this? How do I do that? We had a lot of that going on.

SS: Yeah.

DB: Is the stuff in my freezer safe if the powers been off for X amount of time?

SS: Yeah.

DB: You know.

SS: When in doubt, throw it out?

DB: Yeah.

SS: Well, just to return to the sea turtles. Why are sea turtles important?



DB: [laughter] The fishermen will tell you, they said, well, the dinosaurs still aren't around, and I don't miss them. [laughter] The people they say sea turtles have been around unchanged from the time of the dinosaur. [laughter] I guess all living creatures sort of serve their role in the ecosystem. Sea turtles, you hate to see anything go away because once it's gone, it's gone.

SS: U-hum.

DB: So, regardless of what role in the ecosystem [pets], or what good in the whole natural scheme of things that sea turtles provide; the fact that there were so few of them and that there may not be very many of them was, in and of itself, enough reason to do what we could to protect them.

SS: They have a right to be here.

DB: Yeah.

SS: And it will certainly –

DB: You won't get that same answer from fishermen. That's Dave Burrage's opinion.

SS: Right. Well, that's what I wanted. It's 4:35 and this is the next question it is how I would have started if it had been just an interview through the center for oral history. That is, where did you grow up and tell me a little bit about your growing up years?

DB: Well, as I mentioned, I was born in Hampton, Virginia, and I lived in Virginia through my early college years at various places in and around the Tidewater region.

SS: Oh, yeah.

DB: The little bedroom community where I grew up was called Poquoson which is an Indian name meaning the land of the low water.

How do you spell it?

DB: P-O-Q-U-O-S-O-N.

SS: The transcriber will thank me for that.

DB: It's an Indian term if you can find a dictionary called Poquoson. In fact, it's a geologic term but anyways, it's an Indian term land of the low water. There was a big fishing industry in that town where I grew up. And I always have liked the water in the very first job. I remember the very first paying job that I ever had was I went to work as a deckhand on a fishing boat. We did two things: during the winter months we trotline for blue crabs.

DB: Now what is a trotline?

DB: That's, it's a long line that every so often all along it is baited. We used to use tripe. I still have nightmares thinking about that stuff. [laughter] But we used it because it was nice and stinky, and tough that the crabs couldn't chew it up. And you go along, and you picked the line up off the bottom, and the crabs go, and you have a net, and you net crabs, you throw them in the box. As opposed to using a crab pot, you were actually using like a slot a long line for crabs.

SS: So, the crabs hang on.

DB: Yeah, they hang on.

SS: You're like pulling them out of the water.

DB: Yeah, they like tripe. You pull it out of water, you just know.

SS: Okay.

DB: Then in the summertime, we took people fishing on the same boat. And that was my first job. Then later on in high school, as part of my studies, I always had a thing about oceans and all we knew I wanted to work some field that was related to the coast, oceans and stuff. Always been. Our families were boaters and all that stuff. I had a work study program.

SS: You'll get out of this sometime. [laughter]

DB: Had a work study program, where I went to work at the Virginia Institute of Marine Science for half a day in the afternoons. I got my first day of real, if you will, marine science there. Then, I went to Old Dominion University, got a science degree then I went to grad school up at University of Rhode Island in Marine Affairs. None of which prepared me for what I do now. [laughter] Just like those guys with the bachelors, you talked about in biology degrees that were cooking.

SS: Yeah.

DB: So, when I took the job here, I moved here from Rhode Island. Back in 1983. It was OJT. The guy told me, said, have you had any experience working with the fishing industry? And I said, well, I said, I worked as a deckhand on a boat, that was my very first job. And my father-in-law over in Texas had a shrimp boat and I went with him a couple times on that, and I like to fish. That's my qualifications along those lines. What's really wasn't much. So, all of this stuff about fishing gear and how to tune nets, and how to install gear on boats, strategy, all that stuff was sort of learned since I took the job. And a lot of that I learned from the fishermen that we worked with.

SS: Yeah.

DB: That could take the time for a Yankee like me. [laughter] Or, they call me, on a fisherman if you do something that sort of clumsy and landlubberly like, they call you a farmer. [laughter] You know, I'll have, I'll be working on this knot on this big line that they use on these boats, and

I can't untie it. And I'm pulling on it. And it's just driving me crazy. And the guy walks up there in five seconds have it undone easy. And he'll go, you farmer. [laughter] Yeah, they're joking but, you know. [laughter] That's kind of my life history. And like I say, since I've moved here, I married a local girl and married into a family. A big family. I have a lot of family that I kind of married into in this region here. And I say I've been here, been doing this now for twenty-six years.

SS: A long time. What is your current title?

DB: I'm an Extension Professor.

SS: Okay. Do you actually teach classes?

DB: No. We have a deal with Southern we don't teach and they don't do extension work.

SS: Oh, okay. [laughter]

DB: I am being facetious but really, Southern's got the Gulf Coast research lab over there.

SS: Yeah.

DB: We could, we have the horsepower here to offer courses. We just don't. We have the Extension Service, it makes Mississippi State sort of unique is that we have a presence in every county in the state.

SS: I didn't realize that.

DB: If you look, are you in Forest or Stone?

SS: Forest.

DB: You look in the book under Forest County Extension Office, that's Mississippi State.

SS: Oh.

DB: They usually they'll have at least an agricultural agent and maybe a 4-H person there that deals with youth, and maybe a home economist.

SS: That is great.

DB: Every, all, --

SS: So practical.

DB: -- all eighty-two counties.

SS: Yeah.

DB: Now there are four centers like this.

SS: Okay.

DB: One in the Delta. This one. I can't remember where the other.

SS: Okay.

DB: But in addition to this building, here, as part of our center, we have an experimental seafood processing laboratory over in Pascagoula.

SS: Wow.

DB: We have people there. We've got a horticulture station in Poplarville. We also own and operate the Crosby Arboretum. You ever been to that?

SS: I have. Yeah.

DB: Okay. That's part of, we have staff that run that facility. And we have a beef cattle research station up in Beaumont, which is, north, if you wanted to kind of swing by on the way back to the Hattiesburg. So that's all part of this center.

SS: U-hum.

DB: And what we do we do research. And an informal adult education. I say adult, but also from time to time we have part of the deal that when we got this land, we were sitting on thirty acres here, that's this is Sixteenth Section Land.

SS: Oh.

DB: See, that's an elementary school right across the street over there.

SS: Yeah.

DB: Part of the deal is that we got such a good deal on running this property. From time to time, we have to host field days for the school kids.

SS: Ah, that's great.

DB: We don't do formal education, but we do sometimes work with youth groups.

SS: What would be some examples of those programs?

DB: We have a program we call Living Shorelines that I'm talking about strictly for my area of expertise now, which I'm more familiar with.

SS: Yeah.

DB: But we have for example, a program called Living Shorelines that we teach people alternatives to traditional vertical bulkheading along waterfront properties.

SS: U-hum.

DB: That bulkheads look pretty, but they tend to reflect wave energy, they cause more erosion over the longhand, and they don't provide very good wildlife habitat.

SS: Right.

DB: Typically, when you install a bulkhead you're converting a transition zone from an upland to the water's edge, and you're reducing habitat. So, there are alternatives that we call living shorelines to use in place of vertical bulkheads that are not as expensive. We'll do a workshop for homeowners and we'll, or we might, do a demonstration project somewhere. We say look, you can achieve --. If your goal is to minimize erosion, or loss, on your property due either to wave action or rainfall washing your property away, there are ways you can do this that serves that purpose while at the same time, provides habitat. Oyster shell is a good example. These core mats that are made from copper coconut fibers that, in time, will degrade but while they are there, they provide substrate from like the attachment of fouling organisms like barnacles and stuff. See, these vertical bulkheads there tend to be treated so that wood will last they're treated with --.

SS: Arsenic?

DB: Yeah, well, it's hard to find arsenic anymore but they're pressure treated in so it's not good. Not good for the, uh. But that's just an example.

SS: Do people paint them with what do they call it? Antifouling paint which is the foulest paint you could ever --

DB: Yeah, right. Yeah.

SS: -- think of? [laughing]

DB: Yeah, no, you usually pay the premium for the wood so that you don't have to use antifouling paint.

SS: Now, just for the record, can you define bulkhead?

DB: Well, the bulkhead as opposed to a jetty. Bulkhead tends to run parallel with the perimeter of the land, are parallel with the interface of the land with the water. When we talk about vertical bulkhead, we're talking about a vertical structure that starts right where the land and the water

interface is. Some people will call, you've heard the term jetties or breakwaters, those all have specific meanings. But a bulkhead tends to be the most landward portion of any shore protections, structure along the property.

SS: So, does it necessarily go at any angle to the land?

DB: Generally, will follow the trend of the shoreline.

SS: Okay.

DB: In fact, the law states that if you want to put one in, that's what you have to do. You can only vary where you can't make land. You can't build them. Here's the end of your property. You can't put a bulkhead out here and then come in here with fill.

SS: Right.

DB: And all of a sudden, your property got bigger. Yeah, there're guidelines in law about how they can be installed. But we try to get people to look in and out. In some cases, we have to get State laws in Alabama, we had to get the State law changed to allow people to place certain materials in lieu of these vertical bulkheads.

SS: Hmm.

DB: Because, for example, if they were to put concrete boulders and stuff where there was a provision against that, in this old law, the Rivers and Harbors Act that you couldn't put unauthorized materials, fills. And this wasn't one of the --. The law was written for protecting their shorelines over there. That if it wasn't specifically included in the law, then it wasn't legal.

SS: Ahh.

DB: We had to get the law –

SS: That's a lot of stuff.

DB: -- to allow because now they've got companies that make their livings off of these structures that are designed as wave attenuators. What you do is you put this thing that sort of breaks up the wave energy offshore, that sits on the bottom, and sort of a pyramid shape looking concrete that can be biofouled. Then what you do is you go behind that, now that you reduce the wave energy, and you replant that area with marsh vegetation.

SS: Wow.

DB: That's what they're doing on Deer Island now.

SS: Great.

DB: Yeah. So that's an example of what some of the end course work I told you before with the web, we're doing with [GEER], our electronic logbook program.

SS: Mm.

DB: Since a very large percentage of our fishermen are Vietnamese here along the coast, I have a Vietnamese fellow that works for me that he's one of the guys that didn't make it through the economic downturn. He used to run a great big offshore 100-footer shrimp boat. He knows that end of the business plus he has English and Vietnamese language, not only language but cultural skills. I learned a lot.

SS: Yeah.

DB: I asked, I was just joking with him one day when we were having lunch. I said, Peter, how do you say pretty woman in Vietnamese? And he says, it depends on how old she is. He says, in my culture, an older woman gets more respect than a younger woman.

SS: So, you might not --

DB: So, you wouldn't say you would even use the same term.

SS: Oh.

DB: I said [laughter] Peter, I was just saying that she was good looking [laughter] that's all. So, but it's like that.

SS: Yeah.

DB: They're real big, for example, here a week ago, he came and he said, he gave me this little red and gold envelope and he said, "Happy New Year".

SS: Yeah.

DB: They're real big on the Chinese New Year.

SS: We just put a little exhibit up at the golf cart on campus.

DB: I saw that.

SS: Did you?

DB: I saw that. I sure did. In fact, Peter knows and when I have pictures from that exhibit some of that Tim Isabel's photos and stuff. He knows all these people. That's one thing about Peter, he's plugged into the community.

SS: Right, yeah.

DB: He's related to everybody.

SS: Yeah.

DB: He said, "Oh, that my cousin". [laughter]

SS: Yeah.

DB: In fact, I was there. I was at a meeting on this limited entry we talked about earlier about reducing the amount of people that can participate in the fishery. They had it at the auditorium there. I had to walk over that little bridge across the bayou there at the golf park campus, and I saw the signs for that exhibit. Yeah. And I said that I'd better see that. I was early for the meeting. So, I went.

SS: That's a nice Smithsonian exhibit too.

DB: Yeah.

SS: Very nice. We're closing in on five o'clock. I've got five till. Is there time to wrap it up?

DB: It's up to you. You're the one that's got, I got ten minutes to home. You got to drive back to Hattiesburg.

SS: Okay. Well, I didn't know if we had to be concerned about getting out of a locked building.

DB: No. I've got --

SS: You've got the key?

DB: I know how to set the alarm.

SS: All right, great. We talked about the kinds of turtles found in the Gulf of Mexico. I was curious about anaerobic respiration. I read that some sea turtles are capable of anaerobic respiration, which also means respiration without oxygen. Why wouldn't that prevent them from drowning in nets?

DB: We talked about this earlier. I'm not a sea turtle biologist in that, and I saw that in your list of questions that anaerobic respiration. From what I knew, I knew that they could slow their body processes down much as the same as a mammal does when it goes into hibernation. And for that reason, they can spend twelve hours underwater.

SS: Yeah.



DB: And in fact, divers have reported seeing them, what they'll do is, I've always been amazed that the, we have a relatively small tidal range here in the Gulf average is about two feet, but the currents are really strong offshore.

SS: Okay.

DB: I've seen it. In order to combat these currents along the bottom, the divers reported seeing the sea turtles and they sort of wrap their flippers around parts of the rigs out offshore to kind of wedge themselves in so that they don't have to spend any energy fighting the currents. He said, they'll see them sleeping. And they said, we've seen turtles, they go down with either saturation diving or compressed air where they don't have to worry about decompression, and they can they work in shifts just like you and I would go to work eight hours. They work eight hours when there's repairs that have to be done on the rig. And guys have told me that do that type of work, that I've seen the same turtle in the same place for eight hours since I was when I went to work down there. So, I know they can hold their breath for at least eight hours.

SS: Yeah, yeah.

DB: They said, and I know that there wasn't anything wrong with that turtle because when I went back the next day he wasn't there anymore.

SS: Right? So maybe it's the stress.

DB: Yeah.

SS: They feel that they're caught and they're not about to go to sleep.

DB: Yeah. I know that turtles have gotten drowned in trawls. I can imagine that it can happen. The thing is, I don't know what speed a turtle normally swims. I have been fortunate enough to dive with, in areas where there are sea turtles. They don't have any fear of humans, and they don't, but they don't seem to move real, real fast.

SS: Yeah.

DB: But a shrimp trawl goes to the water about three knots. That's about three and a half miles an hour.

SS: Okay.

DB: That's pretty fast.

SS: U-hum.

DB: That's a fast, fast, it's a fast walking speed as fast as you can walk without breaking into a jog on a treadmill.

SS: I can't swim that fast.

DB: No, no, no.

SS: Yeah.

DB: As fast as you could walk without actually breaking into a jog on a treadmill is about four miles an hour.

SS: U-hum.

DB: That's how fast that trawl's moving. When we dive on these trawls to do the photography and do the die studies. We have to wear special masks that are fit your face really closely.

SS: Yeah.

DB: Because if you would happen to be holding on to that net and turning your head sideways, the water pressure would take your mask off.

SS: You're holding the net, because that's the only way you can keep up with the --. Yeah.

DB: Yeah, you can't swim that fast. When you go that, what we have to do is we take a boat back, we put it in front of the net, and we dive right down, and we try to be where the net is going to be when it gets there and we latch on.

SS: Amazing. Have you ever lost anybody who lost their grip?

DB: We've got guys that swim all the way through the nets. Actually, started the run just like they would be a turtle and swim through stuff.

SS: It sounds like fun.

DB: [laughter] The first time you get down because, you think about what must be going through a turtle's mind. You could think, gee, you know I could die out here.

SS: Right. Yeah, sure.

DB: But you know you're never doing it by yourself. There're always people there.

SS: Yeah.

DB: Working with you.

SS: That's a cardinal rule.

DB: We got all sorts of video footage.

SS: If you can spare any, you might think about archiving something with the Museum of the Maritime Museum.

DB: Yeah.

SS: I think Robin would love to have something like that.

DB: Yeah. And I'd like to check with her because I know at one time I thought, Schultz, Tommy [Thomas] Schultz who you got to speak with was on the Board of that museum and he either has or had access to the same stuff that I have.

SS: Okay.

DB: With any extra copies and stuff like that, that I have. Yeah, that would be a good use for that.

SS: I'm going to mention to her that you have some artifacts –

DB: Yeah.

SS: -- in terms of films.

DB: Yeah.

SS: Just so she can check that out with you if she wants to. I know they lost --.

DB: I have, this shows you how back far they go. They're videotapes VHS tapes. [laughter] Nowadays everything comes on DVD.

SS: Yeah. They could migrate.

DB: But there may be and I think DVD would be a more permanent medium?

SS: They can they can migrate it. Or, somebody can.

DB: Yeah, I'm thinking that you can take to probably any of these camera shops. In fact, I've seen them advertised. Take your home movies and put them on disk.

SS: Yeah.

DB: Yeah. So, we could get that done.

SS: It's interesting to have it in more than one format, you know, because just the VHS itself will be an article. [laughter]

DB: Some of this stuff though. Some of this stuff that I have is non-narrated raw footage of, --. All it is is people swimming around on a net on the water.

SS: That's okay.

DB: There's no, what's that guy with that deep bass voice? [laughter] You know, that does all the narrations? [laughter] You know, who I'm talking about?

SS: Oh, gosh, yeah.

DB: The black guy. I can't think of his name.

SS: Oh.

DB: But anyway, yeah,

SS: Yeah, wasn't he Darth Vader. That's all I can [inaudible].

DB: Yeah, yeah. But there's no narration of what's going on in there.

SS: Right.

DB: And it's like, for example, that one of that I have of the dolphins taking the fish out of the bite of the birds.

SS: Yeah.

DB: That's all that is, it's just that we mounted a camera on the net, there wasn't even a diver because the diver would have kept the dolphin from doing their natural reacting. They would have reacted to the fact that the diver was in the water. In this case, we affixed the camera to the net, aimed at that, where that hole was in the net where the bite. It was a low light fast action camera, so we could get it at night. Sure enough, you'd be wrong and all of a sudden here comes this old dolphin. [laughter] But all it is, is you can hear the noise of the trawl going through the water.

SS: Wow.

DB: But that's it.

SS: Yeah.

DB: Other than that, it's just like raw footage.

SS: Well, --.

DB: It's kind of stuff I have.

SS: It would be fun to dub something in like Flipper. [laughter]

DB: Yeah.

SS: Just kidding. You know, I was thinking when you were talking about the cameras that at some point in the future, it might be feasible to just have cameras, so that whoever's sitting on deck in their shrimp boat can see what's in the net.

DB: Well, a lot of your big high dollar fisheries here, midwater trawl fisheries, they have. They've got equipment now that it estimates biomass in the net.

SS: Oh.

DB: What it is, it's this, I mean --. We've used some of this equipment it's called Simrad Equipment [inaudible]; where you actually mount sensors on each of the trawl doors and on the head rope, in the foot rope of the trawl. First of all, it gives you a profile of what the net looks like. It also, you'll see this little chart on this, but this little bar on the side it's doing the count of every organism passes through this electric eye beam, and it keeps track, and that gives you an idea of what the, I mean--they've got them.

SS: Okay with biomass, which, you know these are a lot of little things and this is one big thing?

DB: Well, you know what you're targeting your catch on. Based on what you know from other gear. They have sonar.

SS: Yeah.

DB: A savvy fishermen can look at what to you and I would look like a red and a blue blob on there.

SS: U-hum.

DB: And he said, that's a blue fish. That's a mackerel.

SS: Yeah.

DB: Because the echo response that the fish shows only is based on the size of the swim bladder, and all that.

SS: Oh.

DB: But fishermen that just been doing it for years and years and years, can look at what, like I said, look like to you and me a yellow thing and he could say, well, that's a blue fish.

SS: Yeah. But this is not stuff you're going to find in the Mississippi Sound with these mid-range boats or smaller.

DB: Some of these shrimp boats are pretty sophisticated.

SS: Even the little ones and the middle sized?

DB: Most every shrimp boat now uses the computer.

SS: Ahah.

DB: Even though one [inaudible] and they use a program called PC Wind Plot. The problem when dragging a trawl [pause] out there. Anywhere.

SS: Yeah.

DB: Is that you've got a net that you're dragging along the bottom. People don't realize just how much crap is out there on that bottom that you do not want to catch, or hang.

SS: Hang. Yeah.

DB: You can't even, you can't catch it. It'll tear your net up.

SS: Yeah.

DB: It could be it could be any number of things. So, the fishermen have what they call a hang log.

SS: Hmm.

DB: And they have the exact location where all this crap is out there on the bottom and there is a lot of it. They know for example, if they go out here, they know that they can drag like this, and they'll miss all this stuff.

SS: Right.

DB: So, this program on the computer shows as blue boat on there, because it's getting real time. Just like if you have a GPS navigator in your car shows where the boat is on this computer screen. On their screen, they know where the lat/long coordinates of all of these hangs.

SS: Yeah.

DB: Either they have personally found them or they got them from their buddies. Don't go here. There's something here, we don't know what it is but you don't want to catch it. Put all those in. When you look at this nautical chart, it's got all these x's on it, that shows them where all the stuff now they know where they can drag. So, they steer every one, every. It's beyond what the

average boat owner has to navigate with on their own boats with everybody's got a GPS nowadays.

SS: Right.

DB: But not only do these guys need to know where we're Chandeleur Island is and where Ship Island is and where the dock; how do I get back to the dock? They need to know what's on the bottom.

SS: Yeah.

DB: That's prime importance to them.

SS: Yeah.

DB: So that's why they that's the program is called P-C-P just plain P-S-E-A. Win Plot W-I-N-P-L-O-T two. You mentioned all of them got at least have that.

SS: Wow.

DB: They all have at least double of most everything else, two radios. They have radar, they got to have that because they work at night most of the time. They have good depth finders.

SS: Good grief the technology is astounding.

DB: I mean all. That's all. That's any boat.

SS: But fifty years ago.

DB: Fifty years ago, they used some Oxbow soap on a piece of lead on a rope. And they threw it overboard and the old timers when they when it came up that soap would grab whatever there was on the bottom. First of all, it would tell them how deep it was.

SS: Yeah.

DB: And then looking at this material off the bottom that soap would grab when it hit the bottom, it could tell you about where they were. [laughter]

SS: It was in their head.

DB: Some of the pioneers we have one that just passed away. You mention the name Joe [Rocks] to any of these folks. He'd been around forever.

SS: Aww.

DB: He passed away a couple of years ago. He started out; the places they used to go in his little boats. I mean, there was a time thirty years ago when a fifty-foot boat, that was a big boat.

SS: Right.

DB: That was big.

SS: Yeah.

DB: But they would go that's considered a small boat these days, they would go off shore thirty forty miles in these little boats and all they had was a compass. They were lucky.

SS: Yeah.

DB: And they would get back and they would find the strength.

SS: Wow, it's amazing. Well, in your opinion, does bottom trawling harm the ecosystem of the Gulf of Mexico?

DB: No. The reason I say that is that the Gulf is where the shrimp is produced. Is by and large most everywhere in the Gulf but particularly what is it's not like a clear pristine water like you see in the Caribbean, something like that.

SS: Right.

DB: So, you don't have the assemblages of things like soft corals and stuff like that.

SS: Okay.

DB: The fishermen --. So, the seagrass beds, where there potentially could be a problem with bottom trawling are limited to zones where the sunlight will penetrate deep enough to allow seagrass growth, which is not very deep, and fishermen don't work in those shallow waters. So, by and large, if you've ever been out there diving, in that Gulf, it's pretty much; it's like a pretty big vast wasteland on that bottom. It's like a sandy, muddy, nothing, with the exception of the [heggs], we talked about.

SS: Right, yeah.

DB: Then of course within the fishermen they've been impacted by this over the past several years. And more, and more, of this with this whole area, this entire area, out there off the river, the dead zone.

SS: Yeah, what is the dead zone?

DB: That is, people think that out of the Corn Belt, what we do, we get an excess supply of nutrients that come down at Mississippi River.



SS: Okay.

DB: Probably from mostly from agricultural production practices. What it causes, it causes a phytoplankton bloom and then the subsequent die off and the bacteria that feed upon the dead phytoplankton create hypoxic conditions.

SS: Wow.

DB: And in some years, it's larger than others and it's really directly correlated to the river flow. It's correlated to the types of crops that are being grown in places like Iowa stuff. Now nowadays, we see more and more people going to corn because of the ethanol and gasoline.

SS: Yeah. So, is it the fertilized that runs down?

DB: Well, that's that too, but it also effluent from sewage treatment plants. You know, that you think about that, that Mississippi River and the amount of the cut this country that it drains? So, basically, we're sort of kind of sitting here at the cloaca of the nation? [laughter]

SS: Yeah.

DB: When you look, I mean, --.

SS: Or at least a cesspool.

DB: The Mississippi River drains 70% of the Continental United States. So, it's not just agricultural production, but that's kind of the big contributor. But anything, anything that has phosphates in it. But anyway, that's kind of the theory. And when we have, and fishermen will tell you, there are, you can't get anything in there. There's no shrimp, there's no fish.

SS: For the record, what are hypoxic conditions?

DB: That's when there is not enough oxygen to support life.

SS: And does it seem to be growing?

DB: It fluctuates from year to year. But the average size, the trend has been for it to get larger. Last year, it wasn't as small, it wasn't as large as they thought it was going to be. You remember last year, we had drought conditions.

SS: U-hum. Not as much drainage.

DB: Well, we had drought conditions locally. We may not have had that in the --, but there also, there are some oceanographic conditions that have to be in place for this also to be more of a widespread event. If you remember last year, we had Gustaf we had several other, we had that we had one real late, I can't remember the name of it. We had a doggone storm in December of

last year. But anyway, all of that, that tends to mix up the water column. And keep those stratified hypoxic conditions, it mitigates them somewhat. The storms and the ocean currents, they all play into the size of this thing too. But it has extended over as far as off of our waters here from time to time. And fishermen will tell you and say man, we just don't go there. You can't catch anything.

SS: Wow. I mean, it could, it would be catastrophic. If it just kept expanding and expanding.

DB: Yeah. But the trend is not, hasn't been for expand. It's like say a lot of things have to be just right for it to you know, but it's there.

SS: Yeah.

DB: People have made their entire careers on studying it.

SS: Yeah.

DB: There's this lady by the name of Nancy Rabalais us over at LSU. She's kind of the guru on the hypoxics.

SS: Wow.

DB: For a lot of grad school grad students to [laughter] do their dissertation and stuff.

SS: Good. How do you define a water column?

DB: From the surface to the bottom.

SS: So, there's only one water column? It's not stratified?

DB: Well, a water column is the entire region from the surface to the bottom.

SS: U-hum.

DB: But it can be stratified. In fact, we have these situations. Mobile Bay is famous for them. Have you ever heard of a Jubilee?

SS: Yes.

DB: That's what causes that, offshore breezes. It has to be set up good [inaudible]. The meteorological conditions have to be just right. But definitely what it is, is often slight offshore breezes that there's no mixing of the water. What happens is that with time with the water without any wave action, all of the suspended solids and nutrients, and stuff settle out to the bottom and the same situation takes place in, as it does in the hypoxic zone; is that that becomes an oxygen depleted zone then what happens, that stratified. This layer above it is lighter, typically the fresh water wedge you know when you're talking in estuaries like that. Then what

happens they'll get an offshore breeze and then raise above this water offshore. This water comes up and takes its place and that's why you've heard tales, the fish actually beach themselves.

SS: They're trying to get out of there.

DB: They're trying to get away from this water that they can't breathe in.

SS: Wow.

DB: And then the locals called it Jubilee because the old timers they used to go along and pick up dinner.

SS: Right, yeah.

DB: There's nothing wrong with these fish they're just --, or crabs, and everything.

SS: They're actually –

DB: That's the same thing as hypoxic conditions and that is stratification.

SS: Okay. Sounds like a natural phenomenon.

DB: It has to be a certain, yeah it is, it's not, it's been going on from years and years. The Indians tell tales about, they didn't call it a Jubilee, but it's the same thing at certain times they could go pick up things along the shoreline.

SS: Yeah. [pause] I think we touched on this one too. Alternatives in addition to TEDs that might mitigate harm done to turtles by shrimping. Are there other methods of catching shrimp besides bottom trawling that might not be as damaging?

DB: We'd looked at, we had a study one time looking at the potential for a pot fishery, a trap fishery.

SS: Uhuh.

DB: We know that in our freshwater rivers that they, here in Mississippi, they catch this freshwater shrimp. It's called *Macrobrachium ohione* and they usually catch it for bait.

SS: Okay.

DB: But and we know on the West Coast that they do have a commercial scale prawn fishery using pots.

SS: Wow.

DB: Because these prawns tend to inhabit really rocky bottom where you can never pull a trawl.

SS: Okay.

DB: So, we tried up here.

SS: Uhuh.

DB: We got some cooperating fishermen to help us with it. And we never could get the shrimp to go in and stay in the trap. Now we knew that shrimp were there and we tried several different baits. We tried Menhaden and cottonseed meal and several different. The reason we knew the shrimp were there, in the area where we had our pots, we threw cast net and caught shrimp so we knew they were shrimp there, but we never could catch them in those pots.

SS: Are the parts on the bottom or they on multi-levels?

DB: They are on the bottom, they're on the bottom.

SS: Okay.

DB: Shrimp are caught on the bottom.

SS: I knew that brown shrimp were.

DB: By and large, white shrimp tend to be caught up higher in the in the water column. But brown shrimp, in particular, are caught, that's the reason had this thing on a net. It's called a tickler chain. And it's a little chain that rides along in front of the foot rope. And what it does, exactly what it says it does, it, kind of stimulates the bottom and gets those shrimp. If you ever reach into a bucket of bait shrimp and tried to grab one how they popped backwards.

SS: Right, yeah.

DB: That's what they're doing out on the bottom. The idea is they pop out of the bottom and then the foot rope in the neck goes, while they're up in the air, that sweeps underneath them. And we just never, we've done it here. They've done extensive studies in North Carolina in the sounds. Because see, we thought if we could get that to work, that would be an option that was less fuel intensive for somebody like a bait shrimp fisherman who would go out there and run pots just like you would run crab pots. He would harvest those shrimp, live, because they were alive when they come out and sell them for bait. We never could get it to work to my knowledge. Nobody could ever get that pot fishery to work. So, the shrimp pretty much they're going to be harvested by otter trawl. Now there are some things that can be done to the otter trawls that we're working on to make them more efficient in terms of how easy they are to pull to the water and that type of thing.

SS: U-hum.

DB: There are some other gears that are working in shallow water. Things like butterfly rigs and skimmer nets.

SS: And do those use boats?

DB: Yeah, those use boats. There are, there used to be a fishery where they used to have in areas and narrow passes where there was a lot of tidal flow, they would actually put a net out there and let the tide rush through the net and catch them that way.

SS: So, would that be outgoing?

DB: Yeah, well, [both thighs]

SS: They could go, do it either way?

DB: [Both thighs], yeah either way.

SS: Okay.

DB: And they used to fish like that off of some of the bridges in Florida. But to my knowledge, I think that those stationary fixed nets have pretty much gone by the wayside. Mostly from regulatory perspective.

SS: There wouldn't be much way to regulate bycatch would there?

DB: I don't know, I guess it's just one of those things a lot of people just don't do it anymore.

SS: Yeah.

DB: So, in terms of helping the turtles, the industry, it's savvy about what to do in the event that they do. In spite of everything else catching turtles. But the other thing that and I can't stress this enough is that the industry has been an active partner in these beach programs. And also, in getting the word out, that, for example, they're on the east coast of Florida, not too far from where we used to go out to Canaveral to do these tests. Condominium associations have rules about when you can have your lights on, –

SS: Oh, that's great.

DB: -- how bright your lights can be, because they don't confuse the turtles from that type of thing.

SS: Okay, so for the record, what happens when turtles are confused by lights?

DB: They travel towards the light. So, they think –

SS: The hatchlings?

DB: Yeah. So instead of going to the ocean, they head across the road.

SS: Yeah.

DB: Typically, you'll see the hatchling will come out, usually on a moonlit night.

SS: Hmm.

DB: They kind of use that as guidance, which I think is probably the worst thing in the world they could do, because then there's more visible, they ought to come out in just as dark [laughter] as it could be and kind of stealth their way into the water. [laughter]

SS: It's not very adaptive. I also read somewhere I can't remember where, that it didn't help a lot to take the hatchlings and just let them go on the water that there was something about actually crawling to the waves that was good for them and not being able to do that was bad for them.

DB: I'm not sure about that. But I know that for a while, a long while it was a mystery where these little baby turtles spent the first two to three years of their lives.

SS: They're so vulnerable.

DB: Yeah. And we're learning at least some of them. If you've ever been anywhere offshore, and that Gulf in a boat, you'll see these big floating patches of sargassum, seaweed.

SS: I've read about them.

DB: They find that these turtles are so it gives them cover.

SS: Yeah.

DB: It gives them, they got food source.

SS: Yeah.

DB: They find that some of them, at least, are associated with these weed [inaudible] patches.

SS: They're swimming underneath them, or crawling into them?

DB: Actually, just riding along in it because that is kind of its own little micro ecosystem, that big weed patch.

SS: U-hum.

DB: So that's speculation. Some speculation about they know that some of these species of turtles routinely cross oceans.

SS: U-hum.

DB: The green turtles, they've tagged these things on, off the coast of Baja, California, and they found it from there in the Hawaiian Islands.

SS: U-hum.

DB: So, they're, they're still learning.

SS: It's their full-time job. [laughter] Swimming in the ocean. I saw, I got some of this information from Wikipedia, which is not the best source in the world. But there was this interesting photograph of people in Belgium on horseback, so there were these two horses and they're walking through the water pulling a net.

DB: Yeah.

SS: They were shrimping. And I believe that around the turn of the century 1890's to 1900's people actually waded the shallows of the Gulf of Mexico.

DB: Yeah, they've use beach sayings here.

SS: Yeah.

DB: Some of the old timers will tell you that's how they used beach sayings before they invented the use of otter trawls. They pull nets with these luggers, these sailboats.

SS: Right.

DB: And the other thing that they did, they used to be they never caught brown shrimp. There was no brown shrimp.

SS: Yeah,

DB: That was looked down on as that was --.

SS: Where those trash fish?

DB: Yeah, there was no --. They knew they were there but here was no market for them.

SS: Yeah.

DB: The shrimp fishery, then really only operated in a relatively small amount of the year, as opposed to right now it operates year-round. We have a shrimp season in Mississippi that starts usually the first week, or two, in June in our inshore waters. Typically, they'll run through December, when the shrimp come. But in the offshore fishery, they produce shrimp year-round.

SS: Okay.

DB: Those boats. The only thing is because most of the offshore fleet now most of the fishing power is in the Vietnamese.

SS: Is that right, most of the offshore?

DB: Yeah. They'll they typically will come in over the Christmas holidays through the Chinese New Year. They're in right now. They probably won't start working again until, well, this year's been a little unusual, because we've had such a colder than normal.

SS: Yeah.

DB: Usually when that water temperature hits about 70 degrees, that's kind of the magic number for when the pink shrimp show up.

SS: Okay.

DB: That's when they'll start working. And then they'll just continue to work right year on year-round until about Christmas.

SS: Yeah.

DB: There's fresh shrimp being produced, continuously.

SS: U-hum.

DB: It's just what people think about. When we going to come down and buy shrimp? People that buy shrimp off the boats, I tell them to come down, during shrimp season, because those are the boats that are going to go out and make one or two nights and come back in and have fresh shrimp.

SS: Right, yeah.

DB: Those offshore boats, they stay out month at a time.

SS: Yeah. They're going to freeze them?

DB: That's right.

SS: I read that midwater trawling is relatively benign compared to bottom trawling. Do you agree or disagree with that?

DB: I think whether it's a midwater trawl, or bottom trawl, there, they both can be equally dangerous to sea turtles. If the sea turtles are there. See, we don't have in our area, a real big in



the Gulf. There's not much midwater trawling, there's some. There's some small butterflyfish production going on and some, but not on a large scale, not like you see on the east coast.

SS: U-hum.

DB: So, it hasn't been an issue for us.

SS: Right.

DB: But I do know that they are requiring, they're going to require the use of these turtle excluder devices. And in fact, I saw one prototype of one that was developed for midwater trawl, over at NIMS in Pascagoula.

SS: Hmm.

DB: And it was designed to be sort of flexible because these midwater trawls are so huge. They roll them up on these net reels on the back of the boats. And this thing was designed so they could be rolled up with the net, this particular.

SS: Okay.

DB: Since turtles are all throughout the water column, here we go water column again, but the bottom and the top that's come to top [inaudible].

SS: Right.

DB: Since and who knows how much time they spend where in that water column, whether it's a bottom trawl, or midwater trawl is less of an issue as to whether or not there are a number of turtles in there.

SS: Right.

DB: We found out for example, in leatherbacks big time down that Atlantic seaboard they got a lot more leatherbacks and we have here.

SS: Now so, the East Coast at this point in time doesn't have to have TEDs?

DB: Yeah.

SS: They do have to have TEDs.

DB: All the all the shrimp fisheries have to have TEDs.

SS: Okay.

DB: Their finfish fisheries, flounder fishery they have to have TEDs. And I'm pretty sure that the midwater trawl fisheries the ones that have to have TEDs.

SS: Okay.

DB: The ones off of, at least off the Mid Atlantic like North Carolina, that area where there's, they have some what they call flynet fisheries. We don't have that much. Our big fisheries in the Gulf are: we have long line fishery, the shrimp fish fishery, of course, of course our oyster industry.

SS: U-hum.

DB: Oysters, of course. Oysters don't back turtles.

SS: They don't? Oysters are gotten with what like – teeth?

DB: Well, they have tongs and they also have oyster dredges.

SS: Dredges.

DB: Which are like teeth but they're small and they don't pull them very long. The oyster reefs although, some species of turtles do feed on oysters among other things.

SS: Do they?

DB: Yeah. They're not pretty, not very picky about what they eat.

SS: Well damn oysters are --

DB: They find them with plastic bags in their stomachs.

SS: Oh, I know, but they think they're jellyfish.

DB: Yeah, they think they're jellyfish.

SS: Do we in the, Gulf of Mexico, do we have cod, squid, halibut, and rockfish?

DB: No.

SS: No?

DB: No.

SS: Okay. Those are supposed to be caught with midwater trawling.

DB: Right.

SS: I think you'd mentioned the depths that shrimpers trawling the Gulf of Mexico already. And we talked about the dead zone. Are there coral reefs in the Gulf of Mexico?

DB: Yep, yep.

SS: Okay.

DB: There's a big marine preserve off of Texas called the Flower Garden Banks.

SS: Wow.

DB: And of course, everybody knows about the reefs off of the Florida Keys and throughout the Gulf.

SS: Pennekamp.

DB: Yeah.

SS: The Pennekamp.

DB: And there's and we actually have some what we call live bottom off of Alabama, and called The Pinnacles it's limestone outcroppings. Yeah, we have we have a lot of them, well not a lot, but we do have coral reefs.

SS: So, does anybody trawl over those or is that forbidden?

DB: No, no. Typically, you don't find shrimp associated with that habitat, anyway. Shrimp are bore creatures of a soft sandy mud bottom.

SS: Okay.

DB: They like to be able to burrow up.

SS: Okay. What kind of sea vegetation is on the floor of the Gulf of Mexico?

DB: I'm not an expert on seaweed. [laughter] But we have, we do have one of these types of seaweeds that fishermen cut. They call it sauerkraut grass that sometimes becomes problematic. It gets to be in such large numbers out there on the ground.

SS: So, they're just, what are they filling the nets?

DB: Yeah. Oh, yeah. It fills the nets, and it sticks to them and you have to shake them out on the edge. And it's a mess.

SS: Yeah.

DB: But there's several in our in our shallow water areas with, that are clear enough that allow sunlight penetration. We have several different species of sea grasses.

SS: Oh, really?

DB: Yeah. But none of those are impacted by the trawl fishing because trawl fishes in murky waters. Where you have this nice clear water, you know, it's kind of a juxtaposition where we go to film these turtle excluder devices where we have enough visibility to be able to film, you would never catch a shrimp. [laughter] But we're dragging along anyway.

SS: Yeah.

DB: But I can say I have some footage of actual, during actual shrimp operating operation with a low light camera and the picture quality is not that good because of the murkiness of the water.

SS: Yeah.

DB: But I'm not, that's not up to speed on that exact species. I know we have one. But I know from time to time, the fishermen talk about the grass being tough.

SS: U-hum.

DB: And there's another, it's a ribbon grass that they catch sometimes they get, get into it real thick. I'm talking about from the fishermen's perspective now, fishermen call it guts [laughter], because that's what it looks like. It looks like intestines. It's kind of a flat black, cylindrical looking and from time to time, it gets thick. And you'll hear him talking to one another radio, yeah, the guts is thick. [laughter]. That's what they call it.

SS: Interesting.

DB: I don't know what the real scientific name for it but the fishermen know can tell you what sauerkraut is, and guts.

SS: Oh, well, I'm going to ask them about sauerkraut and guts. I have to make a note here. Ask fishermen about this, because I've only interviewed one shrimper. So, I've got several more than to go. Well, the last question that we'd like to wrap up with is this question. Is there anything that we haven't talked about today that you'd like to put on the record?

DB: I don't think so. [laughter] In fact, I don't envy the person who will have to go through and edit this to get the meaningful comments [laughter] away from the digressions.

SS: Digressions are meaningful.

DB: Yeah.

SS: Well, in that case, I want to say thank you very much for giving me the time.

DB: And I'll fill this up and send this back to you.

SS: Okay.