

Karen DeMaria: Primarily, I think the reason I am here with you today is twofold. One is trying to observe the changes that have occurred to the marine ecosystem, the fisheries, the water clarity, quality, and benefit communities. But also collecting information like old stories from the old timers on how things used to be. Because a lot of scientists do not really know how things used to be. Like with Florida Bay, for example, there is no information on how things used to be. Now when you are trying to figure out, well, how bad is the problem, well, you do not know how bad the problem is unless you understand how it used to be. It is kind of a twofold thing. Now, I know your job as a NIMS statistician, you probably heard some stuff from the docs, from what are people saying. So, I want to tap into some of that information. Also, I am going to probably need from you – maybe not today, but I can at least give you an idea of some of the stuff I will need. It's years – I'm looking at the dates when different regulations went into effect and other items that affected the fisheries.

Ed Little: Okay.

KDM: Then also, you as a maritime historian/salvor whatever information from you on the personal side. I would like to get more from you as Ed Little person, not Ed Little NIMS statistician right now, but we can tap into the statistician person.

EL: Okay, certainly.

KDM: And then also, since as you said, every Saturday you go fishing, you spend a lot of time, your aspect on that. Is your mailing address PO Box 404-33-041?

EL: Yes. Actually, I use 40, but go ahead. Is this your pen or mine?

KDM: It is yours. Well, which one is it?

EL: This black pen, it's mine. Just checking.

KDM: Your occupation is NIMS biologist.

EL: Well, actually, we are technically called fishery reporting specialists.

KDM: And now you mentioned the US Maritime Historical Society.

EL: Right.

KDM: You are president of that now, right?

EL: Yes.

KDM: What other volunteer or hobby type things do you do?

EL: Well, see, the other thing I am also involved now with something known as the Key West Bight Preservation Association. I am their acting secretary.

KDM: You are president of the Historical Society, right?

EL: Right. Yes

KDM: Secretary of Key West Bight.

EL: Preservation Association.

KDM: How long have you worked here for NIMS?

EL: NIMS, since 1981, I believe.

KDM: How long have you lived in the Key?

EL: Continuously, since 1976, actually, 1975.

KDM: Continuously.

EL: I was also always in Key West. Actually, I was in Marathon in [19]80 or [19]81 in that period. But actually, I first moved here and worked here for years as a biologist with the State of Florida DNR in 1970 through 1971. That is when we used to have a marine laboratory down where the city aquarium is. Well, that shell shop and all that tourist stuff there, that used to be a parking lot, and there was a big ice house there. Tiff's Ice House was our marine laboratory.

KDM: That is where the ice house was. Okay.

EL: It's still there. It's now sort of a shell warehouse or some darn thing. But originally, that was a marine laboratory given to the state of Florida by, I think it was (Bernie Pappy in Spotswood and that bunch?) in the early [19]60s. I came along there in the spring or summer of [19]70s.

KDM: That was the first time you came to the Keys?

EL: Well, I would actually been here once in 1966 on a vacation from when I was at University of Miami. Also, I was conceived in the Keys in 1946.

KDM: [laughter]

EL: My dad ran the small boat station for the Navy. He was in the Navy down here during the war. My mom, my dad lived here, and so, I have seen old photographs of them at that point. I guess we were born over on (Varela Street?0 or something. But I was actually born in New York, but conceived here. I like to claim that that might have something to do with it.

KDM: [laughter] Okay. So, you do have some roots here.

EL: Yes, I guess.

KDM: Okay. You graduated for your degree from college?

EL: Yes. A place called College of Emporia out in Kansas. I sent them \$5 and I was accepted. But it was either that or be drafted, so I decided to do the smart thing.

KDM: [laughter] How old are you?

EL: I am forty-seven now.

KDM: You ever go to graduate school and take any graduate-

EL: I was never in a graduate program. I took a couple of courses at University of South Florida and Florida Keys Community College over the years, but I never really entered a postgraduate program.

KDM: I guess the first question I always throw out at people is what have you observed the most that is different now from what it used to be? What is your most obvious observation?

EL: People, more people and more boats.

KDM: What does that have to do with the impact to the water or to the fish or to the [inaudible] communities in your words?

EL: Well, it is hard to say if you can see a direct impact. I mean, it's not necessarily something I would directly see. But an interesting thing is, and this is important as a result, more people and since everybody who comes down here, a large number of people want to go fishing. One thing that was a fairly substantial change and developed from the mid-[19]70s through the mid-[19]80s or into the late [19]80s. That was at the same time an increased number of people came to the Florida Keys and went out on boats to go fishing their own private boats or whatever. The cost of living in the Keys and the cost of operating those boats and the capital to buy a sport fishing boat, whether it is a runabout skiff or a cabin cruise or whatever. They escalated so much that a large number of people who were not professional commercial fishermen began taking marine life out of the environment to subsidize their hobby of fishing or diving. So, that's a large change, also, probably the other large change, of course is sport diver season. Which when I first moved here in the [19]70s we did not have it in [19]70s and [19]71s, and then I think when I moved back, I think they started in [19]78t or sometime like that. But clearly that puts a tremendous amount of people out on the water. We tried to look at diver impacts years ago, back into the [19]70s when I was with the state because I was really a lobster researcher with the state through most of the [19]70s. I could just tell you that the major change is I don't really see changes in the environment so much simply as I just see the mechanism for change and that is increased number of people.

KDM: Right. What about being on the water? You like to fish a lot. What have you observed being out on the water? Have you observed anything changing?

EL: Well, basically for the record, I am telling you I am catching more and bigger fish now than I did twenty years ago.

KDM: What fish?

EL: Mangrove snapper, groupers of all species, there is no doubt. The thing is the reason for that, it's hard to determine if it's biological. In other words, an increased abundance of the fish or it is my increased sophistication in fishing, that is the thing. The fish are smart. You cannot use the fishing techniques that you used twenty years ago to produce fish now. I can get into an involved explanation on it, but the fish are far smarter. In fact, they were smart. They are known to be smart at the turn of the century and even into the 1850s. If you look at accounts of people trying to catch mangrove snapper, they clearly say that mangrove snapper are very, very smart.

KDM: Where did you get that from?

EL: One from the Hackley diary, which is written through the 1830s through the 1850s. William Randolph Hackley. (John Vealy?), I can tell you about that if you met John in the environmental story, it's over at the library. But in there he talks about trying to fish for mangrove snappers and not catching too many. Then at Dry Tortugas, sometime either before or after World War II, I forgot the exact report I pulled it out of. But in there, they mentioned one, probably either (Dr. Longley or Dr. Hildebrandt?) had said that he was trying to fish off the dock at Dry Tortugas. Using very fine string and so forth, he was finally able to get the mangrove snappers to bite. I have to remember where it is. I may have it in my notes. But it was clear that he said, "I used my normal fishing techniques, and they would not bite. Only by hiding the hook and doing this and doing that, they would bite." You can imagine that it seems to be a function of proximity of people to these fish. The more people around, the more sophisticated the fish are. That's why people who fish commercially in part, or even a sports fishing boat likes to go a long distance. Because when you stop and you throw the line in, you'll see the same number of fishes you do right in Key West Harbor. I mean, there is a world of fish in this harbor after two hundred years. I'm telling you, it's full of fish. But the fish bite more readily because they are not sophisticated. There might be a larger size to them or something. But I can sit here in this harbor and stop the boat and look right off the side of the boat, put some chum in the water, and the water will be black with snappers. Logically, you could not put any more snappers there giving carrying capacity or whatever you have got. I mean, if you look and you see forty and fifty mangrove snappers and a bunch of grunts and two or three groupers and then a bunch of Bermuda tubs and everything else up in the water column feeding within a minute or two of stopping, it tells you there's a lot of fish there, and they're still there.

KDM: How have you changed your method of fishing?

EL: What I've done now is, one, I have got rid of a fishing pole. Forget about using fishing poles. That's the first thing.

KDM: [laughter]

EL: I use hand lines, and we use more live bait. In some cases, we chum with live bait. We also work with fresh caught mullet, fresh caught ballyhoo, as opposed to frozen stuff. In other words, we are more selective in our type of bait. We just don't take any old thing. In other words, we have learned what the fish like and what they don't like. We have gone to using a circle hook like they use on a long line, a Japanese circle hook. I know this is one of them right here. It's not much different because this is fairly small hook. This is what most yellow tail fishermen and king fishermen use already, or even small fish. But this thing here seems to hook the fish. They just take the bait and run to it, and you sit there with a 60-pound test hand line and bring in a mangrove snapper that big in front of the pier house. You do five mangrove snappers like that, that's your limit. Then you go off somewhere else and you catch groupers the same line. My belief is that in terms of the fish fauna, I'm seeing as much as I ever did.

KDM: Can you pretty much hand line fish for snappers and groupers?

EL: Yes, for my own table, simply. But five snappers, you maybe give one away and have two or three for dinner over the course of the week, but that is what I eat. If I do not catch fish and I am a bachelor, I do not eat, opening a tin can of Chef Boyardee. I depend on my fishing for seafood because it is good food.

KDM: You fish pretty much right here off of the harbor in Key West?

EL: Yes. Well, because I have a small boat, I can't go out to Marquesas or Boca Grande Channel or I can't go towards up Big Pine. In other words, I fish everywhere around Key West. Everywhere, out in the ocean, up in the Gulf, any place where the water is somewhat protected and you don't develop a high sea. I can go maybe a long trip might be five or six miles in some direction from Key West. We go out in front of the reef and whatever.

KDM: Have you noticed anything different about the fish in the area? Like, in a particular area, specific area that you fished?

EL: Not really. I have been going to Boca Chica Beach, for example, which is going to be one of marine reserves since 1970, and fishing around in there. We do seem to see in that environment not as – I never really fished there that intensive. I mean, I skin dive there and there is plenty of hog snapper there. Probably we are shooting as many hog snappers there as we ever did. For snappers, the other fish we generally nowadays fish more to the reef and play around there and do things. But as far as reef fishing goes, another thing we have noticed and that is that there is a large number of yellowtail snapper on the reef that we did not used to see. I firmly believe, you could not get any more there if you stop the boat and start chumming and the water is gold around you with the yellowtail snappers of this size and this size. Tell you what, I don't remember seeing that like that.

KDM: I think everyone has said that there is an increased number of yellowtail. I have not had anyone not...

EL: The other thing what we have not seen, really, I have never seen a decline in the

barracudas. But people would tell you years ago there were thousands of barracuda and there are fewer of them now, but certainly there seems to be any amount of yellowtail out there. The trick is to one, catch large yellowtail as opposed to the small yellowtail. The small yellowtail bite, and every last one is either just legal size or just below it. So, there is no incentive to fish for them. What you want is the big 3- or 4-pound fish. What occurs there, you have to have specialized techniques, generally a little bit deeper water to work with them and chum them and get up early and do a whole mess of other stuff that I'm not about to do. I'm am going out for fun, so I'm not trying to get two or three hundred pounds of these yellowtails.

KDM: You are not working at school.

EL: I am just stopping. If we get some fish there, that is fine, but we are not working in an area.

KDM: Have you noticed anything on the fish itself?

EL: In terms of parasites and stuff? Yes. What we have just done is mangrove snapper, in fact, I just sent two tumors off to the Smithsonian that came up on snappers in the last couple of...

KDM: What kind of snappers?

EL: Mangrove snappers, but the only species that you see any parasites or anything out of the ordinary on are mangrove snapper, virtually. Every other species of fish down here, I've seen virtually no external parasites, no cysts, no any sort of abnormalities at all. Mangrove snapper for one reason or another, we've seen – one person called me with one that he caught on Saddlebunch Keys that had a tumor or a cyst on the tail, and someone caught one up in the Gulf. What caused them to call me was they caught one with one of these cysts and let it go or threw it away and then caught another one that same day, the same place. They said, "Well, this is interesting. Let's bring it in." So, that happened twice. I've seen a number of these fish almost everywhere where I have been fishing. It would seem on a rare occasion these things are not particularly abundant, but it is not unusual either, and it's a cyst. It's in the integument, in the skin. It's not in the underlying musculature. It's some sort of skin condition they get. So, you will once see cysts or tumors in the skin, very seldom, it has almost nothing to do with the musculature. I eat the fish.

KDM: Right. We have had too.

EL: We see that.

KDM: Is that something that is just recent?

EL: No, I know of it going back at least five years that I can remember. I can't remember a specific incidence, but I have never had any doubts that it was something that I would see going certainly back to 1980. I remember catching the fish when they first built the highway, put the highway in. It was very good fishing around those bridges for a while. It was before I had my boat, and so we fished the bridges quite a bit and got to see the snappers hanging around these bridges. Because when they built the bridges, they had to jet huge holes in the bottom for the

support beams, the uprights. So, these things, you may have shallow water, and all of a sudden around each it goes under it. So, we saw a lot of fish hanging in those places and fished them quite a bit. That was when I was still with the state, and I remember finding mangrove snapper at that point that had cysts on them. Just like one cyst or two cysts or something on a fish. The other thing you see with mangrove snapper a little bit is a dark spotting on them. If you've ever been around freshwater, you have seen that. I do not even know what it is. Someone ought to check it out. But they do get a dark spot, particularly in the chin area and the face area. Little tiny black spots or blotches, and that is the only thing we have seen with any fish really.

KDM: Never heard of freckles on Barracudas.

EL: Never have, no.

KDM: Some old guy was telling me, he goes, "Did you know that Barracuda have freckles?" He says he thinks that it is a little crab that lives underneath that first layer of skin on the Barracuda's face because it moves around. I was just like, "Okay." [laughter]

EL: Yes, I never heard of that.

KDM: I never did either, but I thought that was kind of interesting. When you say, "we," who's we?

EL: With what?

KDM: Every time you have been talking here, you keep saying "we."

EL: Well, just me and myself in the plural.

KDM: Okay. You and whoever, you go fishing.

EL: Yes. No one else can corroborate these observations basically. What else did we see? Another thing we've seen interesting thing is that areas that, again going back to the highway, when the highway came in in 1980, the new U.S. 1, which is the area around Sugarloaf. There's a lot of lobsters took up in residence in the rocky riprap that was put down as the roadbed. All the shoulders there, all these rocky boulders. Let me tell you, those things produced some lobster you would not believe. Since that time, the area has silted in and it does not hold them anymore. I'll tell you what happened was basically there were the barren boulders and in crevices between them, you would see lobsters. I took people out, I remember this quite clearly in [19]81 or [19]80. I had some friends in town. It was rough and windy, we could not go in the boat or anything. So, I said, "Let's us go. You folks are from Kansas, you haven't seen a lobster? Let me show you with some lobsters that come right out of the water." We went on the road bed over there, right by Shark Channel. We got out of the car and walked down the boulders and right among all the boulders were lobsters. I said, "Well, these are all shorts." It was very shallow water, no more than a foot. I said, "There's going to be shorts here, and they will poke their antenna right out of the water and look at you," and that's what they did. But the guy, they do not look all that small. I look over, he's got two or three of them this big sitting

under these rocks. We got them in the water and we got our limit. We got twelve or twenty of these things right out of that area there by waiting. But what occurred since then is that the area where these lobsters were living has eventually silted up with a lot more flocculent sediment and also got a lot of benthic algae primarily [inaudible] in there. For some reason, it no longer holds them in that spot. It was about the only benthic alteration I can think of down here that I have ever seen.

KDM: Do you think that is the same with the bridges when you are talking about the pilings, they juzzed them down, the fish do you still hang out?

EL: Yes, they still do. It's still good fishing, but I think it was better when it was a little bit newer. I'm sure it settled a little bit or one other thing, but those bridges really had a lot of fish. I mean high densities of fish around those pilings. The water is just black with them, you throw a plug in or something and they all come boiling out. They tend to be small. Mangrove snappers are generally what they are, but there are some big ones in there, too. We noticed that, and what else did we notice there?

KDM: What about the clarity? Well, first of all, you mentioned hog snapper earlier, have you noticed a difference in the size of the fish itself? I mean, you said there seems to be plenty-

EL: They seem to be an average. I do not ever remember shooting huge hog snapper. They were always about a pound or two-pound fish. In other words, a fish about yay big was about the average that we would get. We still see these.

KDM: About eight inches long.

EL: It would have to be. The body from the nose to the center edge of the tail about ten inches or so. The fish of eight inches a little too small. We would not shoot them, but they seem to be holding up pretty good from what I see because I still spear fish at Boca Chica.

KDM: Stupid fish.

EL: Yes, that is good. It is the only fish I can get.

KDM: [laughter] Mangrove snappers are real hard to shoot.

EL: What you do with them? We wait till they poke around their heads around something, usually we go one way and they go in the other way when they poke their head around.

KDM: Yes. Because otherwise they will sit there and they look like they are posing for you, and at the last second, it is like they just sort of jump out of the way.

EL: As you get right in. They're smart.

KDM: Here is a list of different fish species here. Just look down it and see if it sparks anything, because you are sitting there going, let us see what else. So, just go down, see if you...

EL: Cuberas and yellowtail more than ever. Mangrove holding their own. Muttons, I don't have much contact with Muttons. I know I can tell you Mutton snapper live in both in Key West Harbor and in Boca Chica channel, right up against civilization. There seems to be any number of young Red Grouper around everywhere. It would be hard to believe that you could get any more per acre per square foot of bottom, whatever. Every sponge has got one under it. Clearly, you can only fit so many around. Cuberas, no one has really done much with those. I have very little first-hand contact with them. Dog Snapper I don't think it is ever been very abundant. Schoolmaster, never very abundant, even going back. The only place we really see schoolmasters is around Boca Chica in the altered areas. Very shallow water where the [inaudible] is, very stressed, hot environments. They'll be in the prop routes there very small ones. Never any size to them. Over 20 years, I've never seen any number there. Lane Snapper probably holding their own, they are on sandy bottoms, muddy bottoms, you wouldn't expect them to see them anywhere else.

KDM: You see them like in Hawks channel.

EL: Yes, Hawks channel. Primarily the sand or mud, as opposed to a lot of other stuff around. That is where the lanes hang out. They are on sand. Hogfish, other critters.

KDM: I always put others just because you never know somebody...

EL: Yes, other snappers.

KDM: I think I hit most of them.

EL: Tunas. I have very little to do with tunas because they are offshore and I can't play around with them. King mackerel and Spanish, whatever, very little direct contact with them. I do see them on occasion. Cero mackerel looking real good there because they do not school. No one really fishes for them extensively. You can still find them in Key West Harbor.

KDM: Is there a fish that seems to be closer to the harbor, like in Hawks Channel more?

EL: That's a Hawk Channel fish somewhere all year round. They run from the shoreline, run on out over the reef. Where there is one, there's more but they do not school up densely. So, there is no real market for them. Good eating fish, best eating fish down here, probably.

KDM: I like cero.

EL: Dolphin. Any number of them around, sometimes they're here, sometimes they're not. All the other ones, the sailfishes, marlins, don't know anything about the offshore fish. Firsthand mullet, plenty of mullet around. There's three or four species down here.

KDM: Really?

EL: Yes, and they are all good eating.

KDM: What kind are here?

EL: We have the black or striped mullet, which is the one that grows to big sizes. You'll see it up in the canals where you are at, big old mullets, especially where [inaudible] is at. That used to be theater, not theater of the sea, but that aquarium place up by (Betty Brothers?), there used to be a little aquarium thing on the highway. Don knows where it is, [inaudible] is in there now. There is like a lagoon in front of his house or in front of the thing. If there's an area that is protected muddy water with a mud bottom, they will sometimes be mullet frequenting it, and we see a lot of them. That's the black mullet. Then if you are driving down the highway anywhere from Big Pine to Key West, you look out off the highway and you see these big white schools of mud, that's primarily silver mullet. Great numbers of them still around, been here twenty years that I have been around, I still see plenty of silvers. I chase silver mullet probably religiously because I use it for live bait and also for dead bait, but particularly for live bait. They come and they go and they're here one time and they're gone in another. Porgies, I don't know too much about them. They're on open bottoms. They're difficult to spear fish. They generally don't hit the type of fish baits that we use when we are hooking line fishing. Triggers, they seem to be as abundant as ever, maybe there is a little bit fewer of them. Tarpon, everybody seems to say they are holding their own. I see plenty of young tarpon even in the most polluted areas around Key West ditches have tarpon in them. Back around where the mobile homes are in Searstown all there is old ditches and drainage stuff up there full of tarpon. They come and they go. The small ones are here sometimes, then they moved out of the air by small ones I'm talking about fish of this size and this size.

KDM: They are cute.

EL: Yes. There is pepper I keep in my boat. They are in there at times.

KDM: You say, they come and they go. Does it have anything to do with seasonal or temperature waters?

EL: Well, I don't ever try to even get that scientifically correlated and stuff, because...

KDM: You do that all during the week, right? [laughter]

EL: Well, not only that, I mean, there is really very little point to it since I'm going fishing to go fishing. I'm just going, I'm not to worry whether it's 10 degrees or 6 degrees or whatever. I'm just going and I don't really need to produce fish, so I don't have to worry about that. Anyway, Tarpon, though, the adult tarpon is seasonal here, as you may know. Groupers, black grouper have become very, very wary. It's difficult to spearfish them. I never really speared fish them that much anyway, but they do live. Black groupers I catch them in Key West Harbor all the time, all different sizes, from twenty-inch black groupers like this to little ones like that. They're all over the place, really. They're in shallow water. They live in shallow water. Red grouper, same thing. Warsaw, I don't know anything about. Gag grouper lives in very shallow water. You can find it almost any place where there is metal wreckage, any kind of metal on the bottom. There will be a gag grouper there. In fact, Don and I went spear fishing for him one time that

way. He said he could not find, said, "They are all over the damn place, let us go" and bam, bam, bam, we got them. The other yellow mouth, yellow fins, offshore groupers, we don't see them. Tiger grouper, I have only seen one of those, I think it was a tiger. Snowies, don't know anything about them. Nassau are around. I've never seen very many of them, even going back twenty years.

KDM: Yes, that was a question that came up a couple of other times. Has there ever really been a big population?

EL: Not in the last twenty years that I know of. In fact, I just caught three or four of them in the last year right in Key West Harbor. In fact, some of which were legal. I just let the fish go because I thought they were illegal. I didn't realize the state law didn't protect them, only federal law did at the time. Jewfish, I've seen jewfish in the most protected shallow mud puddles you could imagine around by the highway, little ones, juveniles.

KDM: Would you say that they are coming back?

EL: Yes, again, I've never really played around with them that much. I think I have caught two or three of them over the years, speared one and hook a line two, I guess, probably over the years. They were always in very shallow, protected environments. Where I saw them, they weren't the big fish. They're just yearling fish, smaller fish. For the present, are you seeing these species now? Yes. We see Nassaus now. Jewfish, I have not seen a Jewfish lately, but certainly within the last five years, I saw some.

KDM: The harbor, that is a dredged-out area. Does that have a nice clean cut?

EL: Well, I will show you on the Map Room. Let's go to the Map Room.

KDM: Let us look at the cross section of what this is like. You are saying that you have been able to catch all of stuff. I wonder what this area looks like.

EL: Well, I will show you what occurred here over the years. [inaudible] Basically, I'd fish anywhere through here, out the (Cal Bay?) channel. All through here, you can see these wrecks. There's all stuff all through.

KDM: Where is Alexander's?

EL: Alexander's wreck is way out here. Well, it's out in this area here. Somewhere out here is Alexander's. It would be on another chart. But anyway, QS Harbor originally was very narrow. Where my fingers are was originally what the real harbor was. Then at the turn of the century, to accommodate turning of steamships, they dredged it and opened it, made it a little bit bigger. I think that's when they created Wisteria Island. I'm not sure in the chronology...

KDM: Wisteria being Christmas tree.

EL: Right. Yes. The fisheries that put Key West on the map as a fishing producer, in other

words, once the railroad came in around 1912, there was not much going on. I started shipping in fact, I had to do a thing for this Thompson Fish House turtle, canner. I just did an analysis of it to get it on the historic register. So, I had to look into that period, and the railroad came in, I think it was 1911 or something. They started shipping a little bit of stuff out of here in barrels right about that point. But the fisheries really developed when they put a new ice plant in a little bit after 1918 somewhere around there. Then they really started going with this guy Thompson, Norbert Thompson, and he starts pulling millions of pounds out.

KDM: Of what?

EL: Kingfish primarily was the main thing, Spanish and kingfish, Spanish mackerel. An individual fisherman might have a million pounds in a year by using sailing schooners and nets and things. I got the tape from a guy named Elijah Cates who had been an old-time fisherman here. But this catching fish with nets down here is nothing new. They were netting Spanish mackerel here under sale before the turn of the century, and they were netting astronomical amounts. I mean, it was not unusual to have a million or 2 million pounds of Spanish mackerel. I'll even show you the figure from 1922. But anyway, the important thing is we go back to these cold fronts and all is that our fisheries here, the export fisheries, as opposed for the household use, were winter fisheries and that they needed the severe weather to aggregate the fish.

KDM: So, in the 1920s, they used nets under sail.

EL: Well, by 1920, they were using power boats. But they sometimes had sailing run boats that would take the cargo you would set them and then they had run boats. It's unclear how they were catching the fish. The tape that this guy, Elijah Cates had done, an audio tape indicated that he was using schooners and some sort of a purse-seine to get Spanish mackerel. In fact, they actually, although they tranship the Spanish mackerel from the Key West, the fish might have been caught off Key Varga, oddly enough, in the ocean, apparently.

KDM: I always understood that it was a big use of nets, and then it went to hand lines and then nets came back. Or has there always been sort of nets?

EL: Well, the Spanish mackerel fishery has been here. I can even show you one going earlier than this. The Spanish mackerel fishery was always a net fishery. Then they got with kingfish. The kingfish netting is new, but the Spanish mackerel netting goes back. I can show you to the 1890s in fact. Let's see what they got here. Hold on.

KDM: You have got to write a book on the history of commercial fishing down here.

EL: That is what I am going to do.

KDM: Tom Hambrick mentioned that.

EL: Spanish mackerel, Tom is the source.

KDM: He wants to do sport fishing.

EL: All right. For 1918, there was 1.7 million pounds, and then for the 1919, 1920 winters, 2.3 out of Key West alone, 2.3 million.

KDM: That is a Spanish?

EL: Spanish mackerel. Now, the kingfish was always a hook and line fishery. They did not play around with these kings much with the nets. But it says right here, and this is an important point because everybody says all the nets wiped out the kingfishing. Here is the wording of it. For kingfish fishing, a seaworthy power boat is of first importance. Power boat, okay, gasoline engine. The majority of those seen Key West are from 24 to 50 feet. A few open boats are also used for nearby fishing. Sometimes sailing vessels are seen, but without exhibit entrance, they provide unsuitable. The reason they are unsuitable, as the speed of the boat must be even regulated to travel in any direction, the fish may choose to take as the kingfish die. So, they have to go long distances. It is unusual for a boat to cruise about for most of the day without catching fish, and often the catch fairly pays for the fuel. But in the long run, fishing is profitable. A large part of the kingfish goes to Cuba, but I forgot what he said here.

KDM: Those days it was not profitable to do the king mackerel because it just took so much time.

EL: No, it was profitable fishery. What they were saying was the fish were not fitting. So, what happened with the argument was, well, the nets came in and the kingfish that used to be right here in the harbor right here were all caught up and they would never come back. In other words, they have a genetic, I've even had scientists tell me there is a racial memory of these fish. The minute that one season of kingfish that were here, this place called Kingfish Shoals right here, those fish were caught and somehow, they passed on to their genes and they're young never to come back here again. I have even had a scientist tell me this. Well, what I'm saying from this one here and from Hackley's diary from a guy named Collins who was a U.S. fishing captain for the government, when you wanted to get kingfish, you got in in the 1880s, and even in the 1850s you got in a sailboat to catch kingfish. You went all the way to American Shoal and up to Sombrero even. It was a two- and three-day trip. If the kingfish were so abundant as they're saying, all the nets came and wiped them out at the same in Key. Over here, why would somebody in his right mind get in the sailboat and go all up in here to get only a couple of hundred fish for a whole two or three days of fishing? The answer is the fish, because they're pelagic fish, they follow the bait, they follow temperatures. They just have to fall in here one year, and people got them. Then here this thing in 1920s with power boats.

KDM: Is your pen open?

EL: No, that's not – what they were looking for was I thought that he had said something you had to look around for them, you had to go a long distance for them. But it doesn't seem to say that in here. I thought it did. But he said clearly that you had to use a power boat of the first importance. You just could not go out with a sailboat. The sailboats were here all year round. There were people with sailboats for Key West Market fishing here for decades. Well, why would you need to go in a power boat if sailboats were just fine if the fish were right here? The

answer is, by the 1920s and you talk to the old timers, they were going all the way out here to the lands to catch their kingfish, same place they go to today. Sometimes the kingfish will be here and sometimes they won't. They have been kingfishing up here lately and not here, but some years this is where the kingfish were, and some years there were kingfish here.

KDM: Basically, it is just the schools are wherever the conditions are right. They do not always come to a certain area.

EL: Right. I am not a kingfish expert, but it seems clear from the historical stuff as opposed to what people say happened a year or two or ten years ago, these fish were not invariably in the places where people said they were. They might have been in that place once, but over the long term of history, they were not. You had to go a long distance to get them.

KDM: When are you going to write your book?

EL: I don't know, whenever. We were doing stuff on this anyway, we have already done two or three lectures for the Historical Society.

KDM: Do you have copies or notes or something that I can read.

EL: Yes. Hold on.

KDM: That is something that I need you to gather for me so I can look through.

EL: Yes. Basically, it is scraps of information from one place to another. It's not really there.

KDM: That is an important thing because everything I have heard is the nets wiped out the kingfishers. There were two large schools that always existed. That is what I have heard.

EL: The original net fisheries for kingfish when I finally got with nets in the [19]70s because I had to look into this were up in a day. They were even playing around here with nets with them down this way. They were up off Marathon and there was a lot of fishing for kingfish [inaudible] shoal, and whatever. So, it's just h\the fish that moves around. I'm not saying the nets I am letting them off the hook. But the argument was that they put a net in the water and the fish immediately never came back to that spot. It doesn't make sense. In fact, for years they would net fish day after day after day in the same place. Why would the fish stay there over three or four days? In a general area, they might run when you throw a net or even run boats on them, they move.

KDM: Then the general thing is that nets is a newer thing. What you are saying is nets are more of a historic fishery.

EL: With the kingfish fishery, there were some purse-seine activities going back into the [19]30s with purse-seines. Now, this king mackerel gillnet, is a relatively recent invention and that is because the fish is so large and the net would be so large you had to have power to get it in. But the Spanish mackerel, tell you what, here is what they call the Spanish mackerel. I have got

other stuff that went into this. I had a look at the old Thompson. The main fish operation in Key West was Thompson Enterprises. There was a lot of other fish dealers, but they didn't work on the export scale. By export, I mean up to the northern markets that Thompson did, but they started to get into – they are a winter fishery, November through March. They believe the fish come down in the winter. In 1880, the total catch for the Gulf in Florida was only 20,000 pounds in 1880. Then I showed you the numbers they had by the 1920s. Monroe, 2 million pounds like I said. November, they caught them oddly enough. Gilnets and purse-seines are used for catching Spanish mackerel in vicinity of Key West. A few caught patrolling, but this source is small. So, they were using gilnets and purse-seines. Now, the gilnet is used more extensively than the purse-seine. Their boats are 30 to 50ft open half cabin type. I've seen some of the photographs of these, and the fishing is done at night but they use a searchlight. Gilnetting appears to be effective as the crew can make a large catch. I'm curious to see during 1920 to '21 or 1919 to '20, they had one purse-seine vessel, but several other vessels came down. There was a 90-foot purse-seine down here at the turn of the century, at this 1919 period. It was formerly a schooner, but it now has engines, purse-seine, six hundred yards in length. But most of the fish was taken with gilnetting. The gilnetters use smaller boats. What happened? What I'm looking at, I remember I told you about this Elijah case. Apparently, he was the guy who ran the purse-seine schooner. I have got the tape and I have made the thing. Tom Hambright's got the tape over the library. It is very difficult to understand what he is talking about because he wanders around in his discussion. But in other words, it's not a new fishery. They were catching these bloody things. In fact, in 1898, I don't have the literature here for 1898, but by that time, they were catching a lot of them here, too.

KDM: What about Marathon?

EL: Marathon obviously did not exist until the railroad came in at '35. But Marathon was originally settled by commercial fishermen in 1818. Even before Key West, there were commercial fishermen operating out of Marathon in 1818, and their purpose was to catch Kingfish and probably carry them to Havana. They were Connecticut fishermen. It was called Port Monroe, in fact. Then there was a little settlement up there, but Marathon...

KDM: It is got a historical net fisherman.

EL: Oh, yes, definitely. Even going back to the last decade or so, all people who fished on the Florida west coast, the Naples, Everglades City port area with netboats for Spanish mackerel, primarily using small boat to catch a hodgepodge of snapper and Spanish mackerel. We're coming down here in the winters. Then there were large net boats in Marathon through the [19]80s, both Spanish mackerels, a lot of Spanish mackerel, probably more even at Key West. It is just not recorded back that time. So, there's always been a lot of netting here. It's not some sort of innovation.

KDM: You think that the population changes are more of like cyclic due to nature? Have you ever seen anything about that?

EL: Well, I don't know, pelagic fish, that is by definition that is the way they are. They tend to be species, all the mackerels and things, for years there will be a high abundance and then there

will be no abundance at all. In fact, this thing here even mentions that they even said less than fifty years ago, it was not known where the fish spent – here is an important point. This is a guy named – a quote from another book, which I have read. It says, "It's only in recent years that migrations of Spanish mackerel have been partly understood, less than fifty years ago. It's not known where the fish spent the winter. It was only from April November they were caught and brought to market. At that time, Spanish mackerel apparently were not known to be in abundance in the waters of southern Florida during the winter." See what was happening was there was an industry for Spanish mackerel around Pensacola and they could not find the fish after that. But this guy, George Brown Good, who actually Stanley Stearns, the guy that wrote this account of the Spanish mackerel in the 1880s, said, "Hey, they were here and then they're not here." So, these fish fluctuate same with the Atlantic mackerel. Any of the pelagic fish tend to have dips and valleys in their populations anyway. I think almost any biologist will tell you that, even in the absence of fishing.

KDM: But main thing is that you have read it in writing back in the 1800s where they were making comments about it is not just a theory or a scientific statement. It is something that was observed by other people. Right?

EL: If you don't know how valid is you will never know what the basis was for their observation. But the point is that I think most people tell you that fish, especially pelagic mackerel type fishes, have peaks of abundance and drops in abundance. Sometimes, it's related to fish immortality. Sometimes see, don't forget, the thing that determines a lot of this is their larval periods and the larvae. If you have the wrong hydrographic or oceanographic conditions for the spawn. Some of these species, like for the Spanish mackerel, there is only six of your classes in there. You can lose a brew that you can lose your baby boom, if you will and you have a dip in your population cycle. This is what happens, most of your pelagic fish there is very little parental care. They're not like with some of these other fish that guard the nests and all like this or that have I forgot the type of eggs they have. But clearly, I think most people tell you that the large schooling species, pelagic species, whether they are sardines, mackerels, whatever tend to have these extremes of populations. A lot of it seems to be as a result of recruitment as opposed to the survival of the juveniles and the adults. It's all interrelated but more often than not, when they've looked into it, they said, "Hey, it was a poor year class." That's the definition year class. We had a poor year class. We had plenty of adults. We had a good spawning but we didn't get any babies growing up. The answer is in between there, there was a severe winter, there was too much young, there wasn't the right kind of plankton food, you name it. That's where they come up with that theory. So, there you go. There is my theory.

KDM: Have you noticed the difference with the clarity of the water when you have been out and about?

EL: Yes, obviously. I can tell you I remember in [19]70, [19]71, the water being murky at Boca Chica. I think it's looking a little bit more dingy than it has in past years. It looks like dishwater at times. But I have seen in the winter months in [19]70 and [19]71, I recollect seeing a dissolved yellow substance in the water. In the [19]70s, water was clear, something they call gelbstoff it is a German term. It means a straw yellow substance in the water, dissolved substance. I remember seeing that one time in the [19]70s off Boca Chica. The water was

crystal clear but it was greenish or yellowish. You'll see that, it's a solution. Then in the last three or four years in Hawk Channel and sometimes around Boca Chica, we see more of a dinginess to the water, a grayness. Usually, when we see that we've had storms and stuff beforehand. Not the turbidity, but the recycling of the nutrients. I think I saw that when we had the years I saw the dinginess in the border was the last two or three years were the same years when we had the Lenten winds. Don't forget, February through March you have strong southeast winds. We were supposed to for two or three years we had that pattern that you could really not expect to go fishing for almost two months from February through March. I can almost remember, I got it in my weekly reports here. This year has been different.

KDM: This year has been tough [laughter]. They have been northwest and north and stuff.

EL: Right, but we did not, to my knowledge, have the sustained southeast winds that we did during the spring of [19]91 and [19]90, that I can recollect. Those were particularly notable. Then the clarity, sometimes it's crystal clear even two or three years ago, the Middlehawk channel, there's just so many variables.

KDM: Yes, but is it clear as often?

EL: That's the thing, and I think it's probably less clear.

KDM: So, many days per year do you have that like you did five years ago? I think it is more because there is so many variables and stuff.

EL: But just a frequency of a storm. You've seen like the March 13th gale, then we had the February 5th storm of [19]92. We had a real bad southwestern and I got it in my notes there. We had dirty water visibility in the Middlehawk Channel from that southwestern in February of [19]92. You had zero visibility. I mean, I made a point of looking at visibility because everybody said, "Well, treasure hunting does all this turbidity and it is going to kill everything." Someone told me that they could not even [inaudible] the reef relief people thought that you couldn't build where the jail is, Mount Trashmore. Oh my God. If they build anything in the Cow Key Channel, the sediment is going to go out and kill the reef.

KDM: Oh yes, and the county office is raw dumping sewage right in Cow Key Channel.

EL: All the turbidity from that is going to go out and kill the reef. I looked and I said, "Don't you understand what will happen after a storm?" In fact, if you look at the Stevenson's TA and Anne Stevenson who visited the Keys in the [19]30s, this is life between the tide marks in North America.

KDM: Is that a book?

EL: Yes. It was an analysis of the intertidal communities around the United States, rocky shores, sandy shores. Let's see if I have a citation, [inaudible] 1950, excuse me, Journal of Ecology. Anyway, they were here in the late [19]40s when they observed it, studied the tidal stuff. They mentioned sedimentation severe, two to three inches in a cycle after storms, water,

often milky tidal patterns, variable range, small, affected by winds. In other words, what they were telling us about is just like when you see after a storm, the water, you can't see in it. This is in 1947.

KDM: No one doubts that when it gets windy, from what I understand, people like it used to get windy, the water would be stirred up. But then when the wind would stop, it would settle down really quick. But nowadays, it is not settling down.

EL: Right. It may be the fertilization aspect of creating a bloom. I don't know what it is, I can just tell you that, it seems unique. But I can remember trying to put a mooring in Hawk Channel in [19]71. I had a type of current meter, recording current meter. I wanted to study in lobsters off of this area here, Boca Chica, baby lobsters recruitment. I wanted to put a meter in and I figured out a way to shackle it to the bottom and different things. But the point was that when we went diving, it was so murky in here, we got turbidity right there, and we just gave up. It wasn't extreme weather or bad weather. It was a nice day and been in a nice day for a while.

KDM: Did you not work with Mel Fisher?

EL: Yes.

KDM: When did you do that?

EL: 1981 through [19]87.

KDM: That was with the (Atocha?)?

EL: And Margarita.

KDM: Have you been back out to that area recently?

EL: I haven't been out there in ages, really have not. I was hoping in fact, to dive it this past summer because I knew a couple of the divers and they would asked me to participate in the mapping of it. About that time, the sanctuary came in with their definition that all submerged cultural resources belong to them, which they have since backed off from.

KDM: Was there anything that you noticed interesting out there while you were doing this work? Is there anything any oddities, corals or benthic stuff that you noticed?

EL: Yes, the oddities are obviously that the sedimentation there, one, I mapped every square inch of the (Atocha?) site. Not only what you could see on the seabed surface, but under the seabed, we had technologies to see under the sand, in the mud. Under the sand, in the mud, I found drowned river valleys. Under the sand, in the mud I found coral heads, 10, 15, 20 feet high, covered by that much sediment. In other words, it's a typical thing, you would have a side scan sonar. People say, well, there's corals dying or this, that or the other. All I can tell you is we had a sonar and it shows the bottom like this. This might be maybe 10 feet of silt or sand, silty, sand, mud. This is a bedrock here from the [inaudible].

KDM: Right.

EL: We'd see things like this in it, big coral heads, and then you might see one like that emergent. This is in this area of Fork Channel here. You can actually see the coral...

KDM: Southwest of Marquesa.

EL: That is right. This is a big sedimentary basin. It's filling up with sediment, and coral is living and dying and getting killed by sediment all along.

KDM: I wonder how long that took.

EL: We don't know.

KDM: Well how old were the artifacts?

ELs: Well, the artifacts are no telling. The artifacts are found here on the bedrock because they seem to...

KDM: to work their way down?

EL: Right.

KDM: Okay. So there really is no telling how long it took to get ten foot of silk to cover up that head.

EL: Right, and there was also drowned valleys in here. We found gouges in the bedrock that I assumed to have been drowned rivers meandering things. In a plan view, you would see something like this. In other words, we had a way we do transects with a side scan. I mapped out all the stuff and you would see the bottom would dip here on one and it would dip over here on another and dip here.

KDM: Reconnect the dots type you ended up with this river.

EL: We saw also what I think were shell middens of prehistoric Indians. You would see something in your side scan that you have a loose pile like this, something on the bottom. They dive into it and they would dredge it with their prop dredgers, blow it away. If it was shell, piles of shell. I don't know if the piles of shell – in fact is I recognize some of the piles of shell were in the v's of the thing or they were off to the side. I forgot how it was, but I said, "Why would there be piles of shell in these places?" Big old, big old prongs, also, some of the environment oddly enough to dig up welts like these trumpet snails, like this thing here. This thing, and some of the big welts that you see up in more northerly waters. We found big shells of those buried down there. It's not unusual to find these things so, we have seen the environment has changed.

KDM: I wonder how long that has been. What years would that something like that have been?

EL: I can tell you the coral heads were massive. It's hard to tell distances on this stuff. But they're clearly heads as big as this room and twice as big as this room, easily under sand and mud. This is in areas that had not been dug or anything like that. It was clearly was a natural phenomenon. Well, there is a lot of sedimentation moving around.

KDM: Yes. It is really neat after a hurricane. I bet that was really neat. Looking at and trying to decipher [laughter].

EL: I plotted every bomb. I mean, there were...

KDM: A lot of bombs out there?

EL: That is the whole thing. The frustrated mill's search was that he was doing it in a Navy bombing range. Of course, what you were looking for, all your instruments detect metal. Because normally when you are hunting for treasure, you are not in a bombing range, and if you find metal, you know to clue when it is a wreck. All he was doing is finding metal and finding it from bombs. The idea would be, though, that there were assumed to be several large anchors on the wreck associated with the wreck. That by finding a large magnetometer signature or a side scan sonar signature, you would have the wreck, and that's what we did. We just spent years and years going through this data. As they would be searching, would see something, an anomaly, would send a crew out, they would dig it up or dive on it and then report back to us and we would map what they found. One day, someone found a piece of copper where it was exposed by copper. I said, "Well, let me look around." And I had, as I said, a complete bathymetric chart that I had made of the site. Every coral head, every grass patch, everything was in there. I said, "Well, let me see what other anomalies are near where you found this copper." There was a couple of things, and we would go over here, and they went back over there, they dove down. It was a reef of silver bars. They called on the radio and they said, "Ed, you can put away your charts. We found it." It was one hell of a day.

KDM: Was there anything – I guess a lot of silt, was there anything else interesting over in that area?

EL: I never found them in the area here. This area, if you were in any geology types, this bank here, margarita is here. I do not get any other chart here somewhere. This one right here.

KDM: Yes, I have been to the city. Don and I went over, he showed me where it was.

EL: Well, anyway, this is the Margarita site. This is twin posts right here.

KDM: Target, that is where he is at. What his name's out now?

EL: Jeff Chapman. Yes, he is somewhere. Anyway, this is the Margarita, about where my finger is here. In shallow water, anyway, they find mastodon, tusks, peat moss. This is a drowned swamp environment. There is no doubt you will find things from mastodons and mammoths and sloths, whatever the hell they.

KDM: Marquesa is in east of the quicksand.

EL: Right where the two big markers are, those two big triangle markers sitting on posts. I dive around in them. If you have got the ability to excavate a little bit, you will start finding stuff from the [inaudible] in there. Note, too bad I have never seen it. But I have talked to enough people that would find peat moss, for example, or tree trunks in things in there. So, in other words, it is not unusual. We were looking for treasures, so no one fiddled around and no one had the technical knowledge to evaluate is this some mastodon bone or a mammoth bone, or whatever it is. But there's tuff around it here that goes back to that period.

[end of transcript]