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## Stehlik, Linda ~ Oral History Interview

Michael Chiarappa

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Voices from the Fisheries  
166 Water Street  
Woods Hole, MA 02543

# **Interview with Linda Stehlik by Michael Chiarappa**

## *Summary Sheet and Transcript*

### **Interviewee**

Stehlik, Linda

### **Interviewer**

Chiarappa, Michael

### **Date**

July 22, 2016

### **Place**

Unknown

### **ID Number**

VFF\_SH\_LS\_001

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### **Biographical Note**

Linda Stehlik graduated in 1972 from Douglas College, a part of Rutgers University, with her bachelor's. She initially focused on terrestrial ecology but decided to pursue marine studies in lieu of studying birds due to the more promising job market in the marine biology field and her interest in tropical ecology. She began her graduate work at the University of Florida before attending Virginia Institute of Marine Science where she earned her Master's in 1980. She worked at Cook College between schools and spent time researching salt marshes in New Jersey. She began working at the Sandy Hook Laboratory in the 1980s and retired in 2016.

### **Scope and Content Note**

Interview contains discussions of: salt marshes, toxicology, effects of presidential campaign on job opportunities, Building 17 fire, estuaries, bluefish, striped bass, blue crabs, behavioral ecology, Raritan Bay

Linda Stehlik discusses how her love of nature as a child led to her career in marine biology. She describes her research over the years and the changes she has seen at the Sandy Hook Laboratory.

## **Indexed Names**

Fahey, Dr. Mike

Loveland, Dr. Robert

M , Carol [last name unintelligible]

Manderson, Dr. John

MacKenzie, Clyde

Music, Dr. Jack [phonetic spelling of last name]

Phelan, Dr. Beth

Reagan, President Ronald

Rosendale, John

Stoner, Dr. Al

Studholme, Anne

Wilk, Dr. Stuart

## **Transcript--- LS\_\_001**

**Michael Chiarappa:** Today is July 22, 2016. This is Michael Chiarappa. I'm going to be interviewing Linda Stehlik, a former employee of the National Marine Fisheries Service at National Oceanographic and Atmospheric Administration. We're going to talk about her career as a scientist, her work in the fisheries as a fisheries scientist. And so let us begin. Thank you Linda, it's great to be here today. I guess the most appropriate place to start would be how did this all start for you in terms of your career as a scientist? How did that all sort of evolve and take place?

**Linda Stehlik:** Um well, I started-- I loved nature since I was a little kid and I was seven years old, became fascinated with birds. And I was crazy about birds and I learned, really a lot and it was from books and being in the field. My parents encouraged me to do that and my parents also had a big interest in plants, mollusks and a lot of different things and so we would go to wildlife refuges any time we went on a family vacation besides visiting the relatives. There was always trips to wildlife refuges and other stuff--you know natural history museums. So I went through school and I went to Rutgers. I graduated from Rutgers for my undergraduate and while I was there I took a lot of biology courses.

**MC:** Now what year was that did you graduate?

**LS:** I graduated in... 1972.

**MC:** As an undergraduate?

**LS:** Yes from Douglas College which is part of Rutgers.

**MC:** Sure, sure, sure.

**LS:** And so I was a biology major and I mostly knew about all terrestrial things. I took ornithology. I took various kinds of ecology courses as well as genetics and all the other courses that you needed to take. And then when I got out, I was looking for a job and I was lucky enough to get a job working for Cook College which was called something else before that, and it was on a project where people were working with mosquito larvacides and the effects on non-target organisms and the group that hired me were working with fish. So I took the job, I mean, right away. I took the job even though I found that fish were much like birds in that the ecology, the-- you know the approach that you had to know to understand to get to know fish and to do experiments on them so. I wasn't really too good at being what I was but I learned a tremendous amount from the people who I was with, who Ph.D.s and you know... all the other people.

**MC:** Sure, sure, sure. It's kind of interesting, your earlier description, this great tradition of field biology, which a lot of people I know lament today that there's not as much of an emphasis on that but that's such a great contextual approach to the field isn't it in terms of just the immersion. So I think-- so you studied biology as an undergraduate at Douglas, and then you got the position that you described doing work in-- it sounds like you were fascinated by ecology.

**LS:** Oh yes! And salt marshes. We were working on salt marshes, so at that time people were just learning the importance of salt marshes as nursery grounds for fish and it was so exciting because it was new. I took a course in marine ecology from Dr. Robert Loveland. He was-- you know because when you were an employee of Rutgers you could take classes free if it had something to do with your work. So I really, really got a good-- he was terrific. He was a very good mentor for me.

**MC:** Yes, yes.

**LS:** And so we worked on the salt marshes a great deal and we also did a lot of experimental work in the laboratory -- I had to keep all these fish alive and we did experiments with them and shrimp and, so-- I learned. So I was like on the toxicology end of things. What's killing these fish or what's making them ill and what can they handle and what can't they?

**MC:** Mmm, was that salt marshes and what area of the Jersey coast were you doing that?

**LS:** Well it was in Tuckerton, it was on Great Bay Boulevard.

**MC:** Oh great.

**LS:** It was one of the most beautiful places I have ever been.

**MC:** I'm biased, but I'd agree since I've spent a lot of time there in my life, too.

**LS:** Oh great!

**MC:** Yeah it's definitely... so... you graduated from Douglas College then you get this job working at doing some research, and did you matriculate in a program later on at some point or at Rutgers in marine science of some sort or?

**LS:** Well, um the money-- it was soft money project and so eventually after three years, the money ran out.

**MC:** Right.

**LS:** So, I had decided I was going to go in graduate school at some point and... I thought and thought and thought about should I got to study birds or fish and I ended up deciding on fish because I thought that it was more likely that I could be employed, although as I look back on it I find that I tell everybody just do what you really want to do, and that's important. I always tell young people, do what you really want to do, and so I feel in a way that I kind of went off in the direction of fish but at the time, it was so exciting because people didn't know a lot about marine ecology compared to terrestrial.

**MC:** Right.

**LS:** You couldn't see a fish-- they're under the water whereas birds and mammals and trees and all that, they had lots of-- they knew-- they were already studying them-- they already studied them for a long time.

**MC:** Right.

**LS:** It was great. So I decided that I-- I went to the University of South Florida.

**MC:** Ah, yes.

**LS:** My idea was that I wanted to work in tropical ecology but I found when I was there that... they didn't have any assistantships and I ran out of money and the major professor I had left. I didn't know enough, I didn't know enough other people. I gave up and left there.

**MC:** Right, right, right.

**LS:** And on my way back I drove past, through Virginia and I drove over the bridge over the York River and I saw-- I knew about the Virginia Institute of Marine Science.

**MC:** VIMS, yeah.

**LS:** Because Dr. Loveland had recommended that as a very good place and so I had already applied there too, so I just, I went there the next fall. I went there.

**MC:** Ah. And is that affiliated with William and Mary?

**LS:** It is.

**MC:** Yeah. So you studied there and from there where did-- how did things progress from that point?

**LS:** Well, it turned out, at the time VIMS was a really, really laid back place. It was-- you could drive in, you could park anywhere you wanted. You could-- if you couldn't afford your classes,

you could take the classes anyway and then pay for them later when you had the money. If you went out on a cruise or something like that, the professor would just say "hey, make up the work when you get back". And... it was... it was a remarkable-- it was an amazing experience because there was so much to learn but I, because I had chosen fisheries, I encountered tremendous amount of sexism and I dealt with it by being very aggressive and nasty and so not really like I would have preferred to be. I would have preferred not to deal with that, and so I mostly kept them on edge as they didn't know what to expect from me next. But I went and I ended up working on toxicology stuff again and I ended up-- I got my degree and I feel as though I got-- I did a good job, you know, despite the people, despite the professors, despite the students, despite some of the difficulties and the total lack of money and we didn't-- you know-- we had to grow all our own food and fish for our food et cetera. And so yet... I got out of there and...

**MC:** Now was that a Masters or a Ph.D.?

**LS:** I got a Masters and I graduated in 1980.

**MC:** 1980 sure, okay.

**LS:** So, I wanted to get a job in my field. And it wasn't very easy because Ronald Reagan was running for office and so people would say "well, we don't know if we want to hire anyone because Ronald Reagan might get into office and then environmental regulations, they'll be gone." So, then after he did get into office, it was the same thing, they said "well, now Ronald Reagan has gotten into office, we don't want to hire anybody". And so I had applied at a lot of consulting firms. I thought-- you know, I saw my friends were working at them, I thought that's good. I interviewed a bunch of places and then I also had in for New Jersey for state jobs and federal jobs. So I worked as a sail maker for boats for three years. And my first boss was a terrific guy and he taught us everything. He taught us all the different things that you needed to know how to work on sails from the sewing straight seams to gluing things to fixing things to doing the hardware, everything. Then when I got back to New Jersey--well, I moved back to New Jersey because there were no jobs in Virginia at all. Everybody was just on the edge of starving and our cars were falling to pieces and I moved back to New Jersey and I ended up getting hired by Stu Wilk here at this laboratory.

**MC:** Stu Wilk?

**LS:** Yes he was my first boss, Stuart Wilk.

**MC:** Is that-- how do you spell his name?

**LS:** W-I-L-K.

**MC:** Okay, yes and what was his area of research?

**LS:** Well, he was-- first of all he was a recreational fisheries specialist. He worked with fishermen in fishing clubs around the state and he worked with striped bass-- oh no, blue fish. He was one of the first people who was really on-- a blue fish expert. So the project I got hired for was soft money and they were looking into PCBs [polychlorinated biphenyls] and bluefish. Now this is where I feel as though I can't talk about our work.

**MC:** ... Oh okay.

**LS:** I'm make more-- no more statements about our work.

**MC:** Okay, the-- but that-- did he work here at... he was at NOAA?

**LS:** Oh yes.

**MC:** An employee?

**LS:** Yeah, yeah, yeah for many years.

**MC:** So he wasn't with the State of New Jersey doing work on blue fish which is fascinating because I know as a boy-- when we first-- we always would make the trip from Camden County over to the shore resorts and fish for flounder which was always my favorite and my father said-- there was this gradual rise of interest in going for blue fish so it's interesting you're saying how that-- and that was in the mid-70s and so-- and how that corresponds to your-- where you're falling into this mix right there with doing work on blue fish in the late '70s, early '80s, whatever that time period-- so that-- that's interesting how blue fish becomes this new sort of, you know, fish of the day in terms of recreational fisheries, really getting into it so. So you did that work here and you're based in Sandy Hook, I take it?



**LS:** Yes.

**MC:** So that was your-- this was your... and so from there-- and so you obviously segued from that to something else here, I assume.

**LS:** Well, after... I was working in the building seventeen which was over there and there was a big fire and the-- it burnt to the ground. Our... um-- my office-- there was nothing left. There was nothing left of anything. Some people found like a few pieces of stuff that could have been from their office. One on-- the some-- the ichthyoplankton people found their collection of larval fish with thousands and thousands of vials, just in heaps and heaps among all this black rubble and they were shoveling and shoveling. We were all watching and it was most horrifying, disgusting, and annoying and lousy wretched thing for someone to have... set fire to our building. And he was eventually caught.

**MC:** Oh so--

**LS:** And he's dead. He shot himself.

**MC:** Oh, I see.

**LS:** Okay, see nobody's supposed to know that but I don't care-- at this point I don't care. This man, he tried to set fire to twelve different buildings on this hook and ours is the only one he succeeded in burning down.

**MC:** Oh... wow.

**LS:** So, luckily what they still had, building 74. So we all moved in there and then the blue fish project was pretty much-- we finished that and then I had--

**MC:** What year was that roughly?

**LS:** Let's see, the fire was in 1985 and we worked in blue fish let's see, I think it might have been 1986. That money was gone so I worked for Clyde MacKenzie. He was-- I was a GS6 and I worked for Clyde MacKenzie and what we did was interviewing fishermen. We did a great deal

of interviewing fishermen for around Raritan Bay and we did a bunch of studies of benthos and settlement and anoxia, various things... He's always been a mentor of mine.

**MC:** Oh okay, wow. So... circa 1986 you go from blue fish to doing--

**LS:** Benthos.

**MC:** --benthos. And um-- and a lot of-- it's interesting it sounds like... there's a human's factor dimension to this interviewing the fishermen, can you elaborate on that on how the science and the humans-- the behaviors of fishermen? How is that-- talk a little bit about that, that's fascinating.

**LS:** Hm... I guess we combined doing an entire survey of Raritan Bay from all the way around it all the way to New York as well as going to visit all the fishermen that were known around there that had retired pretty much. He was trying to get the oldest ones so that he could find out what it was like in the '20s, '30s etcetera. How many fishermen were there? How much of a living were they earning? Where do they sell? You know?

**MC:** Right.

**LS:** It was amazing. We then would go to the beaches and see what was there now. And then we could say to them "well, it's now like this" and they would say "well, before it was like this" and then they didn't-- they'd refer us to more people who--

**MC:** So were you doing like stock assessments and then-- basically comparing what you were doing with what these memories and these experience of these older fishermen had been?

**LS:** Well, we did do a paper. There was a paper that came out on our Raritan Bay study. It was fairly informal. We'd go to each beach; we would do an overview of how many soft clams and how many of anything we still were able to find and was there eelgrass there. And there was a paper that came from that and, of course, because of the amount of eelgrass had diminished so terribly in the 1930 and then never really came back.

**MC:** Ah, interesting. Huh. So yes, that's a fascinating... well, that sounds like a really interesting project. It actually-- it sort of-- and what year would that have been roughly, approximately-- was that '87?

**LS:** I guess. Yeah, I think so.

**MC:** Yeah, because, that's, you know, as you know now, that's become such a timely field of research this combined-- scientists combining their work-- their more traditional scientific research on ecology and on particular species but mixing that with the experience of the fishermen themselves, so you and Clyde were doing some things that were sort of--in a-- I think, from some of my research, kind of setting a pattern for subsequent work.

**LS:** Yeah I think I learned a lot from him about that. And it even has carried over until now going-- people like John Manderson who is my colleague who now no longer works here-- works with a different group-- and he's working collaboratively with fishermen using sonar and other underwater mapping to find more about why certain fish that are commercially sought, where do they go exactly? And he works with these fishermen-- various fishermen, some of them are doing... um, I can't remember what it's called-- collaborative research. They have contracts with NOAA and it's just because-- it's really great. It's-- they're learning a lot and they don't-- it can't simply depend upon the groundfish survey and it's not-- it can't be the only source of information anymore.

**MC:** Right, this field of traditional ecological knowledge or fishermen's traditional knowledge of -- his first name escaping me but maybe you can remember-- remind me-- Ames, the fellow who won the... the MacArthur Genius Award who was-- who did this work in the Gulf of Maine and he was... you know, he was a biologist. He had his Master's degree in biology but he was also-- he worked as a lobsterman and he became very interested in cod fish, groundfish-- the stocks of groundfish up in the Gulf of Maine and this is what he started to do. He would do the interviewing and trying to find out where these various sorts of breeding grounds were and where certain stocks were coming out of but he got to that by interviewing the fishermen and so it's again this mix of a traditional biologist skill set with information he was gleaning from the folks that you described. So I think that's a really interesting development. So that's great. Now how many years did you and Clyde were-- roughly again, did you continue working on Raritan Bay or was that basically over?

**LS:** Uh well I um...there...um...Ste Wilk had a job opening for a GS9. And I took-- I applied for that job and I took it. So, I was sad to not work with Clyde anymore but I continue to talk to him a lot and he got me interested in crabs as predators on shellfish so I got interested in crabs as well as fish and I continue-- Clyde continued to feed me ideas and I continued to write papers on using data from groundfish and using a variety of data on crabs but when I started to work for Stu again, um let's see, we did a lot of field sampling and he had done studies in '80s and he wanted to replicate them and this was in the 1990s-- started in '92, '94, '96 -- we were doing a Raritan Bay study. And we also got money to do a Newark Bay study for a whole year. And so... plus I was working on not only their data but I was using all the crab data that I got. We got from hauling all those nets, we got a tremendous amount of information on blue crabs, rock crabs, lady crabs and Jonah crabs and so I started working just with the-- and getting involved with food habits.

**MC:** Oh interesting, interesting. Um... I'm curious... perhaps you can maybe elaborate on this. Do you know what was some of the factors that were driving this interest, I mean, aside from the obvious those of us who are interested in fish can appreciate all of these topics but was there any particular pressing issues that were going on economically or politically that were driving some of these projects that you were working on? Like in the case of-- like you say-- going from the Raritan Bay survey and then going into the work on crabs and their feeding habits, was there anything going on that you know of that was making that a priority?

**LS:** Oh I was thinking about that and I was thinking that over the years NOAA has been going Northeast. They've gone, they went from a very strong oceanic focus and then there was a focus on estuaries-- oh well, where are all these fish coming from? Maybe many of them are being either nursery grounds in estuaries they're supported by-- they spend some part of their year in the estuaries so there was a big, big push to learn about estuaries and that was going on for a long time and it's only recently that NOAA has discouraged those of us from working in estuaries. No more estuaries no, this should be the prerogative of the states, let's go back to the ocean. And let's go back to the fisheries that are in the ocean which are the ones that are mandated to learn about despite the fact that we did learn as much as we possibly could about estuaries, what was going on in them and estuaries have been really studied thoroughly and they've learned so much.

**MC:** Sure, sure.

**LS:** But that was during that time, there were-- estuaries were legitimate subject for study plus we didn't hear much from Woods Hole. The-- you know, we went ahead and did our work, we produced papers and we were known and we made and went into scientific meetings and people thought we did a great job and that was fine. As long as those of us continue to produce work and it was related to fisheries, it was just fine.

**MC:** Right, right. That's fascinating, the-- as someone who loves estuaries, not that I don't like the big water but as someone who loves the labyrinth of environments that make up an estuary and that interface so I like what you're saying. It's very interesting in terms of-- there was this-- and if you understand ecology, you'd understand why you'd be interested in an estuary right because it's not like it's separate from the big water so that's really great to-- so there was this push for more estuarine sort of environments and then they kind of gradually--

**LS:** I think it's just recently really that... but it's part of just political-- whatever political things go on and they have to cut. The number of employees has shrunk so that the number of federal-- permanent federal employees when I came here was about a hundred. Number now, 30.

**MC:** Wow

**LS:** That is 30 and that-- there's some contractors here and some are employees, okay the number of actual federal full-time employees is so little. And so part of that is simply proximity. The people who are the heads of the fishery science center are in Woods Hole so they're looking around them and hiring around them and they're... you know, we're out down here and... at the tail end.

**MC:** [laughing] right.

**LS:** And, it's very difficult to know that I have. I learned, as partly from graduate school and partly teaching myself, to be a good taxonomist. And I learned from Mike Fahey who was one of my mentors here, who's an ichthyoplankton biologist and taxonomist and excellent. And I learned how to be one of those people that if somebody doesn't know what a fish or a crab or whatever is that they would come to me. Now that Mike wasn't there, they would come to me and so they're so few of us left.

**MC:** Right.

**LS:** John Rosendale is one of my colleagues. He's there also, but he's not an academic, I'm like academically trained too, I mean I was trained by Dr. Jack Music [last name spelt phonetically] in taxonomy so we, you know I feel like there's so few of us and we know that. Everybody knows that. The lack of taxonomists is hard because what happens in the future when you need to do a project, you have to be sure which fish it is you're working on.

**MC:** Oh geez, yeah, yeah. Yeah the uh-- and so did the declining staff did that require you to sort of have to broaden your base or take on a wider variety, you know, like you say being a taxonomist, did you have to wear a number of hats to make-- was that... did that happen... you know?

**LS:** Well, I think-- I didn't mind changing animals, you know? I didn't mind changing from fish to crabs to [unintelligible] to which ever. I think that what the real problem is that each one of us had to become our own scien-- total-- you know we had-- we're supposed to be able to do our own statistics, produce our own graphics and plus be able to write all the bureaucratic stuff. So what formerly might have been divided up among various people who had different talents, you're supposed to do it all. And this has ended up being a terrible, terrible drag for me. Because we used to have people who like statistics, and I used to work with them. We'd produce a paper and my friend Carol Micee [last name spelt phonetically] she loves statistics. She plowed into it-- we came up with really interesting stuff and wrote some papers and now people like that aren't around and what's happened is that, I think, there are programs like R-- the R program and stuff that are beyond my capability and the simple statistical programs that Clyde and I used to work on and we used to use-- just to figure out our... you know, our comparison of these and these... I learned multivariate statistics, I learned how to use that and then it became totally-- just beyond my capability so. That's what happened. That is what-- it's not just changing from fish to fish, it's like well, now you're supposed to do this too, plus, of course, computers. We had to learn to operate them, then we had to learn to use-- do-- learn all the programs ourselves because there was no one who's going to teach you how. So you have to learn all that yourself by making mistakes and--

**MC:** Sure.

**LS:** But that's how it is now. You have to learn to write your own budget, you have to learn to, whatever. Everything, you have to do it. And there's nobody to help. So--

**MC:** Yeah, no, I understand. I understand, yeah, it seems this-- yeah. It's-- and lots of research and educational venues you get this situation where they start to deplete your support services and you assume the burden-- it makes it difficult to focus on things you want to focus on. I mean because you're so-- your effort becomes fragmented right? Um--

**LS:** Yeah, it does. You come in and you think that you're going to be doing one thing and you discover you have a computer problem so you have to spend the whole day trying to figure out what's going on with it instead of just saying help! Well, we used to but those people have retired.

**MC:** Sure, sure.

**LS:** They're not here anymore. It's just like, okay. We're stuck now.

**MC:** Right. Um, the-- were there um-- so this takes you into the 1990s and... the... from there where did things progress? You were doing this work on crabs in the 1990s did you then shift to something, a new sort of focus after that?

**LS:** Well, I um... Anne Studholme, she was a senior researcher here and she suggested that I come to work in her group and at that time that was possible. I was moved from Stu Wilk's group or branch, whatever they were called at the time, to her branch which was behavioral fish-- behavioral ecology. And this group had a long history from the time this lab started with people working on animal behavior and... fish behavior. They were some of the people who did some of the basic research on fish behavior and they passed that knowledge down to Anne and the next generation and I became the lucky person who got to get into that and we did so many studies and we had graduate students and post-docs. We did amazing studies on things having-- a lot of predator-prey studies-- blue fish. Put blue fish into a tank and with striped bass in the large research aquarium and competition and how many blue fish-- if there's ten blue fish and three striped bass-- the striped bass will tend to wait at the bottom and the blue fish will tend to eat the food from the top. And then what if you had ten striped bass and one blue fish, different things would happen. And all those studies-- our co-workers who, they were post-docs, they did phenomenal amount of work and we were so psyched and our group, and Anne Studholme had wanted to just do this project that the fire interrupted it. So, when this new building was built-- the new-- the research aquarium which I don't know if you saw it, but--

**MC:** No.

**LS:** Anyway I'll show you. The first project that she wanted to do was to repli-- to start over the study that she had been doing when the fire happened and that was to take a group of young of the year bluefish and put them in there and keep them for a whole year under controlled light and temperature conditions to find out a lot of things about their swimming speed, their behavior in day and night, how much they ate depending on temperature and I was put-- like in charge of this study -- keeping it going and it was an incredibly interesting-- and I was so-- we were very-- we were just so excited. And this group was-- we were a really wonderful group of people. We finished that project. We wrote-- I finally got the paper done and got really great, great praise for having gotten this done and the stuff that we learned about the bluefish and how little they eat in the winter and... um... gliding behavior they do in the night.

**MC:** Mhm.

**LS:** The young bluefish where they swim here and they turn on their sides and glide.

[knocking on the door]

**LS:** [to the person at the door] No thanks... [to the interviewer]and so that was something that Anne and her colleague had wanted to do for ten years. They kept that a secret and they never a s-- they never told anybody about the bluefish that glide, so when they came-- finally they were able to do it and dot all the different kinds of data they wanted. We got videos of bluefish gliding and all that stuff and were able to publish it.

**MC:** Wow, and that was in the 19-- the late 1990s or?

**LS:** Uh let's see that was '95 to '96.

**MC:** Wow. Now of course the typical historian's question would be this interest-- again we're coming back to bluefish and striped bass and we know how popular they are-- do you know-- was there anything again behind-- that was kind of driving or encouraging this line of research to the best of your knowledge? Do you know what was...um?



**LS:** Hm, I am not really sure of the politics of it, there were various groups of scientists from up and down the east coast who would meet together and there were various... I'm forgetting the names of some of them-- that's-- Stony Brook SUNY is where two of the graduates students came from who were working with us and they had a strong program with working with bluefish and striped bass in the Hudson River. Oh and that was very very, very important to everybody because that was where striped bass, it was one of the major nursery grounds so everybody wanted-- they needed to know. The striped bass are really important, mostly recreationally. They wanted to know is the Hudson River suitable, is there development there that's going to be harmful to them and so they had huge amount of work there and we worked on those stuff of the species too because it was mid-Atlantic, it was middle Atlantic, very important fish.

**MC:** Now you're saying this yet because this was the year where there was all this interest from the recreational community to get stripers, you know, stock rehabilitated right?

**LS:** Yes.

**MC:** And there's a lot I know politically there was a lot swirling around in terms of the priority. So I can understand why these predator/prey relationships with -- between bluefish and striped fish and striped-- I can see where that would become an interest in terms of, or how you folks would be encouraged to take your research in that direction.

**LS:** Yes, there were people who said because it was interesting that you'll tend to see populations of bluefish in certain years are very high and striped bass were low and there was a point at which that switched and I think-- I can't tell you which decades it was. Striped bass really increased and the number of blue fish was relatively less and so they were, before this switch happened, they were saying "well, the bluefish are eating up all the prey that striped bass would want". And there was this big deal but there was also-- had to have a moratorium on fishing striped bass. A total moratorium on fishing striped bass at all, which happened... I guess that was going on when I first came to work here. We came-- went to um, pick up some bluefish... at a... market out on Long Island and we went to-- because we needed to get bluefish from various areas and when we walked in there was a big sign that said... hake 59 cents a pound, bluefish ten like ten cents a pound, this, this, this, striped bass, nothing! And we were afraid to even drive our NOAA truck into there because I think they tried to give us a whole bunch of crap about it because we are personally had nothing to do with anyone deciding who that they were not going to catch any striped bass-- it-- we were just there to pick up some bluefish and--

**MC:** Right, right, right.

**LS:** Buy they were very, very angry, but yet look what happened. Striped bass are back. You know, they're back so it worked.

**MC:** Right.

**LS:** It's interesting but it worked.

**MC:** Yeah it's funny because you know, people-- like when I do research on commercial fishermen from a historical and anthropological, they always confuse me with a policy maker and they say what do you need a policy-- there's regulations taken obviously I say-- I told you guys I don't do that [chuckling]. You know, same thing with you, you say we're just doing the research. We're just observing the scene, what the policy makers do with it, that's their decision but we're look-- we're just reporting on what we're seeing right? And uh... so I can imagine where you would [chuckling] where you might be in a situation where people misunderstand what your role in all this is.

**LS:** Yeah, well we-- and we thought it was funny, you know, of course. It was funny but we-- I mean I had been on... it was when I lived, was in Virginia, there was a spring striped bass, seine survey every year and there were almost none, and we went to all kinds of estuaries. There were almost none.

**MC:** Well that's going back to --

**LS:** --So, and that was in the late '70s.

**MC:** That was back in your graduate career?

**LS:** Yes. So there was almost none. I mean I realize that there's a reason why people are upset. I mean there's not only not many big ones, there are not little ones there in that was-- they were historically. So those studies eventually they caught them again. Eventually they came back.

**MC:** Right, right, no that's... that's fascinating. You're probably familiar with the book *Men's Lives* by Peter Matthiessen.

**LS:** Yes, I, yeah.

**MC:** The uh-- looking at the uh... I know how that became a contentious, of course it's a contentious issues in New Jersey as well, I've heard from the people I know who've been involved and crabbing and everything blaming and everything. A lot-- but we won't get into all that the uh-- so that's interesting you were doing that in the late '90s and then um... I guess just for the record, you were retired what year?

**LS:** This year.

**MC:** Oh so you're just. Okay so you... what-- in terms of projects, what did you move into next after late 1990s and working on bluefish and stripers and that great scenario you just described and you went from there to what?

**LS:** Well, Al Stoner was hired as our new boss, our new supervisor and he had-- he was an incredibly intelligent, skilled ecologist and a wonderful organizer and somebody who could organize research programs, decide what you need-- we're going to do this, organize, plan everything-- who's going to do what and he would listen to everything-- we would have meetings all the time and we'd talk about the ecology behind what projects we were going to do and what was going to be going on it was just so stimulating. The first thing he decided to do was a Raritan Bay, Sandy Hook, two-year long study. So it was back to, you know, catching fish, find out how it was here. So we did that for two years and then again on a more limited basis. And we learned so much about Raritan Bay and Sandy Hook. And I mean, the Navesink River.

All of us know that place like the back of our hand. We did benthic study, we did beam trawls which collect a lot of algae along with shrimp, crabs and then trawl surveys which catch the bigger fish. And then from the results of that, lots of experiments were devised that a lot of it having to do with predators and prey again, what happens when--one year the temperature was-- no the salinity was higher so striped sea robins were collected in the Navesink whereas the next year when salinity was lower, they were not, so that led to a bunch of studies in the laboratory run by John Manderson about striped sea robins because they were eating young winter flounder. And the amount they would have in their stomachs when we collected them-- they could have

like ten young winter flounder and at that time winter flounder was the number one fish biomass in our area. Al Stoner said "all right, we're going to do this project on Sandy Hook Bay and the Navesink River" and he said "we're going to-- winter flounder is going to be our number one fish". And I said, "well, blue crabs". He said, "blue crabs?" Well, I mean he knew blue crabs but he said, why would we want to study blue crabs but it turned out that blue crabs were the number two thing by biomass that we caught every time our entire survey. So I ended up doing a bunch of studies in-- you know, I did experiments with blue crabs and everybody did experiments with winter flounder a lot-- young winter flounder. Beth Phelan did her Ph.D. on that and their choice of habitats and who eats whom and John Manderson got his Ph.D. doing a variety of those types of studies as well with bottom structure. Everyone was into structure, you know, Chesapeake Bay too, everyone was well, what kind of structures do they need in order to survive?

**MC:** Mm, mhm.

**LS:** And so I found out a lot of stuff. I did that with blue crabs too, what kind of structures were-- if they were preyed upon by something were they able to hide because they were in a structure?

**MC:** So you're actually talking about the actual physical depo-- of the grey bottoms .

**LS:** Yes, that was at the time was like really... and then mapping. Mapping with GIS became possible. Before that we used these primitive kinds of programs that kind of drew circles around our data and things then they started using these very sophisticated... so that changed science a lot.

**MC:** Wow, interesting, interesting how, so GI-- in that sense GIS was very liberating I assume in terms of the questions that you could ask and--

**LS:** I think. I mean I didn't do a lot of it but a lot of other people in these buildings have, especially in the ocean because you can't see it but, boy, with mapping it they learn so much and--

**MC:** Right

**LS:** And then there's underwater cameras and what not, which we couldn't use because it's very turbid in estuaries but in the oceans, they can use them.

**MC:** Right, right that's um... and so when... Dr. Stoner came on board, what year was that roughly?

**LS:** Gee, I think it was... I should know this, uh

[audio ends]