

Stephanie Scull-DeArme y: This is an interview for the Maritime and Seafood Industry Museum and the University of Southern Mississippi. The interview is with Mr. Mike Weber, and it is taking place on Saturday, April 10, 2010, at noon in Hattiesburg, Mississippi, and in Redondo Beach, California, on Mr. Weber's end. I'm the interviewer, Stephanie Scull-DeArme y. First, I'd like to thank you, Mr. Weber, for taking time to talk with me today. And I'd like to get some background information about you, which is 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?

Michael Weber: Certainly. My name is Michael Weber.

SSD: And how do you spell it?

MW: M-I-C-H-A-E-L, and then W-E-B-E-R.

SSD: When were you born?

MW: November 2, 1949.

SSD: And where were you born?

MW: In Hawthorne, California.

SSD: H-A-W-T-H-O-R-N-E?

MW: That's correct.

SSD: What's your current job title?

MW: I'm a program officer for oceans, coasts, and fisheries.

SSD: Oceans, coasts, and fisheries? What's a brief description of your job?

MW: I oversee programs of grant-making to promote conservation of ocean and coastal resources.

SSD: Well, let's jump right into the questions that the Maritime Museum asked me to gather information on. I'll start with number one. Why are turtle excluder devices [TEDs] necessary?

MW: Turtle excluder devices are necessary because, in the normal operation of the shrimp trawl in most areas in the Southeastern United States, turtles get caught in nets frequently enough that the capture and drowning of turtles has led to or contributed with other factors to a decline in population so that they were listed as threatened or endangered under the Endangered Species Act. The turtle excluder device is a very effective method of reducing the capture and drowning of sea turtles, and its use has contributed to a decline in those captures.

SSD: What are some of the other pressures on turtles?

MW: The biggest pressure on turtles – not so much in the United States, but abroad – is the taking of the eggs. It used to be the case that turtles were hunted – or some species were hunted for meat and for oil. In the United States, coastal development has damaged nesting beaches and areas where sea turtles feed, such as green turtles feeding in seagrass beds that have been damaged now and hawksbill sea turtles on coral reefs. Pollution has probably had an effect, but it's not clear what that effect is or how important it is. So those are, I would say, the biggest problems.

SSD: Are you doing work in ocean pollution and water pollution?

MW: We support work by other organizations in water pollution, yes.

SSD: Is there a problem in the oceans?

MW: Well, I think there are multiple problems in the oceans. Our common ones are fishing at unsustainable rates, fishing in ways that damages habitat, ocean pollution, climate change. Ocean acidification is another one. Oil spills damage the habitats. Intentional activities such as dredging for harbors. Also, changes in the flow of rivers and coastal waters. So there's a wide range of problems that the oceans are facing. Many fishery populations are far below where they were even thirty years ago. Some are returning as a result of strong management measures, but there are many that have not returned yet.

SSD: From the interviews that I've already done on the topic of TEDs, I have become aware that there are a lot of problems with overfishing. It seems like the United States is making a good effort to write regulations and laws and enforce them to bring fisheries back up. Do you think that other countries in the world are doing the same thing? Are there any others who are?

MW: There are others. Some countries that come to mind certainly are Australia and New Zealand, who I think are doing a significantly better job than we are. Some countries in Europe are doing a pretty good job. But all in all, I'd say the United States is doing a much better job than it was even just fifteen years ago.

SSD: To what do you attribute that change?

MW: Well, I think one thing, certainly, is the decline in fisheries. After a certain point, it became obvious that there were less fish. Fishermen were going out of business. Regulations had to be tightened just to maintain fisheries. Also, there's been a lot more involvement by the conservation community and the science community calling for measures to halt overfishing and to enact measures that will rebuild fisheries. So there has certainly been much more political pressure to do something about fisheries that have declined.

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

MW: Well, those began early in the 1980s. There was an initial meeting convened by conservation groups, the National Marine Fisheries Service [NMFS], some shrimp industry associations in Charleston, South Carolina. At that meeting, the National Marine Fisheries Service described the problem – most of us were aware of it – but also described their early efforts at developing the turtle excluder device. Soon afterward, we formed a group, the TED Voluntary Use Committee, which I co-chaired with Ralph Rayburn at the Texas Shrimp Association. The committee included other people from the shrimping industry and the conservation communities, and we met several times trying to identify ways of promoting the voluntary use of turtle excluder devices. The organization I was working for at the time, the Center for Marine Conservation, actually bought several devices to enable shrimp fishermen – these were shrimp fishermen in South Carolina – to test them. We also worked on appropriations from Congress to support testing of these devices. So we tried to do what we could to promote voluntary use. But by 1984, it was clear that there was very little voluntary use of turtle excluder devices, and we in the conservation community insisted upon setting some targets for the industry to reach in terms of the percentage of vessels that would be using turtle excluder devices by a date certain, and the industry refused to do that. So it was at that point that we decided that we needed to pursue regulations.

SSD: Did your opinion of any of the issues with TEDs change over time?

MW: Yes. I mean, it became clear that there were different kinds of TEDs that could be developed. For instance, Georgia Sea Grant developed a TED by a fisherman by the name of Sinkey Boone that seemed to be more acceptable and seemed to do a pretty good job. The challenge was to make sure that these other devices actually excluded sea turtles so that we could be confident that they would exclude sea turtles. The turtle excluder device developed by the National Marine Fisheries Service had a lot of testing – hundreds and hundreds of hours of testing; these other devices didn't. There were issues with the National Marine Fisheries Service TED, some of which they responded to. People complained about their being bulky and heavy, so they decreased the weight and made them collapsible. But all in all, the basic design of a TED was shared among all of the different devices.

SSD: There was a lot of collaboration, wasn't there, between the industry and NMFS?

MW: There was some collaboration. I would say the industry was very reluctant to collaborate actively. There were very few vessels that voluntarily pulled TEDs or participated in the trials that the National Marine Fisheries Service ran.

SSD: Was that after the regs [regulations] or before?

MW: Before.

SSD: Before? Okay.

MW: Once the regs were in place, then there was more of an effort to find alternative TED designs. But that was only, I would say after there was a requirement. I think, in a lot of ways, the shrimp fishermen didn't see what the problem was because individual shrimp fishermen may

have rarely encountered or drowned inadvertently a sea turtle in a year. But just in the Gulf of Mexico, there were thousands of shrimp fishermen, so those numbers add up pretty quickly. So they didn't see it as a problem that they encountered frequently, and so there was not much of a motivation to address it.

SSD: So if a shrimper saw two turtles a year, that wasn't a big deal to him.

MW: No.

SSD: But if you multiplied it by two thousand shrimpers, that's a lot of turtles.

MW: Yes, it is. So that's why there was an effort to look at other benefits of TEDs. In some shrimping waters early in the season, there were what were called cannonball jellyfish, and they were so dense that they would collect in the net and forced fishermen to pull their nets up more frequently than otherwise. The TEDs would basically keep those cannonball jellyfish out of the net. That was generally only useful early in the season because afterward, the jellyballs – or the jellyfish just weren't a problem. At the same time, there was another problem in the shrimp fisheries, and that was the incidental capture of fish that were caught by other fishermen. Depending on time of season and whatnot, in catching a pound of shrimp, a trawler might pull onboard five to twenty pounds of other fish.

SSD: Per pound of shrimp?

MW: Yes.

SSD: Per one pound of shrimp, twenty pounds of bycatch?

MW: In some areas and at some times. The average was more like five pounds of other seafood, so to speak, for every pound of shrimp. So this was a big problem in the Gulf of Mexico. The capture of juvenile red snapper was a big problem – capture in shrimp trawls – and was thought to be one reason that the red snapper population was depressed. Because it was, there were restrictions in the red snapper commercial and recreational fisheries that would not have been there otherwise. So there was the need to address that problem as well. The National Marine Fisheries Service worked on adapting its turtle excluder device to do that, and at least in trials, it reduced the finfish bycatch by forty to fifty percent. It was thought that if you reduced the bycatch, it would mean that trawlers would be dragging less weight in their net, and there would be some fuel savings, among other things. There were studies done that concluded that that was the case, but it wasn't enough to convince people that they would benefit by putting TEDs in their nets.

SSD: For the record, what happens to bycatch?

MW: Well, most of it is dumped overboard because if they were to hold onto it, they would have to put it on ice that they would rather use for shrimp. Now, if they have a big fish and one that is desirable that they could sell in the marketplace, they would hold onto that. But a lot of

what they pulled up were sharks and rays and small fish that were just – crabs and whatnot that they didn't want. So they would dump it overboard.

SSD: Does it live?

MW: Most of it doesn't.

SSD: Do you think that any use is made of it at all when it goes back into the sea?

MW: It ends up decomposing, maybe being eaten. It's like anything that's dumped overboard' it's going to decompose, and eventually, something will feed on it, or it will release nutrients or whatever. So it enters that cycle, but it's not – particularly the fish that are caught and discarded are juveniles of fish that other fishermen want. It's not a very sensible thing to be doing.

SSD: Because they don't live to reproduce?

MW: No. Or to grow up to be big enough for somebody to catch and sell in a fish market.

SSD: Is there anything else about TEDs changing over time that comes to mind?

MW: Well, I think one of the things – and I haven't looked at this in recent years, but one of the difficulties is that some turtles are too big to go through the opening in a turtle excluder device, so they get caught, and they drown. So one of the problems has been identifying the size of the opening that makes the most sense. Whenever you put a hole in the net, you change the flow of water through the net to the bag end, and you can lose other sea life, like shrimp, out the hole. So there's a whole question of how big should the hole of the TED be. So with turtles like Kemp's ridleys, the relatively small turtles, it's not a big deal. But with turtles like leatherbacks and loggerheads, even green sea turtles, it can be a problem.

SSD: They get much larger, don't they?

MW: They do.

SSD: Now, just for the record, can you tell me – what does the flow of water changing have to do with catching shrimp?

MW: Well, usually, as a net is being pulled through the water, if it's totally enclosed, the water will go straight through. But if there is a hole in the top or the bottom of the net, the water can go out through that hole and take with it shrimp. A lot of that has been worked out for most TEDs, but it's just an issue that people raise, that they could be losing shrimp.

SSD: So the shrimp are flowing along in this water flow, and that's part of what takes them into the net?

MW: Yes. The shrimp are on the bottom, and at the front of the net, there's what's called a tickler chain, which stirs up the bottom. The shrimp pop up, and in a sense, they're overtaken by the net. It's not that the shrimp are swimming so much. It's just they are overtaken by the net.

SSD: Is there anything else that comes to your mind when you think about issues with TEDs changing over time?

MW: Well, I haven't been following it, I would say, for the last ten years, so I don't know what the most recent developments have been.

SSD: How have TEDs affected the shrimp industry? I know it's been a while for you since you've been involved with TEDs specifically. But just relying on your memory, what comes to mind?

MW: I don't believe that anyone has done a really careful study of the economic impact. There was a vigorous debate about whether fishermen would see any benefits from the TEDs, whether they would recover the cost of installing the TEDs, and whether there would be costs over time in terms of lost catch and whatnot. These are all issues that, so far as I can tell, back then were the subject of a lot of opinion and not a lot of data. I think it would be very hard to generalize about the shrimp industry. One of the things I found out working on this issue for ten years in the 1980s was how diverse the shrimp industry was. I remember being in Cameron, Louisiana and describing – well, actually, it was in Plaquemines Parish – and describing the device that had been developed by fishermen in Cameron, Louisiana. The fishermen in Plaquemines Parish that I talked to said they never would use a device that was developed in Cameron, that Cameron was a totally different fishery. Similarly, on the East Coast, if you talked to shrimp fishermen in Charleston, they're going to have a different point of view from fishermen in Beaufort, North Carolina. In Louisiana, in Mississippi, you have small-scale shrimp fishermen; you have large-scale shrimp fishermen. So it's very, very hard to kind of generalize. The other thing, though – I think what has caused the biggest problem by far for the shrimp industry is the growth of foreign shrimp imports into the United States, most of it raised on a shrimp farm. It has depressed prices paid fishermen at the dock – we saw it happening already in the 1980s. Now, I think it's three out of every four pounds, maybe four out of every five pounds of shrimp consumed in the United States is imported. So fishermen just don't get a good price. I think that's had a far more profound effect than TEDs. You just think of the over maybe 150 million pounds of shrimp caught in the southeastern United States, and if they're getting even ten cents a pound less than they used to, that's a huge amount of money.

SSD: Especially when you consider fuel prices.

MW: Then fuel prices go into it as well, and especially several years ago when the prices bumped up so dramatically.

SSD: Some of the shrimpers that –

MW: Go ahead.

SSD: Some of the shrimpers who I've interviewed actually have started retailing some of their own shrimp. They might wholesale the huge majority of it. Now, these are inshore shrimpers. They're not the huge, big commercial boats. So they stay on the dock a couple of days, and they sell out of their coolers. They make up for some of that loss on wholesale prices and some of the high cost of food. In fact, it's allowed some of them to stay in business while others could not stay in business. Also, they do some crabbing in the off-shrimp season.

MW: Sure. Well, that's the sort of thing – there's a similar thing in California, where fishermen get a relatively small price for fish that fetches a much higher price in restaurants or markets. I've been in Louisiana and Mississippi and Florida and South Carolina over the last couple of years, and I'm always astonished. I can go into a restaurant – I was in New Orleans about a month ago, and they had imported shrimp. I don't know. You go in. I ordered a po'boy. I ordered an oyster po'boy and asked about the shrimp. The shrimp was imported. So, I don't know. Really, there's a huge disconnect there, and part of it – I mean, the fishermen aren't in a great position to market their shrimp because really it's the processors who control that. The processors are just – I guess they decided they don't do much in the way of marketing Gulf shrimp as wild-caught Gulf shrimp. There's a little bit of it, but not a whole lot.

SSD: Right, not enough. How about the sea turtle population? How have TEDs affected sea turtle populations?

MW: Well, I think that they certainly have contributed to the rebound of Kemp's ridleys. They aren't the only reason, but Kemp's ridleys were the premier reason for using turtle excluder devices. They were dangerously, dangerously – they were on the brink of extinction. Together with protection of nests, and I think some of the head start programs down in Texas, they have continued to recover. My impression from some recent reading that I've done is that the other populations are – we haven't seen such dramatic returns. I think actually, in Florida, the loggerhead population has been declining. One of the things that I think would be great to have done is an evaluation of the effectiveness of the turtle excluder device regulation in terms of recovery of sea turtle populations. I think some of that work has been done, but I guess I myself would be interested in seeing that kind of analysis done. I certainly believe that TEDs help with the conservation of sea turtles, but it would be good to really have that tested.

SSD: Just for the record, can you explain what the head start program is in Texas?

MW: The head start program has been going on for, I don't know, thirty years, and what it involves is collecting the eggs of Kemp's ridley turtles that are laid down in Tamaulipas, Mexico, and bringing those to Galveston – the National Marine Fisheries Service lab in Galveston, Texas, where they are hatched out and raised until they're, I don't know, the size of a dinner plate. This is meant to get them past that early stage where they could be eaten on the beach or when they are hatchlings leave the nest; they could be eaten by a bird or by a fish and so on and so forth, so the first couple of years of life. Once the sea turtles reach that juvenile stage, then they are released into the water at various points along the coast. The turtles are marked, and I believe they mark them on their shells. They take a plug out and reverse it on the shell, so as the shell grows, the mark becomes more prominent. So you can tell when a female comes onshore that this is a head-started turtle. Some years ago, head-started turtles started

nesting on the islands across Padre. So some of them have survived and are now reproducing. That, I think, really made a difference.

SSD: I think that some of the testing of TEDs was done with those captive-raised turtles.

MW: Yes.

SSD: Going back to the loggerhead decline in Florida, is the loggerhead the one that gets so huge?

MW: It gets to be a very big turtle. It isn't the biggest. The biggest really is the leatherback.

SSD: The leatherback? Okay.

MW: The loggerhead can get to be a very big turtle.

SSD: Is it so big that the TEDs are not big enough? The TEDs that work for the Kemp's ridleys, for example, are not big enough to let the loggerheads out?

MW: Some of the adult-sized loggerheads – I think the bigger adults may still be getting captured. I don't know what adjustments that they made in the TEDs to account for that, but it is something that I think loggerheads as a species were more vulnerable to that than other species. There are just lots of challenges for sea turtles in Florida. The nesting beaches are changing with rising sea levels.

SSD: Right.

MW: There has been some loss of that. There's still a lot of development continuing on the Florida coast. That, the lights associated with that, and human traffic on beaches during the nesting season – all of those things contribute. But I haven't seen – I really haven't looked for a detailed evaluation of the trends.

SSD: Do you know if there are any plans to address the decline of loggerheads?

MW: Oh, yes, there are. The National Marine Fisheries Service and the US Fish and Wildlife Service, together with state wildlife agencies and volunteers in various organizations, are certainly working on reversing the decline. I don't know specifically what those activities are, largely because I've been out of the field for quite some time.

SSD: Right. I'm just looking at my notes and seeing if there's anything else I wanted to ask you about it. There was, but I've lost it. [Sirens in the background.] There go the police. I'm so sorry that these sirens are getting recorded through my phone, but there's nothing I can do about it. Well, we've covered the questions that the museum asked us to cover. If I had been interviewing you strictly for the Center for Oral History, where I work, we would have started with question six. Do you have time to go through the remainder of the questions?

MW: Sure. We've got another twenty minutes.

SSD: Okay. Just tell me when you need to break it off. Can you tell me a little bit about where you grew up and what your childhood – I'll tell you why we'd like to ask this question. People in a hundred or two hundred years will be interested in what to us seems very ordinary now, so we'd like to get a little background information on the record when we can. So can you tell me a little bit about your growing-up years?

MW: Well, I was raised in Southern California, and I was raised near the ocean, so I've always been something of an ocean person. I went to a Catholic school for twelve years, and I went away to the University of California at Santa Cruz and completed my studies at UC Berkeley. Really, since probably the seventh or eighth grade have been politically active in a way. So I've worked on everything from the Vietnam War to rent control and low-rent housing to conservation and really got my start in marine conservation with a small organization in Oakland that was focused on whales. From there, because of my academic background, my boss there sent me to help the conservation community with some negotiations in Bonn, West Germany, regarding a treaty on highly migratory species.

SSD: A treaty on what, again?

MW: Highly migratory species. So birds and mammals and fish and whales and whatnot. There, I met a fellow who ran an organization in Washington, DC, who called me up later and asked me to come back to Washington, DC, to work. One of the things that he wanted me to do was to start a program on sea turtle conservation. This was in 1980. The previous year, there had been the first world conference on sea turtles and their conservation, which was held in Washington, DC, I believe. I didn't go to that conference. In any event, I knew absolutely nothing about sea turtles but was interested in finding out how Washington, DC, worked. So I agreed and went back and worked on that program, amongst others, at what became known as the Center for Marine Conservation, and then after I left, the Ocean Conservancy. I was there for ten years. I worked on marine protected areas, on sea turtles, including international trade, pollution, fishing, incidental capture, and projects on sea turtles in different parts of the world, a lot of it in Mexico and Costa Rica. But I left in 1990, then worked as a special assistant to the head of the National Marine Fisheries Service for four years, and then left and was a freelance researcher/writer for twelve years before getting into my current job about four years ago. During all of this time, I've focused largely on – almost exclusively on ocean and coastal conservation, everything from offshore oil and gas drilling and bulk transportation oil to fisheries to coastal development. So I've been doing this for about thirty years now.

SSD: Yes. Wow, it sounds really interesting. I think I'm a frustrated naturalist. I really do, yeah. When I first learned to snorkel off of Ship Island, which is a barrier island off the Gulf of Mexico – I grew up in Gulfport, so I was a beach rat. It's not a very big beach, [laughter] but it was big enough for me as a kid. But I just can remember snorkeling at Ship Island and floating in the water, very still, watching a tiny little crab as he scuttled back and forth and just thinking, what does he think? What does he feel? What is his consciousness? I get that way about everything – earthworms and everything. So maybe in another life, I'll get to do it. What degrees did you earn? What were your areas of study?

MW: Well, I have degrees in Greek and Latin literature.

SSD: Wow, that's a far cry from a naturalist.

MW: Yeah. Well, I'm not a naturalist. I really am a researcher and a writer. That's my main, I guess, calling.

SSD: Yeah. I was just expecting biology.

MW: Well, I am very much of a policy person. I taught myself and learned a lot about biology and ocean science, but I wouldn't claim to be an expert in biology or whatnot.

SSD: But studying Greek and Latin literature allows you to research – do you feel like it prepared you to research anything that you needed to research in your life?

MW: Oh, yes. Absolutely. Because I was in a doctoral program at Berkeley and researching and writing were core to being successful in that. And I was twelve years as a freelance consultant, and people knew that they could hand me a box of studies or whatever and ask me to research an area and write it up in clear English in ten or fifteen pages. That's really what I do.

SSD: What was your dissertation topic?

MW: I didn't get to the dissertation. On my twenty-fifth birthday, I dropped out. I decided I didn't want to be a university professor.

SSD: That's where you were headed? Is that where you were headed, then?

MW: Yes.

SSD: Why did you decide you didn't want that?

MW: Well, there was just a point where – what I was interested in contained the excitement I felt and the pleasure that I got out of studying Greek and Roman literature and culture and whatnot. But the emphasis within academia was on research and publishing papers and whatnot, and I was happy enough to do that. But after a certain point, I just realized that I didn't have the interest that I once had. This was 1975. It was a time of a great amount of commotion, and to me, it seemed that the classics as a discipline was too far removed from the issues that were really pressing at the time.

SSD: 1975. I'm thinking troops have been pulled out of Vietnam. Things were looking kind of up in that area. Where was the commotion?

MW: Well, it was just everything from the counterculture to Richard Nixon.

SSD: That's right.

MW: All of that was going on. So there was a lot more questioning of authority, and that all shifted pretty quickly. I just thought that academia was too insulated from that.

SSD: Okay. We've talked about, really, why you chose your career path. I think we just covered that unless there's something you want to add.

MW: No, I don't think so. I think a lot of the reason I do what I do is that while I really care about the natural world, what truly drives a lot of what I do is trying to change the behavior of our society or people because a lot of what is done just doesn't make any sense.

SSD: Absolutely. I mean, we're headed for self-extinction.

MW: I'm a true believer that if you assemble facts and put together solid arguments, and engage in discussions, you can solve problems. That's the biggest thing.

SSD: What is a typical day at work for you? Can you kind of paint us a picture and walk us through it?

MW: I spend two days a week in Sacramento at the office up in Sacramento, the main office. There, I work with a lot of staff. I'm on conference calls a lot. I do a lot of drafting of reports, analysis of proposals. I do a lot of strategizing on projects that we're engaged in. I meet with foundations and government officials, fishermen, conservation organizations. So it is a real smorgasbord. But most of it is focused on a couple of major efforts that we have underway. One is to establish a statewide network of marine protected areas in state waters. We're more than halfway there, and it should be complete by 2011. That is really the big project that we're working on right now.

SSD: That's wonderful. Anything else about a typical day of work that you could put on the record?

MW: No, not really.

SSD: Well, one of the questions on here has to do with the kinds of turtles found in the Gulf of Mexico, and I've certainly covered that well in my other interviews. Always when I'm interviewing, I'm thinking, you know, two hundred years from now, if this is the only remnant of culture that somebody finds, what would be interesting for them to hear and may be helpful? So, just off the top of your head, can you tell me some of the sea life that's in California? What are the marine resources in California?

MW: Well, what we have is very different from the Gulf of Mexico because the water is much colder, and much of the nutrients that drive the production in the area is from the ocean bottom and is brought up by upwelling. We're one of the few areas in the world where you have these big currents that come from the bottom and bring nutrient-rich water, cold water, to the surface. Of course, people associate California with anchovies and sardines. We certainly have tuna and salmon, although salmon populations are in really bad shape. We have our own kind of coral

reef fish. They're called rockfish. They're over there on our rocky reefs, especially around kelp beds. So these are areas that are kind of like coral reefs, and there's a great diversity of fish there. Unlike the Gulf of Mexico, the continental shelf here is very narrow, so the water gets deep, not so far from shore. We have huge submarine canyons. In Monterey Bay, there's the Monterey Submarine Canyon, which is deeper than the Grand Canyon of the Colorado River. So it's a pretty dramatic coastline and seabed, and that's partly because we're such a hotspot for earthquakes.

SSD: It all works together. I've asked everybody this question. I guess, your own opinion. Why are sea turtles important?

MW: Well, they are important in and of themselves, as any living thing is. Just in terms of the world in which we live, they are a group of animals that have persisted since the time of the dinosaurs, and I think morally, it would be inexplicable to allow them to go extinct in our lifetime. Also, in a lot of ways, they're just fascinating animals. I think anyone who's been out on a beach and watched a female come ashore and dig a nest or seen hatchlings emerge from the nest finds it an unforgettable experience. Just the fact they spend most of their lives in the water and travel thousands of miles and come ashore is just an extraordinarily different kind of life from what we're familiar with. They play a big role in the ecosystem. So you take sea turtles out, you risk affecting other parts of the ecosystem. I think that's been seen with seagrass beds down in Florida, where it used to be that when there were plenty of green sea turtles, they would kind of trim the seagrass beds, keeping them healthy. But now, that's no longer so much the case.

SSD: It's amazing how much of an effect they have on our lives – what impact they have on our lives. I'm totally puzzled, stunned, disappointed in people who are – their behavior is – it's going to do humans in, is what's going to happen. Sometimes I think that would be a good thing, you know? [laughter] If we were gone, the other animals would make a comeback, and the Earth would be a wonderful, beautiful place. But that was a wonderful, wonderful narrative about why they're important, and I think what came through for me from your description is that they enrich our lives. The turtles enrich our lives.

MW: Absolutely.

SSD: I don't know if you know anything about anaerobic respiration without oxygen and why that doesn't prevent sea turtles from drowning in nets. Do you want to take a stab at that question?

MW: I think that that phenomenon is usually associated with sea turtles going into dormancy, as green turtles do, say, for instance. Where I first heard about it is green sea turtles going into dormancy in the Canaveral Ship Channel [multiple conversations; inaudible].

SSD: Is that like hibernation?

MW: Yeah, it's a kind of hibernation. But is a major change in the physiology of the animal. Bears go into dormancy. Well, they can't just turn it on and off. It's associated with a cycle. So it's not something that they can just do when they decide to do it.

SSD: Is there bottom trawling in California?

MW: There is some still, yeah.

SSD: Do you think it harms the ecosystem?

MW: Yes. [laughter] I don't think there's any doubt about that.

SSD: How does that – I'm sorry.

MW: Well, yeah, I'm going to have to go after this. I think the biggest thing is that it's indiscriminate, largely, in what it catches. And second of all, bottom trawling can be damaging to sensitive habitats. Those are the two main problems.

SSD: Okay. Thank you so much for letting a complete stranger call you and pepper you with questions. I really, really appreciate it.

MW: Happy to do it.

SSD: And I'll send you a CD as soon as I get one burned for you next week.

MW: Good enough. Good luck with your research. Bye-bye.

SSD: Thanks. Thank you. Bye.

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Reviewed by Molly Graham 12/7/2021