

Stephanie Scull-DeArme: And it seems like it is working. This is an interview for the Maritime and Seafood Industry Museum and the University of Southern Mississippi. The interview is with Debby Crouse, and it is taking place on June 12, 2010. I am the interviewer, Stephanie Scull-DeArme. First, I'd like to thank you, Debby, for taking time to talk with me today and ask you, for the record, could you state your name, please?

Deborah Crouse: Deborah Crouse. I go by Debby.

SSD: For the record, how do you spell it?

DC: Deborah is D-E-B-O-R-A-H. Crouse is C-R-O-U-S-E.

SSD: Thank you. And when were you born?

DC: I was born in 1950 – a long time ago – July.

SSD: Where were you born?

DC: In Massachusetts.

SSD: What city?

DC: Amherst.

SSD: I bet Amherst was beautiful in your childhood.

DC: We didn't live there long enough for me to recognize it. [laughter]

SSD: Oh, too bad.

DC: My father was a graduate student, and we left when I was only about a year old.

SSD: What is your current position?

DC: I am a biologist with the US Fish and Wildlife Service, in their headquarters endangered species program.

SSD: Can you give us a brief description of what you do?

DC: What I do here is I work primarily on policy issues related to how to better recover any and all listed endangered and threatened species.

SSD: Is that for the whole federal big picture?

DC: It's for the entire Fish and Wildlife Service. Now, there is – we cover all terrestrial species, and all freshwater species, and all marine birds. The National Marine Fisheries Service covers

most marine species other than that, except there are a few species, like sea turtles, where we have joint jurisdiction, and so the National Marine Fisheries Service is responsible for sea turtles while they're in the water, and Fish and Wildlife Service while they are on land.

SSD: That's pretty interesting. Do you guys engage jointly ever – have a joint effort at the same time?

DC: Absolutely. Yes, frequently.

SSD: Great. Well, let's dive into these questions that the museum wants answered since they funded the project. If you have time, I'd like to get into the questions about your childhood and your choice of your career path. And also – this is kind of blindsiding you – I didn't ask you if you'd be willing to comment on it, but at the end of the interview, maybe you could make some comment about the BP oil spill.

DC: I thought that might happen.

SSD: Which I think is a euphemism – oil spill. It's an ecological disaster.

DC: Absolutely.

SSD: It just keeps getting worse every time I turn on the television or look on the Internet.

DC: Right.

SSD: I'm sixty miles north of the Gulf of Mexico, and I grew up right on the Gulf of Mexico. I was a beach brat, and it's breaking my heart to see those animals down there.

DC: I'm sure. It must be really, really hard for you.

SSD: Yes. Well, the number one question for the museum is why are TEDs [turtle excluder device] necessary?

DC: Well, TEDs are necessary because the most effective way to recover any endangered or threatened species is to identify and eliminate or reduce the threats that caused its endangerment. Otherwise, if you don't do that, you might increase a population somewhat, but those threats are still out there acting, and they will come back and reduce it with time. So a lot of data was accumulated over several decades that indicated that one of the major threats to multiple species of listed endangered or threatened sea turtles was drowning in shrimp trawls and that it was a significant enough threat that, even if you were to try and, say, protect all nests and eggs on the beach, you were not likely to be able to recover the species because losing larger animals was so significant to the population – reproductive type animals. So the concept of TEDs was to find a way to allow shrimping to continue, but in such a way that it released turtles unharmed in the process.

SSD: I know from other interviews that one of the first considerations was just to close the shrimping grounds. I think that the shrimpers I have talked to – maybe one or two of them understood how serious it was and that the TEDs were allowing them to keep their livelihood. But I don't think that a lot of them really understood that they could have lost their shrimping grounds. Do you remember when that was a consideration?

DC: Yes. I first became deeply involved in this around 1982 or so. And so, the concept of turtle excluder devices was already around at that point. And that was the primary thrust. But there were clearly some people in various arenas who still thought that the best way to go was to close certain areas at certain times.

SSD: Did any of the –?

DC: I was just going to say I was aware of that, but it was not, I think, the primary aim of most people by the time I became involved.

SSD: Did any of the grounds actually undergo closings?

DC: I think there were some short-term emergency closures in some areas. But to my knowledge, no grounds were closed like this – you will never be able to shrimp here again.

SSD: Was it hard to defeat the party that wanted to close the grounds? Was there any kind of memorable controversy or confrontation about that?

DC: I suspect there were. But as I say, I didn't become involved until about '82, and I had no interactions with people with that bent.

SSD: The second question – what actions did conservation groups take to support the need for TEDs?

DC: The group that I am most familiar with is a group that has evolved over time. It was originally called the Center for Environmental Education. It became the Center for Marine Conservation. I worked for them from about 1990 through '98. Now it's called the Ocean Conservancy, so all the same organization through time. I began looking at this issue, as I said, back around 1982, when I worked in the state of North Carolina and first doing some independent work working for the state documenting nesting and sea turtle strandings and also doing some work by contract for the Center for Environmental Education – at that time. Certainly, it's my belief that the Center for Environmental Education, the Center for Marine Conservation, was always an organization that tried very hard to look for a scientific-based solution that would achieve the conservation they believed necessary but not overly impose on fishing interests. So one of the things that they did early in the game before I was an employee there was they actually contracted a marine economist to use data from the testing that National Marine Fisheries Service was doing and other sources to calculate what the actual economic impact of turtle excluder devices would be on shrimpers. The paper concluded that, in fact, the cost of using TEDs was relatively small compared to the annual operating expenses of running a trawler and that, by getting a cleaner catch without not only sea turtles but also old tires,

cannonball jellies, and all the other things that frequently came up in trawls, that the fuel efficiency would actually go up and that the quality of the catch – and therefore the return on sales – might improve too and that a TED would actually pay its way in a fairly short period of time. So that was a big thing was trying to really look at the data of what the cost – or not – of using turtle excluder devices was and taking that out and working with the people. Then they also had a gentleman named Mike Weber. I don't know if you've had opportunity to talk with him, but he worked with them, and I know he worked as part of the – as the conservation side of a voluntary campaign. He worked with somebody from the shrimping industry. I'm afraid I – I could look up his name – anyway, they worked for several years in various ways to try and convince fishermen to use turtle excluder devices voluntarily. When that did not result in a large increase in compliance, they then started advocating just some time and area requirements. So at least that organization worked very hard to try and find the best solutions that would least impact the fishermen.

SSD: I'm not sure I know what you mean by time and area requirements.

DC: Well, that there would be requirements for turtle excluder devices but only, say, during the months of June through August and only in nearshore waters in certain states rather than, at this point, they're basically required in all trawls throughout the Southeast at all times.

SSD: Right. Yes. I have spoken to Mike Weber, and he gave us a great interview.

DC: That would be expected.

SSD: [laughter] I wish that I could remember what everybody has said. There're so many of them that they're all starting to run together now. But it's going to be a great body of information for this museum. The museum identified people in conservation, people in NOAA [National Oceanic and Atmospheric Administration], and shrimpers, so we got three different points of view.

DC: Excellent. That's very good.

SSD: Yes. Fitting all the pieces together has been really interesting. So conservation groups took data, looked for scientific solutions to conserve, and looked at the economic impact of TEDs on shrimpers, finding that it was a small expense, and TEDs really paid their way with a cleaner catch. Is there anything else you can think of that conservation groups did to support the need for TEDs?

DC: Well, I know, at one point, when they were trying to encourage voluntary compliance, they were actually working – now, I cannot remember factually whether conservation organizations supplied the money or whether they encouraged the government – National Marine Fisheries Service – to. But there was a period of time when there was an offering for someone else to purchase the TEDs so that the initial expense of the turtle excluder device was not taken on by the shrimp fishermen was another approach.

SSD: Do you remember –

DC: [inaudible] the fish – what?

SSD: I'm sorry. Go ahead. I interrupted you.

DC: Well, I was going to say that another approach that was of that – now I'm trying to remember where I was going – oh. One organization worked and tried to get a sort of a labeling thing – you know, turtle-free shrimp – and encouraging the people who would be purchasing shrimp, either in restaurants or in shops, to purchase only turtle-free shrimp, to see if they could get an economic incentive going. I know there was one other thing I was thinking about. I've forgotten it. It'll come up later.

SSD: I hope it does. That labeling really worked for me with tuna. I always look for tuna that's been caught on a long line. But now I understand that longlines also kill sea turtles, not just nets.

DC: Yeah. So they're again working on a technological – we hope – fix in terms of some special kinds of hooks and some special ways to set the lines that may help in that situation as well [inaudible] –

SSD: If any turtles survive the oil spill.

DC: If they survive the oil spill. That's a big one. That's a very big one.

SSD: Yes. Well, what about litigation? Do you remember any litigation from conservation groups?

DC: Yes, I do. I certainly am personally very much aware of the fact that there was a time at which the Center for Marine Conservation did actually litigate on excluder devices in the Texas area because I was one of the expert witnesses for that lawsuit. We met in the Galveston courthouse several times. As I recall, that was a time when I think there were already excluder device requirements, but there was a serious question as to whether there were a lot of violations. There were an unusually large number of dead turtles stranding on the beaches. There was evidence from enforcement officers of a large number of violations. So I do believe that, over time, there was a wide variety of approaches taken. When nothing else worked, in fact, the CMC did revert to court cases. But there were other organizations, I think, that sued considerably earlier.

SSD: So were the CMC suits over, say, a shrimper who was cited and brought to court to be fined?

DC: No, they were more generic, over the fact that there were lots and lots of turtles washing ashore. There was reason to believe there were violations, and so it was a suit trying to get NMFS [National Marine Fisheries Service] to either increase their enforcement, which was difficult because of their logistics and/or do temporary closures. Have you seen –? There is a little booklet printed in April 1995 by the Center for Marine Conservation written by Michael Weber, Deborah Crouse, Robert Irvin, and Susanne Uticello, which gives a sort of a history of

some of these things. Now, that's different than an oral history, but it has some of that. I'm trying to look – I think it might have been – this might help me think of some things.

SSD: Did you say it was April '95 or '85?

DC: '95.

SSD: '95. So even as recently as '95, this is still a hot enough issue for a booklet with these multiple authors to be produced?

DC: As I recall, at that point, one of the particular big issues was there were proposals to actually change the Endangered Species Act that were – certain people, like Mr. (Towson?) of Louisiana, were backing that. So this booklet was put together to try and clarify some of the history of that situation so that there would not be inaccurate claims made about the Endangered Species Act and its role in the situation.

SSD: In the back of my mind, throughout these interviews, there's sort of been this deep thrumming of how long will the ESA hold ground. How long can it hold its ground when we have people to drill in the Arctic and mine for – I don't know what – coal in the Arctic. Even now, with all these billions of barrels of oil being suspended in the Gulf of Mexico – and I heard – I didn't actually see it, but someone told me that Jacques Cousteau's son has dived in it, and he says, "Oh, it's so much worse in the water column than what you're seeing on the surface." Of course, that's completely hidden. I'm not turning on the television and seeing what the divers are seeing down there. That's just not being covered at all. It's being swept under the carpet.

DC: I did see something just this morning on the Internet. I don't know who the diver was, but it was pretty compelling.

SSD: Yes, with the oil and that toxic dispersant, which they keep just loading out there. I just – I don't get it. I don't understand people. We are slowly making this Earth a planet that won't sustain humans.

DC: Well, but I think you hit on something there, which to me is fundamental to the TED situation but is much bigger. The turtle excluder devices/shrimp trawling situation is, I think, an example of the same fundamental issue that has happened with oil drilling, be it in the Arctic or in the Gulf, the same issues as spotted owls and logging – that the issue is more fundamentally that we are overutilizing our natural resources, and we are reaching a point, with each resource, where we're running up against a wall. Therefore, the people who have earned a living off those resources – be it loggers, be it oil drillers, be it shrimp fishermen – their livelihoods are at stake. I have no doubt that shrimp trawl fishermen are in trouble financially. But is that because of sea turtles and turtle excluder devices and the ESA, or is that because of the way they utilize the resources and the fact that there are far too many fishermen out there for the shrimp that can be caught? What happens is, understandably, many people turn to the first issue that they can get their minds around and an issue that, if they fight, they think they can avoid having to change the way they do business. That, I think, is the crux of what happens in each of these cases.

SSD: So they're overusing natural resources, what they're doing is not sustainable, and they don't look at the big picture?

DC: Well, it's hard for them. It's hard for them. I mean, for an individual family shrimp fisher in the Gulf, I know that they have a very, very tight budget. I said something at the beginning when we were talking about the cost of TEDs that I'm not sure I emphasized enough. That is, the cost of purchasing and using TEDs is a very small percentage of the annual operating expenses of a shrimp fisherman. But if they're taking in – if they're competing with so many other fishermen, often their margin – their net gain at the end of the year – is not that large. And when we ask them to put turtle excluder devices in their trawls, they look to the cost of TEDs as a part of their net profit, which was small, and so they saw it as a much bigger chunk, whereas we looked at it – we, the people interested in conserving turtles – as a cost of doing business – when somebody is harvesting public resources that they're not doing anything to cultivate. They're barely even paying a licensing fee, and they're selling them for private profit. So we considered using turtle excluder devices as a legitimate part of their operating expenses, where they are a much smaller percentage. They looked at it – many of them – as an intrusion taking away part of their small net profit. So that is a very, very important distinction in how to look at the expenses. I spent a lot of time attempting to understand what the resistance was. I do understand that, for small family fishers, in particular, it was imposing on their ability to do what they had done all their lives and without any restrictions. It was telling them that they had to suddenly not only have restrictions but add some expenses. If they were not in a position to understand the big picture, that probably did look like a severe imposition for them. So that's where the rub comes is that I would argue it's important to look at the big picture and the long term – just like you can't clear-cut timber forever and expect it to just reproduce and keep coming back forever. Well, it's the same sort of problem. If we're looking at the problem from different perspectives, each of us thinks our perspective is the right perspective. I would argue that I think taking a long-term perspective and looking at long-term sustainability is ultimately the only viable perspective. But it is hard for people who have not had that sort of training or background and are looking at it as just a way of doing business, and it's what their parents did, and it's what their neighbors do. It's harder for them to see it that way.

SSD: Yes, absolutely. Some of these people have been in it for three generations.

DC: And that's hard. I would hate to feel like I had to change what I do for a living just because our society didn't value it anymore – it didn't value doing it in the same way.

SSD: And it gets harder as we get older too. Yes, I'm fifty-six this year. And my funding is soft money. Every year, I think do I have to go out and compete for a job with these kids who are just coming out of college and can do anything on a computer. It would take the kind of a paradigm shift that not many people have the courage to do.

DC: Yes. If we don't, I personally think that our society will come up against a wall at some point, be it logging or shrimping or oil spills polluting our own nest. I think we will come up against a point where our society will be vulnerable to collapse.

SSD: The human culture – I think we’re close to it, actually. I think we’re pretty close to it, which is maybe a good thing for the nonhuman animals – the sooner we’re gone.

DC: [laughter] Well, unfortunately, it looks like we’re going to take a lot of them out with us.

SSD: Oh, we are. We’re going to take a lot of them out with us. Yes. Let me see if I can get back on task. [laughter]

DC: Okay. Sorry about that.

SSD: No, it’s me. I took us way, way afield. That booklet – I would love to be able to get that booklet that was written by you and Mike Weber and others. Do you know if – how could I get it?

DC: Well, I do not know how many copies the organization still has. I personally have about five copies left. Mike might have some. But I’m not using all of mine. I wouldn’t give it to an individual. But if it’s going into a place where it’s a history where there might be some value for more people seeing it, I would send you one of mine.

SSD: That would be terrific, Debby. If we can copy it, we’ll keep one at the University of Southern Mississippi and send one to the museum.

DC: Okay.

SSD: Terrific.

DC: Why don’t you go ahead and give me a mailing address, so I can just put that on a sticky, and we’ll put this out?

SSD: All right. Let me counter that with this – I will be making a CD of this interview, this conversation, to send to you. You will have my address. I will also send you a self-addressed, stamped envelope, and you can send it back to me in that.

DC: Excellent.

SSD: Will that work?

DC: Yes.

SSD: All right. Thank you. Well, is there anything else you can think of on question two regarding actions that conservation groups took?

DC: Well, I guess there’s also the fact that they did look at working at the state level versus the federal level. They tried, in some states – I think the states of Florida and South Carolina in particular, there were state regulations requiring turtle excluder devices that went into effect and were being enforced before the federal regulations under the Endangered Species Act. I believe

that people tried a variety of different approaches. But as I said, from my point of view, I thought it was valuable to start with the economic analysis and looking at voluntary usage. Excuse me one second. I've got a 15-year-old calling. I'm back.

SSD: Okay. Thank you.

DC: She's home from school. [laughter]

SSD: So you were interested in looking at the economic consequences for the shrimper, and you wanted to give them a chance to comply voluntarily?

DC: Well, yeah, that actually was even before me. That's something that the Center for Environmental Education did before I got involved. But I thought it was a good approach. I thought it was appropriate to start with that sort of thing and to look for voluntary compliance first and only to go to trying to get requirements when that didn't seem to be working, and the data continued to mount that this was absolutely necessary from the point of view of turtle conservation.

SSD: Right.

DC: I guess one other thing that's been a lot slower coming out, but some people have been working on and come up with some really elegant information on is the value – the resource value – of sea turtles. I think a lot of people had no concept of what potential value sea turtles were and why save them? That has been much, much harder to get at because the populations are so depleted, and the research is times-taking and slow. But there have been some really amazing hints in recent years about the value of sea turtles and the ecological services they may play in things that are important to humans.

SSD: Is it possible for you to give us some examples of those?

DC: Sure. One of the most elegant ones I've heard of recently is there is a woman who was working on her PhD at the University of Florida in Gainesville – and I don't have her name on the tip of my tongue, but I could help you find it if you wanted to dig – who looked at turtle nests on beaches and the fact that many eggs – and whether or not all the eggs hatch, there's yolk sacs and eggshells left on the beach; there's hatchlings that never make it, etc. She looked at the cycling of nutrients in sand dunes. She concluded that the turtle nesting on barrier island beaches – or not just barriers, I suppose wherever they nest – provided the majority of the phosphorous and nitrogen necessary for maintaining beach grasses and sea oats and things like that to stabilize dunes.

SSD: Wow. That is no small accomplishment.

DC: Oh, no. Yeah. It's a huge piece of information with respect to if you care about what the purpose of dunes do in stabilizing islands and beaches. It's pretty important to know that there is no real inherent source of those nutrients in there in that system, except for the turtles that forage sometimes thousands of miles away and carry those nutrients to the beach and leave them there.

SSD: Do you know, typically, how many eggs would be in a nest?

DC: Yes. The average nest size – and it varies by species and individual – but say, for loggerheads, an average nest is somewhere between a hundred, a hundred-and-twenty eggs – thereabouts.

SSD: How many of them hatch, do you know?

DC: It varies considerably, depending on whether there are – we think that natural predation before human activities may have been quite different. Certainly, there are a lot of predators on these things. But hatching in some areas can be upwards of eighty-plus percent. But in some areas – say, where there's raccoons and foxes using the beaches at often, apparently, higher numbers because of human interactions and stuff – hatching can be very low – only ten to twenty percent.

SSD: So if the raccoons and foxes carry off the eggshells, we don't get to count those eggshells?

DC: Well, you mean in that calculation of energy and nutrient [inaudible]?

SSD: Right. Yeah, because I was thinking a hundred eggshells – that's a lot of calcium.

DC: Yeah, but those raccoons and foxes live in that area, and they deposit the remains of those eggshells back in that area, in that system.

SSD: Right. They wouldn't use all of the calcium themselves.

DC: No. [inaudible] they might, but it's going to cycle – a lot of it's going to cycle through, and they're going to deposit it back in that basic system.

SSD: Wow, that is so cool. That is just great.

DC: Like I said, that was an astounding piece of research to find.

SSD: There's a question in here – number ten is a question that I actually put in – why are sea turtles important? Can we just go ahead and answer that one now? Why do you think sea turtles are important?

DC: Sure. Well, I think they're important for a lot of reasons. One, I think they're important ethically and morally because they're organisms that have existed on Earth pretty much unchanged for a hundred million or more years, which suggests they do something right. There's reason to believe that only a few hundred years ago, their populations, say in the Caribbean, were vast – millions and millions of animals. So I think, just ethically and morally, it's important to conserve them from that point of view. But set that aside completely and look at why are they important – as I say, we're starting to get at – or some people are starting to get at – some of the value they have in the functioning of the ecosystems. It appears that there may

be a very, very important function from the point of view of transporting nutrients from one part of the oceans to a completely different part of the oceans. Because they are nesting, migrations may come hundreds or even thousands of miles and deposit eggs – all those nutrients that went into making those eggs came from somewhere else. So they seem to be very important in that role. They also do things like they crop – like green turtles are vegetarian, and they crop the grasses, the seagrasses, and actually force them to grow faster. It's almost like mowing your lawn. They grow faster. They have a higher protein content when they're growing faster, so there's reason to believe that that may make it different for other – they may be important in helping the nursery habitat for many other species that humans care greatly about – and crabs and shrimp and young fishes and things like that. We're just starting to get hints of what's going on there. There's a woman named Karen Bjorndal over at the University of Florida, Gainesville, whose research for thirty years has been on the nutrient usage at foraging of turtles. She's helping us get at some of that, which is very important stuff.

SSD: Now, would that be the name that you were trying to remember before, or is she a different –?

DC: Well, she's the major professor of the woman who actually did the piece about the eggs and [inaudible].

SSD: Which university is it?

DC: University of Florida, Gainesville.

SSD: Gainesville. Any other thoughts about the importance of sea turtles?

DC: Well, they've had huge cultural importance for people around the world over years. There are some places where they have been extremely important as food sources for human populations.

SSD: As sort of a subsistence food or more than that?

DC: Well, they've been used both ways. And it's pretty clear that most times we've tried to use them as a commercial source, we have overdone it. We just don't know enough about their population dynamics. They don't seem to be able to tolerate much commercial harvest. But that doesn't – you know, the jury is still out in the long run on whether or not some certain level of subsistence take or some highly-regulated level might be tolerable for some populations. But they have been culturally extremely important for peoples of a number of beaches – places around the world.

SSD: Can you think of any concrete examples of that?

DC: Well, take, for instance, the olive ridley, which is a species that has a shorter life history – reaches maturity at a shorter time than, say, a loggerhead or a green – probably more like ten to fifteen years instead of twenty to thirty. There have been a number of populations – human populations, say, in Costa Rica, western Mexico – that have harvested eggs and, to some extent, adults of that species, where there's reason to believe that they can tolerate some of that harvest.

It became a commercial harvest, it overdid it, and the population started to nosedive. Now, they've closed commercial harvest, and the populations are recovering. So the question is, we don't know yet how to set proper subsistence harvest limits. But it's possible, it seems to me, that that could continue.

SSD: You know –

DC: Well, I was going to say, in Hawaii, it's almost more – it's not so much for harvest but honu, the green turtle – is considered very, very important – part of the Hawaiian culture – and the people worship these animals. So there're a lot of different ways that a species can be valuable to humans.

SSD: I'm thinking about starting a church for pagans. I think, if we worshipped this planet, our priorities would be really right. [laughter]

DC: Yes. Well, I personally subscribe to the concept that a higher power exists, but I'm not sure it is a white-haired man up there. I kind of think it's some sort of nature thing, myself. It's hard to watch people who seem to think that the only reason anything exists is for humans to exploit it.

SSD: Yes. That doesn't even make sense. It's self-stultifying when you look at it taken to its extreme, which is where people always take things. We always take things to the extreme. We don't seem to be able to be sustainable. I'm really not supposed to say these things as an interviewer. [laughter]

DC: [laughter] Yes, I was going to say you need to be careful who you say these things to.

SSD: They're on the record now. I'm an open book. Well, looking at question three – did your opinion of the issues faced by turtles and fishermen change over time. You might want to take those – first the turtles and then the fishermen.

DC: Well, for the turtles – I guess my opinion changed a bit, just in terms of originally not being – thinking that, obviously, turtles were in serious trouble but not necessarily having a very good feel for whether protecting nests was going to do it or whether you had to go deal with shrimp fishermen and things like that. Over time, as I studied the data, and I did actually a population-modeling exercise for my PhD that really convinced me that there was no way on Earth you could recover these species without addressing the trawling mortality. So I guess, from my point of view there, my opinion was strengthened that this was a significant problem that had to be addressed. With the fishermen, I would say my opinion evolved somewhat in that I tried hard – and I think I did – come to better understand why it was they didn't emphasize and why it was hard for them to adopt TEDs. But I didn't think that that was – I mean, what I tried to do was understand so that I could better help explain to them what the problem was. I tried to keep an open mind to see whether or not they were right – maybe this was not a problem for turtles. That didn't work for me because the more I dug into the information, the more I became convinced it was an absolute necessity to reduce trawling mortality. But I did, through that same course of

time, learn, I think, to become more understanding of why the fishermen were so stressed. As I said, I came to realize that they – most of them were in very serious financial straits. We just disagreed as to the cause. They seemed to feel that the cause was things such as more regulations, more impositions. It's hard for them because they might only catch one or two turtles a year, so it was hard for them to see how that could be significant to the population.

SSD: Well, multiply it by the number of boats.

DC: Exactly. Fifteen thousand trawlers in the Gulf or Southeast US. I can't remember which that number went to, and if each of them catches one or two turtles, you're talking 30,000 turtles. That's a whole different thing. But for each of them individually, it was hard for them to see why they were a problem. I tried very hard – and I think I did come to empathize with them as human beings who were up against a very difficult economic problem. I just couldn't agree with them that if we let the turtles drown, walked away from turtle excluder devices, that that was going to solve their problem. I think that they would still be up against that wall. I think that they're still going to find their livelihoods jeopardized because I think their problems are bigger and different than turtle excluder devices [inaudible].

SSD: High fuel costs and imported shrimp driving prices down – both of those –

DC: [inaudible] and an open fishery that allows anybody who wants to go fish when there's only so many shrimp in the Gulf, and we've got more boats out there than you need to harvest the shrimp that there are.

SSD: Yes. Anything else about issues changing over time?

DC: I think those are the big ones, from my point of view.

SSD: Well, how have TEDs affected the shrimp industry, in your opinion?

DC: Well, that goes to another little piece of writing I was involved in a few years later – maybe about '97, '98 – where there were four of us who wrote – this was, again, because of attacks on the Endangered Species Act using what we felt were inaccurate information from the shrimp-turtle issue. We looked at the logistics and the cost issues again and concluded that turtle excluder devices had – the only way they had significantly affected the shrimp fishery was because so much energy was expended in fighting them that that energy wasn't available to address the real problems that the industry has. So it was like a huge red herring, in my point of view. From that point of view, I suppose you could say TEDs were a problem. But I think it was – the problem was focusing on the wrong thing as the problem – that I don't think – and in fact, there were fishermen that I talked to individually or heard of who, once they'd use a turtle excluder device for a year or so said, “Well, you know, I thought it was a big nuisance at first. But really, my shrimp are cleaner. I don't have to deal with tires and buckets anymore. You can live with them. And the shrimp are in better in shape when they come up.” So I'm not convinced that they have significantly impacted the fishery in terms of costs or anything like that. They may have even had some small benefit. But I do think that the ten-plus years of

fighting them was a significant distraction and focusing of energy on the wrong thing, which probably did not benefit the fishery at all.

SSD: Right. I have had more than one shrimper tell me that TEDs improved his catch.

DC: Well, I've certainly heard that too. And I've heard it enough that I don't think it's just an aberrant fisherman. I think it really does do that or has potential to when used right.

SSD: Yes. People have also commented in interviews about the difference in the Gulf of Mexico shrimpers and the East Coast shrimpers. On the East Coast, Sinkey Boone, with whom I spoke –

DC: Mr. Georgia Jumper.

SSD: Yes. [laughter] The cannonball jellyfish shooter. In fact, he protected it as intellectual property when he first invented it because –

DC: I didn't realize that.

SSD: He did. This was before turtles were ever an issue. People were asking him, "How do you catch so much shrimp? All we're catching are jellyfish." He wouldn't tell them. He would not share it. He started sharing it with his family and his friends, and then eventually, the cat was out of the bag. But on the East Coast –

DC: Oh, that's great.

SSD: Isn't that funny? On the East Coast, those guys were already pulling TEDs. They were just calling them cannonball jellyfish shooters. But in the Gulf of Mexico, because there was not a bycatch nuisance like that jellyfish, then there was more resistance.

DC: But look at some of the pictures there are of the contents of a typical Gulf trawl haul back fifteen years ago, and it's scary, because – I've shown pictures to people, and I've had them say, "Well, that's a really dramatic picture." There's a sea turtle and all these fish and things like that. "But why are you using that one? Why don't you use one from a shrimp trawl instead of a fish trawl?" And I said, "That is a shrimp trawl before TEDs." You can't see the shrimp because of all the little fish, the juvenile fish – the red drum, the red snapper – all those species that were being impacted too.

SSD: Which most of them die, I understand?

DC: Yes. That was my understanding. They were, by and large, too small to keep for harvest, and having been smashed in this trawl and hauled up on board, etc., and the sorting – they didn't live.

SSD: I read in Wikipedia – which is not the greatest and most reliable source of information – but for example, Wikipedia says that in Thailand, for every pound of shrimp that is wild-caught, there are seventeen pounds of bycatch.

DC: Yes, I believe that.

SSD: Isn't that astounding?

DC: Well, that figure's not that much different than what the Gulf of Mexico figures were fifteen, twenty years ago.

SSD: Today, because of BRDs, bycatch reduction devices, Wikipedia says that, in the Gulf of Mexico, one pound of shrimp has a pound and a half of bycatch or two pounds of bycatch, which still is a lot. But when I compare it to seventeen pounds, I think hooray for the United States for leading the way in reducing this bycatch.

DC: Yes. But it's funny you would say Thailand, because, if I recall correctly, Thailand was one of the four nations that took the US to international trade court, to the World Trade Court, on the requirement that we have that shrimp imported to the US from another country should be caught either with turtle excluder devices or in another turtle-safe manner.

SSD: They did not want to comply?

DC: Of course not.

SSD: Thailand? Did they win or lose?

DC: They won. Well, there were four nations – India, Australia, Thailand – and I can't remember the other one; I'd have to look it up, but they won on the first round. The US lost in the first round. But bless their hearts, for whatever reason, the US trade representative in the State Department fought it and took it back on appeal, and it was ultimately decided that the US law was fair trade practices because it didn't tell them that they had to use TEDs to sell their shrimp anywhere. It said any shrimp that they sold to the US had to be conserved that way, so we were protecting turtles from our commercial market. So it was decided, ultimately, that it was fair under World Trade Organization rules. They did determine that we had – our State Department had applied it unfairly because some countries were given three years to come up to speed and others were not. So we went back and redid how they worked with the nations. So ultimately, we won.

SSD: Good. Some of the folks I've interviewed from NMFS and also one of the TED inventors, a man named Noah Saunders from Biloxi, traveled throughout the world educating fishermen and enforcement officers on protocol for TEDs, which is great.

DC: Yes, and that all came out of – yes, but that came out of that law that John (inaudible) and a few others were authors of that actually required shrimp imported into the US to be caught in a turtle-safe way.

SSD: The problem then is with enforcement. I think their enforcement is probably not as good as the enforcement in the United States.

DC: Well, that's probably true. I think you're probably right.

SSD: But what can you do about that? That's a big problem to solve.

DC: Yes. Only so much, but if you talk to folks at the State Department, they do go over and actually spend time – I don't think it's every year in every one of these nations, but they do sort of make the rounds, both training and looking at their enforcement systems.

SSD: Good.

DC: Anyway, our own enforcement system has some holes periodically.

SSD: Right. Yes, that's true. Comparatively speaking, though, I think we do better than some of the other countries, where people are not so rich, so it's easy to take a bribe, and it's easy to turn a head the other way because you know that the fisherman's going to take that turtle home and eat it, even though it's drowned on its boat – and he's not using a TED, but he's going to eat that turtle and needs it.

DC: Absolutely.

SSD: Well, how about sea turtle populations? How have TEDs affected sea turtle population?

DC: That is the sixty-four-thousand-dollar question. I don't work personally with sea turtles as much these days. As I said, I'm doing more policy on how to make any recovery program more effective. But I do keep up, to some extent, with what's happened with turtles. What we saw in the US for the first ten years after turtle excluder devices were required was increases in loggerhead nesting and also, concurrently, increases in shrimp – in strandings, which was worrisome at first, until we decided, "Well, if your population is increasing, the same percentage or less would still result in more carcasses."

SSD: Would that be loggerheads or all sea turtles?

DC: All. Well, it was all. [inaudible]

SSD: Okay. So more strandings?

DC: In some areas sometimes, yes. But we saw increases in loggerhead nesting numbers for about ten years. Now, for the last ten years, we've seen declines in loggerhead nesting numbers. So a question that's legitimate to ask is, well, was it shrimp trawling all along, or was it something else? I would argue that – and I predicted this, actually, in the work I did on population modeling of loggerheads. I predicted that one of the biggest questions that was still out there was what happens for those turtles out there in the large marine environment, the

juvenile turtles that haven't come back here to mature and nest yet? That was the part of their life history we had the littlest information for. There was a serious question in my mind as to whether – yes, you could protect them from shrimp trawling through TEDs, but in the '90s is when the longline fisheries really started (inaudible) and increasing in numbers in huge increases. So what we may be seeing is the TEDs were saving the animals that had gotten back here and matured, and we had that increase because of that. Now, we're getting to a point where, however, we're having the young turtles that would have been coming through the pipe and coming back to start nesting aren't coming because they got caught in the long lines.

SSD: Those longlines are down for a long time, aren't they?

DB: Yes.

SSD: Long enough to drown a turtle?

DC: And there's thousands of those. Even if they don't drown, they often used to get hooked in the esophagus. So when they're pulling the lines in, they would tear the esophagus of the turtle because that was the one attachment, so that, even if they thought they were releasing a healthy animal, they could have released an animal that was so badly internally injured that it would die later. So I am very comfortable that turtle excluder devices have resulted in the survival of many thousands of turtles and that they should continue to be used. However, I do feel that we can't be complacent and say we've dealt with the turtle problems because there are other sources of mortality out there, and longline fisheries are turning out to be a huge one.

SSD: Is there anyone researching those other causes of mortality? Is anyone doing anything to – ?

DC: Yes. The National Marine Fisheries Service has several requirements. The place this is harder is a lot of longlines are set in international waters, so there's no government agency within the US or most other nations that has real authority over what's happening out there. The closest you can get is the world – the UN's FAO – the Food and Agricultural Organization. But it's all voluntary. There's no real laws and enforcement.

SSD: Well, voluntary doesn't work. We've already seen that.

DC: Well, it certainly doesn't work nearly as well. So, people are having to struggle real hard – equally as hard, if not more so – with the longline problem. But I don't think that problem in any way negates the benefits we've gotten from TEDs. It just means that there are new threats as well, and they need to be addressed. The ultimate threat now is global warming and what it's going to do to – both development on the nesting beaches and sea-level rise. If you have no place to nest, that's going to be a real big problem.

SSD: So, sea levels rise, and the only nesting beaches would be, what, manmade beaches, where you go and dredge something up?

DC: And/or what we're seeing already is more and more bulkheads and things, where there is no beach.

SSD: Well, for the record, can you define a bulkhead?

DC: A bulkhead being a hardened, usually steel-type bank put in front of a building on the beach to prevent the ocean waves from coming in and actually undermining the building and having the building fall into the sea. Well, when that happens – when you put something like a steel bulkhead in front of a building – it doesn't keep the sea from coming up and eroding the beach. It just prevents it from getting under the building. So you reach a point where – well, on Galveston Island in Texas, they have that enormous seawall. I've been there when that seawall may be keeping the water from coming into the town of Galveston. But there's no beach in front of it that is above water at any time of day. It always is covered by water, at least sometimes during the day, so no eggs would be able to survive there. They'll drown.

SSD: The eggs would drown?

DC: So there is no nesting habitat.

SSD: A female turtle is not going to deposit eggs in a tidal pool.

DC: If she does, it's not going to do her any good. And usually, she's smart enough not to – if she can find another place to put them, but –

SSD: So just for the – I'm sorry.

DC: – if she's tried two or three places, sometimes she just biologically has to let them go. But if she can find another place to put them, she will. But as we develop more and more beaches with big buildings and as we put things like seawalls and bulkheads up in front of those buildings, there'll be less and less place for the turtles to nest.

SSD: Unless someone will dredge up some barrier islands for them and keep them uninhabited.

DC: If we know how to do that so that we get the right type of sand and the right consistency and not too much mud and silt in there so that she can dig and eggs can breathe. They've tried in Florida and other places. They've had a problem with, when they deposit dredge on beaches, it hardens, so that turtles can't even dig. So now they actually require them to come along with these enormous tractor-type rakes with tines that go down about three feet to loosen it up, just so the turtles can dig.

SSD: All these problems that come up with the contingencies – it's amazing.

DC: [inaudible]

SSD: I guess, just for the record – and tell me if I’m wrong – eggs have to be in oxygen, and because the walls are permeable and those developing turtles, which breathe air, have to have oxygen even as they are developing.

DC: Yes. Now, it appears that they can take occasional – like a storm or something – that they can get wet. But they have to then be able to dry out within a certain time. They also can’t get too dry. There’s places where the sand is so hot and dry that they don’t seem to do very well. It’s a certain level of humidity or moisture that they need.

SSD: So they cannot survive below a certain humidity and moisture?

DC: Or above.

SSD: Anything else about how TEDs have affected sea turtle populations?

DC: Well, I think, from what I have read and heard, pretty much any place they’ve been used for a while, there’s reason to believe they have benefitted the turtle populations. Sometimes there’s been finetuning needed. We’ve had to change the size of the openings because it turned out they were designed originally for Kemp's ridleys, but they weren't big enough for loggerheads and greens – you know, things like that. But I think the overall picture is they have benefitted sea turtle populations.

SSD: Great. It must feel good to have been a part of that.

DC: It does. It does.

SSD: Yes. That’s terrific. Well, do you have time to go through these other questions?

DC: What time is it?

SSD: I’ve got 3:15 my time.

DC: Okay. Yeah, I’ve got another half an hour, maybe.

SSD: Well, tell me when you need to break it off because I could go until dark. [laughter] If I had been interviewing you strictly for the Center for Oral History, we would have started with question number six because, in years to come, people will – what seems ordinary to us today will be of interest to people. It will be arcane. So we’d like to know a little bit about where you grew up, what that was like.

DC: Well, this is kind of funny. I personally grew up mostly in California and Arizona. No sea turtles, no shrimp trawls. [laughter] Not even ocean most of the time.

SSD: Where in California?

DC: Well, when I was young, in elementary school, we lived in a little tiny mountain village northeast of Los Angeles – five-thousand-feet. Then we moved up to Berkeley for a while.

SSD: Were you a teenager in Berkeley?

DC: Well, we moved to Tucson, Arizona when I was thirteen – well, I just turned fourteen, I guess, so not quite. [laughter]

SSD: Berkeley has such cache, I guess. It's just such a mythical place.

DC: Well, my mother finished her bachelor's degree at the University of California Berkeley when I was fourteen. So she went back to college after having four kids. [laughter]

SSD: Good for her.

DC: Yes.

SSD: Then, where in Arizona?

DC: Tucson.

SSD: Okay. So what was a typical day for a young girl in Tucson, Arizona, when you were growing up? What's your best day that you remember about growing up in Tucson?

DC: Well, I guess, for me, the really big thing was I got a horse.

SSD: Yes.

DC: I don't know if you know about teenage girls and horses. [laughter]

SSD: Yes, I know very well, because I got one when I was 12. [laughter]

DC: And I was just fourteen when my parents got me a horse. So that's what I did is I was lucky enough to be able to come home from school, walk a mile to the stable and climb on my horse and ride off into the desert. Back then, nobody worried about me riding by myself out in the desert, and I did a lot. [laughter]

SSD: Wow. What was your horse's name?

DC: Micaballo.

SSD: How do you spell it?

DC: Do you speak Spanish? No.

SSD: I don't.

DC: It's M-I-C-A-B-A-L-L-O.

SSD: Micaballo?

DC: It means my horse in Spanish. [laughter]

SSD: Oh, that's cute. [laughter] Was it a grade horse? Did it have a breed?

DC: It was mostly quarter horse, a little bit of Arab in him.

SSD: Nice.

DC: Yes, he was a great horse.

SSD: So what did you find out in the desert when you were –? How hot was it? Did you ever get off and explore?

DC: It was hot. But it was a dry heat. It's not like the heat you get in Louisiana or Mississippi and places like that. It was a dry heat. So to me, it was more tolerable. I did get off and explore. I regret in many ways that I wasn't old enough to really appreciate biologically what I was being exposed to. For me, it was just getting away and having the fun of my own control and seeing neat things. But now that I've become a biologist, I frequently regret all the things I may have seen and didn't know I was seeing. [laughter] I guess that's life.

SSD: I guess so. Yeah, we trade the innocence of childhood off for any expertise that we might have had.

DC: Yes.

SSD: Well, where did you go to college, and what did you study?

DC: I went to the University of Wisconsin in Madison. I started out as a meteorology major. And I got there in 1967, which was right when the Vietnam War was a very big thing, so a time when you learned not just about the things you were taught in class, but you also, in one way or another, got a really big education on life. There were demonstrations. I was teargassed trying to go to my meteorology class, and that kind of got me riled and involved in other ways. Anyway, I started out as a meteorology major because I had one thing I knew – and this was true in Tucson – I loved watching nature, the power of the weather, and the storms. I really have always wanted to, and still want to, fly into a hurricane someday. Is this crazy or what? [laughter]

SSD: I think we might have one for you this summer. [laughter]

DC: I hope not just because of the implications for the Gulf. But I fairly soon began to realize that most meteorologists spent their time in front of a computer in some backroom doing

equations and stuff like that and that I wasn't necessarily going to be flying into hurricanes. So I kind of dropped that idea and had to spend some time flailing around, figuring out what I wanted to do, and ended up as a biology major. I realized that being outdoors and being in nature was very, very important to me.

SSD: So you got a bachelor's degree in what?

DC: Well, I didn't, actually. Because I spent several years trying to figure that out and working and just taking a course here or there, I didn't finish my bachelor's degree until 1974, and it was in zoology. But by then, I had a pretty good idea that I wanted to do something in conservation, so I went straight on for my master's, stayed in Wisconsin, and then I moved to North Carolina, and that's where I started working for the state and got involved with turtles. I knew nothing about them at the time. But eventually, I went back to Wisconsin and finished a PhD on sea turtle biology and conservation.

SSD: Wow, fabulous. Well, why did you choose that career path?

DC: Well, it evolved. As I said, first, I knew I loved being outdoors. I tried meteorology and realized that wasn't going to get me outdoors, so I got into biology. And then I sort of – I started out on a research track, but I quickly realized that, to me, the research was interesting mostly as it could apply to conservation and management of species. So I switched really to more of a conservation focus. But I realized that research has a very important role in conservation because – and this is where I'm a very pragmatic person, I think, and that I see no reason in advocating for some sort of conservation if there isn't some good scientific reason to believe that that will actually do what's necessary if it'll achieve it. There's no reason to ask people to use turtle excluder devices if it's not going to protect the turtles, so I see the value of research in helping us make the best management decisions.

SSD: Right. So did you feel –?

DC: Well, I was going to say there is a really interesting little piece of trivia that I've become aware of in the last couple of months about me and Tucson.

SSD: Let's have it.

DC: I don't know exactly where you're going – I mean, what your intent with all this is, but I find this very fascinating, and I'll share it with you. In my same high school graduating class in Tucson, Arizona, in the middle of the Sonoran Desert, was a man that I only got to know many years later. He was the president of the Center for Marine Conservation when I was hired there. He was from Tucson. He went to high school with me. Neither of us remembers each other. But we both ended up in marine conservation. Okay. Three years ago, I went back to Tucson for my fortieth high school reunion – was that our fortieth? I think it was. Guess who I discovered was another person in my high school graduating class?

SSD: Who?

DC: Coast Guard Admiral Thad Allen.

SSD: Wow. You guys were sea deficient. You didn't get enough of the sea when you were little, and you had to just go and get in it. That's funny.

DC: I don't know. I think that's a fascinating piece of trivia. I don't know what to make of it.

SSD: You're probably going to find more and more of these people as you travel your conservation path.

DC: Could be. But I don't remember Thad Allen. I'm sure he doesn't remember me. But there we were at this reunion, dancing. At the time, the only thing I could connect him with was, oh, Katrina – I heard his name then. But now, I hear it every day.

SSD: Yes. So really, you were just following what you loved as you chose what to study in school and then what to do to make a living?

DC: Yes. And in all honesty, I don't recall loving oceans in particular. I loved mountains just as much. But I was following the desire to be involved in making a difference in conservation and trying to find ways to do something for nature. The big irony there, as my daughter continues to point out, is she used to be so proud of me when she was in elementary school [and] tell her friends, "My mom works for the sea turtles. My mom does conservation." And then she started coming to work with me every now and then, and she says, "You work behind the computer at a desk."

SSD: Where are the turtles? [laughter]

DC: "Where are the turtles? Why aren't you outdoors?" And I'm going, "Whoops."

SSD: Well, gosh. I wish I had done as much as you have for conservation.

DC: Well, I think there's roles for everybody. I don't think anybody can judge another person's contribution, per se. Mine sort of has just happened. I guess the one thing I am proud of is there were times, especially the first ten years or so of my career in conservation, where staying employed was not easy. It was just not an easy field to break into. I stuck with it, and I'm proud that I did and feel that I've made good on that. But I've worked with people at various places whose contribution has been to do the payroll for a conservation organization. That is no less conservation if it keeps people employed doing it. It is also conservation.

SSD: Well, and with the rise of the Internet, every day, I think I probably sign an average of five petitions – no more drilling, let's support the Clean Air Act, don't let them disassemble it – so each of us really can have an impact.

DC: Absolutely.

SSD: Yeah, even if you have to go to the public library to get on a computer. [laughter]

DC: Or what you're doing – if it helps people look back at this – what at the time was a really tremendous issue for a whole number of people, particularly in the Gulf – if what you're doing can help them look back and that and, hopefully, learn how to tackle the same sort of problem in a more constructive way in the future, that's important.

SSD: Yes, some lessons learned. Yes. Then, that can instruct policy. That would be nice. That would be very nice. We talked about your title and your current position, and a brief description of what you do. Do you have time to kind of paint a picture of a typical day of work?

DC: [laughter] Well, let's see. It's pretty peripatetic.

SSD: I don't know what peripatetic means.

DC: Sort of scattered around, doing lots of different things. Frequently, whatever I planned to do at the beginning of the day doesn't end up happening. I do things ranging from being the lead for the Fish and Wildlife Service across the nation a few years back in developing a sort of a manual on how to develop a more effective recovery plan for an endangered species. What sorts of things would you put in a recovery plan? What are necessary inclusions to make sure that it really is more effective? Who to involve in the process? Things like that. Now, that's the sort of thing I came to the job for, and I love. How much time do I get to spend on things like that? [laughter] Frequently, I'm doing a lot of other things. I do get to – I am the person who, from our headquarters office in our recovery program, works with people in a couple of regions to help them with various regulations they're developing. So I just finished – published last week some documents in the Federal Register related to the establishment of an experimental population of pronghorn in southwest Arizona. The Sonoran pronghorn is in serious trouble. They think they've fixed some of the problems in that area, and they want to try reintroducing them and see if they can live there now that they have some more water sources and things like that. So that's exciting, but the part of it that I do – I'm not the one who – I'm not a pronghorn biologist. I'm not the one who wrote the rule. I'm the one who makes sure that the Is are dotted, and the Ts are crossed and makes the copies and send it to the Federal Register, but first I make sure that the right people have all read it and signed it and their edits are incorporated. So that's somewhat busywork, but it has a very important role. One of the things that I do that I really enjoy is we have a very small amount of money – the Fish and Wildlife Service is currently responsible for more than twelve hundred listed endangered or threatened species. That's plants and animals. We actually have free money to spend on those much, much less than we need – far from [inaudible]. But I am given a small pot of money each year, usually around two million dollars for the entire nation – twelve-hundred-plus species – and I get to ask the people in all of our offices who are working with these species to – we give them some constraints – some sort of parameters that they have to work within, but if they want to make proposals, I am the one who actually makes the decisions on which projects out there get funds to actually work on those recovery projects.

SSD: So, do you guys send out a request for proposals and the guidelines for basically grants –?

DC: Yes. We send it out to our regional offices. They send it out to the field offices. And they come back with proposals. And then I have to review them and make recommendations to our director as to which ones to fund. I got really lucky this last year. We had – Congress gave us some extra money just for bird conservation. I was able to put all the bird projects over there, and it effectively doubled the amount of money I had to work with, so we had almost four million dollars worth of funding to give away, which was huge.

SSD: I wish that you were getting all the money that's going into the war machine.

DC: Yes, or all the money that's going into – will go into cleaning up the Gulf for the next decade or two.

SSD: Which BP should pay.

DC: Which they should [inaudible].

SSD: I hope that they will. Well, now I'm afraid that I'm keeping you too late, so you tell me if I am.

DC: Well, we could do one or two more if you've got a particular one that is of most interest.

SSD: I think that most of these questions have been answered pretty thoroughly. I just did want to ask you about BP, Deepwater Horizon. What can we do to stop drilling? What is this going to do to pelicans, which were on the endangered species list, and what's it going to do to the turtles? What's going on?

DC: Yeah. Well, okay. That's another thing – as I said, peripatetic – I sometimes don't know. I came into the office the other day and thought I was going to work on one thing and got told the assistant secretary of the Department of Interior is testifying tomorrow morning before Congress about the oil spill. We need you to pull together information on sea turtle nesting in the Gulf of Mexico. So I spent a day pulling together who nests where, how much, and things like that. So I've thought a lot about that just recently. I'm not sure I have a good answer for you on that. I really believe that, unless and until humans – and this is a global issue, not just in the Gulf, not just in the US, not just in China or India – until humans realize that what we do affects the environment upon which we depend, and it's having more and more of a negative environmental impact, and if we don't do something to change how we do that, it's going to come back and bite us. So I view people like myself, who work on endangered species here, as really applying the bandages, while hopefully the bigger issue of human attitudes towards our environment and natural resources are changed. I do what I can at home. I have, I think, a pretty environmentally small footprint. We put an addition on our house that we put extra insulation in and a fan so we wouldn't need as much air conditioning and stuff like that. I drive a Prius. But I really do believe that what we're trying to do in endangered species work is just sort of keep these species alive, while our human society as a whole decides whether we're going to value them or whether we care about the environment in which we live. I think that the problem is far bigger than just caring because I believe that environment is absolutely critical to our being able to continue to live on Earth. But just like shrimpers and trawling, I don't think we can simply legislate people

into changing their ways. We can do certain things. But ultimately, we've got to educate and get people to understand what the real issues are as far as keeping the ecology functioning. That's one of the reasons I've been involved with endangered species is – again, I think I mentioned I'm a pretty pragmatic person, and I realize we're not going to save every species. I also realize that not every species has a function that, if it was lost, that the world would collapse. But I don't believe we have the knowledge to make decisions on which of those species we can do without. So if we're lacking that, I think we have to try and save them all, but I think, ultimately, we aren't going to make it as humans on this planet if we don't deal with this.

SSD: I agree with you. It's so clear to me. I don't understand why other people don't see it.

DC: [laughter] If you figure it out, let me know.

SSD: [laughter] I think it has something to do with greed, but – no, I think that [for] some people, it's just the bottom line. You know, the CEOs who have a lot of power – for them, it's just, "Am I going to make money or not?" That's all they're concerned with. But for the majority of people who are the middle class, this should be on the front page of every newspaper in the country. Save the Earth. It's the only planet you have. [laughter]

DC: But apparently, we collectively haven't done a good enough job of articulating that.

SSD: I guess not, or denial is just maybe the easiest thing for human beings to fall into.

DC: Well, sure. It's a pretty scary thing to contemplate, and it is much easier to just sort of say, well, somehow we've always managed before – we'll manage again.

SSD: It can't be that bad. Yeah.

DC: I'm with you.

SSD: Well, Debby, I'm looking at the last question now. I'm going to skip these other ones and just ask you if there's anything that you'd like to put on the record that we have not talked about.

DC: Well, I guess I would just emphasize really something that I did say earlier, and I think you did hear, and that is that I think the problem is bigger and more fundamental than turtles and shrimping. I think somehow we collectively need to – when we come up against problems like the shrimp trawls killing turtles, we need to figure out somehow to deal with that such that we don't get lost in these ten-plus-year sidetracks, where everybody's energy is focused on an issue which is smaller in the big picture, which is not to mean that it isn't an important issue, but I think it is really more of a symptom of the bigger problem, just like spotted owls being endangered in large part because of logging of old-growth forests. I think that that is indicative of the bigger problem of human overuse of natural resources and humans not really looking at what their activities do.

SSD: Yes. Well, I am going to say thank you so much for allowing a complete stranger to call you and pepper you with questions. Really appreciate it. I'm going to turn off the recorder.

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