



07-29-2016

## Thompson, Nancy ~ Oral History Interview

Suzana Mic

Follow this and additional works at:

<https://www.st.nmfs.noaa.gov/humandimensions/voices-from-the-fisheries/index>

---

### Recommended Citation

Thompson, Nancy. Interview by Suzana Mic. *Voices from the Science Centers*. Voices from the Fisheries, NMFS, NOAA. 29 July 2016.

This oral history was produced in 2016 as part of the *Voices from the Science Centers Oral History Initiative* conducted by *Voices from the Fisheries* with funding by the NMFS Office of Science and Technology.

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

## **Interview with Nancy Thompson by Susanna Mic**

*Summary Sheet and Transcript*

### **Interviewee**

Nancy Thompson

### **Interviewer**

Suzana Mic

### **Date**

July 29, 2016

### **Place**

Place unknown

### **ID Number**

VFF\_MI\_NT\_001

### **Use Restrictions**

This interview transcript is provided for individual research purposes only; for all other uses, including publication, reproduction and quotation beyond fair use, permission must be obtained in writing from: *Voices from the Fisheries*, NMFS, 15 Carlson Lane, Falmouth, MA 02540.

### **Biographical Note**

Dr. Nancy Thompson was born in September 1949 in Newark, New Jersey. She earned her Ph.D. from the University of Rhode Island. Dr. Thompson worked for NOAA from 1980-2011, serving as the Director at both the Southeast and Northeast Fisheries Science Centers during her career. At the time of this interview in 2016, she was working at the University of South Florida's College of Marine Science.

### **Scope and Content Note**

Interview contains discussion of: Southeast Fisheries Science Center, Northeast Fisheries Science Center, sea turtles, female scientists, sea turtle management, Hurricane Andrew, Hurricane Katrina, relationships between scientists and stakeholders, red snapper, Magnuson Stevens Act, aquaculture, Endangered Species Act, fishing communities, sustainability of commercial fishing, modeling in fisheries science and the future of NOAA.

Nancy Thompson's interview details her history working for NOAA from 1980-2014. She describes many of the projects she worked on, primarily with sea turtles. She discusses her view of the importance of positive relationships between fisheries scientists and the local fishing communities and how she encouraged such interaction while in her leadership roles. She feels the human dimensions both internally and externally are important to the role of NOAA Fisheries.

Dr. Thompson discusses her experience as a mother working in science in the 1980s and the support she received from NOAA and her colleagues. During her time in the Southeast, she experienced multiple hurricanes, each of which impacted her staff personally as well as professionally. She discusses how she handled each storm and the overall impact on her.

Additionally, she compares the differences in how science is viewed by stakeholders in the Southeast versus the Northeast and how politics came into play. She ends her interview by sharing her hopes and concerns for the future of NOAA.

### **Indexed Names**

Brown, Brad

Bush, George W.

Clinton, William J.

Nixon, Richard M.

O'Neill, Thomas Brad "Tip"

### **Transcript –NT\_001**

**Suzana Mic:** So. This interview is being conducted as part of the Voices from the Science Centers Project funded by the Northeast Fisheries Science Center. It is also part of the Voices from the Fisheries Project that is supported by the National Marine Fisheries Science Office of Science and Technology. I am Suzana Mic and today I am speaking with Nancy Thompson. It's July 29, 2016 and the time is 11:13a.m. I would like to let you know that you can stop me at any time if you need to take a break or if you find that you don't want to answer a question that I'm asking also please let me know and you don't have to, obviously.

**Nancy Thompson:** Okay.

**SM:** Um, I'm going to ask you a little bit of background information, and this is optional, if you want to tell me your date, the date of birth and the place of birth.

**NT:** Sure. I was born in September, 1949 in Newark, New Jersey.

**SM:** Okay. Um, so I understand from your, um, from your CV that you worked from 1999-2006 at the Southeast Fisheries Science Centers, Center as the Science and Research Director.

**NT:** Right.

**SM:** And then you moved to the Northeast Fisheries Science Center

**NT:** Right

**SM:** ... in the same position

**NT:** Right

**SM:** ... where you worked until 2011. Did you have any other positions within the Fisheries Science Centers?

**NT:** Well, I started at the Southeast Fisheries Science Center. I was actually hired in 1980 just before I finished my Ph.D. and it was a temporary position but there were people there who were interested in the skill sets that I brought, particularly computer-based skill sets, which were not that common back in 1980. And so I was hired by the Southeast Fisheries Science Center as a bench scientist and I worked there most of my career and when I became the Science Center Director, was in 1999, so I'd worked there for almost 20 years as a bench

scientist. I also, so I was a bench scientist and I was hired basically to start a program for sea turtle research that would provide information that could be used to assess the status and condition of sea turtles relative to recovery, recovery and that is relative to the recovery criteria established under the Endangered Species Act.

What happened is, when I got there, because of the skill set that I had, I got yanked into doing work on marine mammals which were the, at that time, the big issue because there was a live capture fishery for bottle-nosed dolphin and the population estimates were used to establish quotas. It was largely the Navy that was taking the, was involved in the live capture. And so I had a background in aerial surveys and population estimate, and actually in marine mammals in addition to turtles, so I got yanked into that.

And then what happened is I got back to turtles, and working on turtles, but then because again of the skill set that I had, I got yanked into working on stock assessments on lots of things down in the Southeast - bluefin tuna, lobsters, reef fish, all kinds of stuff. Then I bubbled up as the Division Chief and I was in charge of stock assessments for the Gulf of Mexico and including sea turtles. And then from there I became the Deputy Center Director and then from there I became the Center Director. And it was not unusual back then for the Science Center Directors to have a background in stock assessment, whether it was dealing with marine mammals or with other protected species or with fishery resources. So that was, so I spent most of my career at the Southeast Center, doing science and engaged in developing surveys, developing sampling plans, designing research and then implementing it and using it to integrate it into the actual stock assessments. So that was the focus of my career.

And then while I was the Southeast Fisheries Science Center Director, I was asked to go to D.C. and fill in to run the Science Office there because the person who had been there left and became essentially the Chief Scientist for the agency and that office was open. So I came in there, and that was temporary for about maybe about maybe seven or eight months. And from there I went to the Northeast Center. So, that was the trajectory that I took.

But interestingly, when I was hired in 1980, no one knew that I hadn't finished my Ph.D. and they allowed me time to work on my dissertation and so I had earned my Ph.D. by the end of that calendar year in 1980, which was really great.<sup>1</sup> And along the way I had two kids and NOAA, again, was really supportive during that period of time. There were people having children, there were women having children, certainly there were guys having children, but there hadn't really been science staff, [women]scientists who were having kids and of course, you know, on the administrative side there were people who could multi-task. On the science side, you were always under the gun and you always had a deadline and they were real deadlines. And, you know, so there had to be some flexibility on NOAA's end to be able to accommodate me and provide continuity for the work that needed to get done. So, it was interesting, being an early, a young woman scientist, having kids, before there were actual rules and regulations related to maternity leave and, you know, working at home, and all of that, so. It was interesting.

**SM:** That's a fascinating time, and I want to come back to that, um, but I want to ask you. I want to take you back to the very beginning and ask you how did you decide to pursue a

---

<sup>1</sup> Narrator Clarification: "NOAA folks knew I had to finish my Ph.D. and allowed me to work on it while working at NOAA/NMFS/SEFSC. As a result, I was able to finish my Ph.D. by the end of the calendar year 1980." – Nancy Thompson

career in fishery science and, and go to work for NOAA. And you mentioned a little bit already, but...

**NT:** It, it was a decision, I mean, that I had made that I, you know, the choices when you come out with a Ph.D., or you're getting a Ph.D., are, as you said, academia or then there's the agency. Or you could work for a consulting firm, and consulting firms, in my, you know, are I mean, are good things and obviously they give people opportunities, but there's risk associated with that. It's always based on soft money. Being a graduate student, as you know, you get to see how universities really work and I was not enamored with the political atmosphere within a university. And I wanted to move on, and even though for my Master's, I actually did a behavioral study with sea turtles, because I could add a couple numbers together, I moved into fisheries realizing that, that applied capability and expertise was something that people were actually looking for.

And so I bolstered my graduate studies with fisheries classes and I went to the University of Rhode Island which, at the time, had a really strong fisheries program so it was not difficult for me to stay and bolster that capability and expertise. I am not a high-end modeler like a lot of people are. I do the traditional bio-statistical kinds of things with production and, you know, VPAs [virtual population analysis], and things like that, but not a high-end modeler, but still what I could do was I could take those skills and apply them to sea turtles which had really never been done before. I did that for my dissertation work, doing some modeling, and that had never been done before. And there was real resistance in the sea turtle community, science community, about applying those kinds of approaches to sea turtles. There was some feeling among sea turtle biologists that they were "special" and that, you know, there was no way you could apply those kinds of projection models to look at recovery trajectories, you know, based under various scenarios of mortality and that kind of thing.

So, it was, it was a hard fight, you know, and there were people who even didn't want to talk or use the term "stock assessments" for sea turtles. It was very bizarre. And just traditional kinds of naturalists, wildlife type biologists in that community, and it was slow in going but, you know, they came around, and uh. But anyway, so I knew I wanted to do applied kinds of things and the nice thing, too, about NOAA at that time is, first of all, there were opportunities for jobs, and second of all, there were opportunities for funding as well. And, you know, you get into academia, and you're constantly struggling for funding, and you're constantly writing proposals and bringing your graduate students into it, and it's difficult.

So I ended up, there were a group of people in NOAA at the Southeast Center at that time who were looking for somebody who could bring the quantitative skill set and computer skills into the Protected Species Program down there which was just new. Now remember, I started working for NOAA in 1980 and NOAA was created in 1972, so there was still a lot of growing and changing going on as far as the agency was concerned. So I just happened to be the right person at the right time, and met people at various meetings that I was able to attend with graduate student funding and support from the University of Rhode Island, and so there was an opportunity. A position became available and at that time, actually, there were two or three positions that were becoming available in the Protected Species realm, and I was targeting one in particular and that was in Miami. And lo and behold, I got it, and things took off.

But it was a tremendous opportunity, like I said, to be able to dabble in a variety of issues in my career back then and I really appreciated that. And I was encouraged. There's no question

that there were a number of people who felt that, or saw that I had some other abilities and they nurtured those and mentored me and men who were very encouraging. Because there weren't that many women, and there were certainly very few women in leadership positions back then. And certainly women in leadership positions who were having children and still able to maintain their career trajectories. So, it was a unique time. And there are people who, you know, you don't do things on your own, and there are a lot of people who I thank because of that.

**SM:** Can you, can you talk a little bit more about, because I think it is fascinating, you are one of the few female scientists that I interviewed in this project, and who has held very important leadership positions, and if you can talk a little bit about, yes, the beginnings, and how that, how it evolved, how did you see throughout your career, there were changes related to your role as a female scientist in a leadership positions, position.

**NT:** Well, I think, I think what people recognized is early on when I was doing stock assessments, I was asked to give presentations at the Fishery Management Council meetings in the Southeast and there are three of them, and in particular the Gulf, obviously, I mean, that's the most contentious and can be the most contentious with the most controversial issues associated with fisheries. And that's because there's a lot of fisheries and commercial fisheries, and it's still incredibly important in the Gulf of Mexico, and I think there were people who thought that I could explain really difficult concepts in ways that non-scientists, or people who perhaps didn't have that expertise, could understand.

So I found myself going more and more and more to those meetings and working with them, and, sure, you know, it's contentious, and there's a lot of controversy associated with them, but you expect that. And I never, I never really got upset or concerned about people from outside the agency who might complain about our science. It's the beatings inside the agency that start to grind up on you after awhile, but that didn't happen until long into my career. But you, generally, the leadership in the agency is there and they show their support. And over my career, and particularly during my years of leadership, generally people who were the head of the agency would be there for you and might even come to a meeting and say some words and then sit behind you. And there were some that were much more open to that than others, but as long as you feel that you have that support from within the agency, then you feel like you're on solid ground and you can say well, you know, this is the science. I don't have an agenda. My agenda is to provide information, that's my agenda. I'm not advocating for this, in terms of how the information is used for management or this. What I'm arguing for is having the best available information, which of course is codified in law now.

But, um, so, you know, there were people who saw that, you know, I was able to do this and work with people in those councils and then, you know, it just got more and more and then the sea turtle issue really blew up there, of course was the interaction with the shrimp fishery and we had folks in our Pascagoula laboratory who were developing tools to eliminate that turtle by-catch, the turtle excluder device. And we were working really closely with the fishermen there, too. And then, in the fishing communities we were starting to work more and more with cooperative research with the fishermen themselves, in terms of them helping us collect data. And what happened is that they become more aware, more sensitive to how difficult it is and what the quality of the data are, and they understand the uncertainty then in terms of the science advice that you provide and why that uncertainty is there, and from the science side I really tried to encourage all my folks when I got to be the Science Center Director, actually the Deputy, to go out and work with the fishermen and to actually get some

hands-on experience, and particularly the people in modeling, you know, they didn't have so much. And, to gain their perspective as well. And so, you know, while I was there, even before I became the Science Center Director, I mean I felt that was important to do, was to interact with the stakeholders and people in the communities. And to take advantage of expertise in the universities as well, because there's a tremendous amount of expertise there; it's not all in the Science Center.

So, anyway, so what happened then is that Brad Brown, who was the Science Center Director through the '90s, decided he was going to retire and I happened to be his Deputy at the time and so I applied for it and I wasn't the only person, there were three people, but I ended up getting that position. But I have to say, you know, I was down in the Southeast for a long long, long, long time, and it is hard... it's a hard position, first of all, if you care about people. And, you know, because you're an organization of people first, and one thing that happens in the Southeast is you're impacted by storms, by hurricanes, and the first one that came along that was really difficult, was, to deal with, was, of course Andrew, that was in 1992, and that affected us down in Miami. I lived here, everyone was affected down there. I was not the Center Director at the time, but because I was unaffected, myself and another person who lives here as well basically took over the responsibilities of, not only the center, but mostly, in terms of helping people get back on their feet, you know and, from a personal standpoint, and, you know, when you become the Deputy and then the Science Director, it really falls on you.

And what happened is we had a series of storms in 2005. We had Katrina, Rita, Wilma, and it was just boom, boom, boom, boom, boom. And, you know, I, it's those kinds of things that are hard and again, if you care about people, because that's really what you are, you're an organization of people, that really does get to you after awhile. And I have to admit, that by the time '06, '07, '08 rolled around, I was pretty beaten down by that. And you know, the challenge with Katrina, which was different than Andrew - with Andrew it was a wind event, the laboratory was still there, people could come to it, we could establish a laundry facility at the lab, people could do things like that. We could establish an ice-making facility at the lab and there was all that kind of capability. People could come and take showers whatever. The University of Miami RSMAS [Rosenstiel School of Marine and Atmospheric Science] set up essentially a cafeteria that was open for anybody to come and eat, you know, for the sci-, for us, for AOML [Atlantic Oceanographic and Meteorological Laboratory], and for them as well.

Katrina, everything was gone. The lab was gone. People's homes were gone. Everything was gone. The only thing that was there was the ships. And of course, I had to work out of the ships in order to bring people on and online, but the challenge there was first taking care of people and making sure they had a place to live, and then, and then getting them back in terms of a mission kind of mentality for a couple of reasons. First of all, you know, people in headquarters were wondering when we were going to start working again out of Pascagoula, is where the big surveys occur and all kinds of other stuff is going on. But also because it could get people engaged in something other than thinking about the storm and the outcome of the storm and that kind of thing.

So, you give people a lot of flexibility, obviously, to cope as they need to cope, but you know. So that, that was a long-term draining kind of, I mean, it, during the storm I even got a call, I had a satellite phone and I turned it on and off and on and off because that's how they work, right? I got a call from someone who was at Bay St. Louis during the storm and Bay St.

Louis was ground zero; but I got word from one of our folks, one of our science folks, who had to evacuate his house in Bay St. Louis and had to go to the lab. And he called me from the lab because he wanted me to know that he was there and he had brought his mother. And I said, "you do what you got to do." You know, and the, I got a phone call from someone after the storm who was lucky enough to get a generator, because we had all kinds of generators and all kinds of stuff flooding in and everything, and he asked me if it was okay to take it down the street because there was a kid down the street who had medical equipment and they didn't have any electricity, and was it going to be a problem because it was government issued, and I says, I said, you know, "you're a human being, first and foremost. And so, no, of course not!"

So, you know, there, it was just a constant, it was constant. Um, so yeah, so, it was, that beat me up quite a bit and so I ended up in headquarters working in the Science Office and actually that was, that was a relief, for a lot of reasons. And then I went to the Northeast. And the Northeast is very different from the Southeast, and politically, you know, Tip O'Neill, I guess is the one who said "All politics are local" and there's no question that in the Northeast that is very, very true. And so, politically, it's a more, much more difficult environment, and people generally last three to four year up there and it's, talk about beatings. And the issue with that is that unfortunately at the time NOAA really didn't have, didn't have your back. I mean, there are a lot of people who I think would agree with that and, so things didn't work out. But that's okay.

**SM:** Can you expand a little bit more on that? What's different about the politics, or just the work environment in the Northeast compared to Miami?

**NT:** Well, the work environment itself is outstanding, and again, you know, the people who are there are outstanding scientists, there's no question about it. And how they've survived the decades, some of them up there, is amazing to me. It really is a testament to their resilience. But there, there's a lot of conflict, I'd say, in the science, outside, outside the center. There's a huge amount of attention paid to the fishing communities, particularly in Massachusetts. And, you know, there's a lot of control that's exerted from those communities. And what's interesting in the Southeast, is that in the Gulf in particular, I think politicians, regardless of party, of course it's pretty homogenous now, back then, I mean there were Democrats throughout the Gulf as well; they learned how to work together. And much of that was a function of storms, you know. A storm hit in Texas and resources would come from the rest of the Gulf. A storm hits in Florida and resources would come from elsewhere, and they had learned, at some level to work together. And in the northeast, it, it's seemed like it was Massachusetts against the world and, and that the world, in terms of fishing, revolved around Massachusetts. And there were a lot of people who were, you know, they're champions and had political clout and it was, it's very difficult to deal with that in the sense that if you disagree and you try to maybe move things in a different direction that you think is better science, you get, you get smacked. And down in the Southeast that's really not the case. I think if you make the appropriate arguments about the quality of your science, and you can articulate that, people will agree. Now, the decisions may be made that may not be argued by the biological science, but there are the economic issues as well. And in the Southeast those always came to the fore. And similarly in the Northeast, but still, it was always shoved down your throat and, you know, beaten over the head with things. And again, the political connections in the Northeast, particularly in Massachusetts, are ... difficult, that people outside the agency have. So, it made it, it made it a lot more difficult.



And I think the accumulation of, you can only do those jobs for so long, quite frankly. And by that time I'd been doing, you know, I was a Science Center Director or Deputy Director since the mid-'90s. That was a long time. Twenty years. That was a long time. If you notice, most of the, most people don't usually come into those positions until later in their careers, and you know, don't stick around too terribly long, unless they're really not interested in doing anything, and that's part of it. You know, if you want to do things, naturally, someone's going to get upset. That's just the whole nature of a regulatory agency. Someone is upset. Or, and I remember one time I was in a meeting at the then head of Fisheries and I were sitting there and everybody was upset with us. And this person leaned over to me and said, "you know, we must be really doing our job well, because everybody is upset!" But, you know somebody is. It's a regulatory agency, it's the way it is. So, but you know, you don't really learn those kinds of things from day one, but you learn them pretty quickly.

**SM:** So, you mentioned that, um, you really wanted to know and learn about your stakeholders and then so you went and spent some time with fishermen in the Gulf of Mexico, I think...

**NT:** And also in the Atlantic

**SM:** And, yes...

**NT:** Yeah, and in the Atlantic as well.

**SM:** So what, uh, what did you learn from this experience? What was, in what way was, were your eyes opened?

**NT:** Well, first of all, in terms of the fisher, the people who are participating in the fishery themselves, you know, they're trying to make a living. And I think on the science side, everybody needs to understand that. You know, they're not out there trying to be bad people. They do understand that there are limitations to what productivity is for their resource. They understand that there has to be some regulatory framework. But, but many of their arguments they come back with, in terms of regulations, are clearly valid; there's no question about it. I mean, they can, the regulations can be too detailed, too confusing, change too quickly, you know, communication has to be open between the regulatory regime and who's involved in that, and stakeholders, and of course, that's mostly the regional office.

But from the science side you need to understand that as well because you need to have a really clear understanding of where your science advice is going, and how that is affecting the regulatory regime. So, you know, that, to me, the link between collecting data and fishermen is something that has to be, has to be there, and, um, so yeah, you gain a real sensitivity. Now I went on shrimp boats in the Gulf, and of course shrimping remains the biggest fishery and most valuable fishery in the Gulf, and arguably in the United States. I think it goes back between that and scallops. But I think right now shrimp may be more valuable. Because of the turtle issue. But I was out on shrimp boats, you know we did those kinds of things, and I, and also had the opportunity to talk to people in other fisheries about interactions with sea turtles and things like that. On the East Coast I actually did go out with mackerel, king mackerel fishermen, who happened to be on the council at the time, and may be back on the council, for all I know, on the South Atlantic Council. Anyway, so I went on those boats. And in the past I've been on fishing boats, too, as a graduate student, largely because it's a good way to get turtles, it was back then, a good way to get turtles. It's

interesting, because the more we move towards regulating the shrimp fishery and fisheries relative to turtle by-catch, the less likely they were to tell us. Back, back in the beginning of my career we'd even get a call, you know, from a fisherman saying, "hey," you know, "I caught a leatherback turtle, it's alive on the deck, do you want it?" It was always, "sure!" But, then you get into the regulatory environment and then it's, you don't hear from them at all. You know, but. So those kinds of changes occurred. It's understandable. But, yeah, I really learned a lot. I really gained an appreciation for what commercial fishermen do and how they're trying to make a living, and how, you know, they're not all bad people. And just like any industry, I mean, there's a handful of people who are bad people, you know, and trying to get away with this and that, but the vast majority are not.

**SM:** What was the, um, maybe you can give me an example of a conflict or contentious issue that was part of your experience in dealing with the councils. Because the councils, I understand, are the places where the stakeholders meet and decide and receive the science, and the regulatory part of the science. So what, what stuck with you? One of, maybe the most contentious issue.

**NT:** Oh, that's red snapper.

**SM:** Okay.

**NT:** There's no question about it. Um, red snapper targeted recreationally and commercially, a significant and important fishery, fin fish fishery in the Gulf of Mexico, and the initial stock assessments back in the late '80s, early '90s showed that it was in trouble. And of course then the regulatory scheme was pretty severe.

**SM:** What was the scheme? What was the regulation?

**NT:** Uh, well, in terms of cutting back, in terms of commercial quotas, and yeah, in terms of recreational catch, and it's always based on bag limits, one fish, two fish, that kind of thing, per person, and size limits and things like that. So it was really cranked down, and interestingly, subsequent assessments showed some improvement, but maybe not the kind of improvement everybody was hoping for. It remains an issue, it's still probably the most controversial fin fish issue in the Gulf of Mexico to this day. And it really revolves now, I'd say, well, there's limits on fishing mortality, you know, through ITQs [individual transferable quota] or IFQs [individual fishing quota] or whatever it's called, for the commercial industry. But the recreational industry now, it's a very important target species for the recreational community particularly in the northern Gulf. Really high value for charter boats and that kind of thing. And so there's continued discussion and controversy associated with that. Recently there have been bills introduced in Congress that have moved the management away from the federal cohesive Gulf management approach to individual states, kind of thing. Personally, I think, you know, my own personal opinion and that's all it is, is that's a mistake, losing that kind of control. I don't think that's going to be helpful for the stock as a whole. But it remains. It's just incredibly contentious and has created a lot of, over the years, a lot of division and personal animosity at the, within the Gulf Council. So, yeah, that, that probably has been continuously the most contentious issue.

**SM:** I see. Um, I know you came and you started working in 1980. You mentioned that was, like, a little bit after the Magnuson Stevens Act in 1976. I didn't know if you had any experience, and you can talk a little bit about what that act meant for science and

management within the fisheries science. You didn't personally experience the transition necessarily, but you were right there at the beginning of it, so...

**NT:** It was still the transition. People were still trying to figure out what Magnuson Stevens meant, and in terms of management. It probably, I mean I was in the Southeast and there's no question, I mean there was a lot of discussion at council meetings because I was going to council meetings early on in my career as a bench scientist, but there was a lot of discussion in terms of what does it mean? What can we do? What can't we do? And so there were a lot of boundaries that were still being established relative to what we could or couldn't do.

Probably in the Northeast it had more impact than anywhere. In the Northeast, of course, historically fishing had been going on there forever, and then, and in the Southeast, this affected the Southeast as well. After World War II power ramped up and people became better at catching fish. And in the Northeast in particular, you have groundfish and cod and those kinds of things, and it, and then all of a sudden, you know, people are sort of self-regulating. Then all of a sudden there's an act. And there have to be fishery management plans and the fishery management plans have to be very specific in terms of setting those boundaries for commercial and recreational fishing. Mostly looking at fishing mortality rates and how do you control those so that you're not overfished and overfishing. Probably had more impact in the Northeast in the sense that it immediately created problems. I was a graduate student when all that was going on and I was at the University of Rhode Island, and I saw a lot of that just from the outside.

And, but certainly it impacted the Southeast as well. In the Southeast then, we had the Endangered Species Act, and that's where the turtle issue came in and that was huge, which is why I was hired. Because that was an issue that became huge in the Southeast when we finally started taking a look at mortality rates of sea turtles, shrimp fishing, we realized we had to do something. So again, you know, the Endangered Species Act had been around for a few years too, but again, it's putting the bounds on it, the requirements, and you know, that kind of thing, so. That, it was not easy and people were not happy. I mean, you have a group of stakeholders and they're doing their thing, and then all of a sudden you have an act that says, federal government's going to start regulating. It's a big change. I mean, that's huge. And people were not thrilled.

**SM:** How was this solved? Or, how much of it was it solved? Is it better now than it was?

**NT:** It's better in some sense that, a lot of it actually depends on who, who it is. And particularly from the agency's side. And I think the agency was fortunate that for a long time the people who were the who people were willing to sit down with the councils and the stakeholders and work through these issues. And you can only give so much, and they understood that too and, you know, they're trying to get away with what they can, but they understood it as well. You know, the stakeholders understood that they needed those resources for them to make a living if they were going to continue being fishermen. So, once you get past all of that, then I think there was a really good understanding and it's about communication. You just have to keep communicating. And you can't be afraid to give people bad news because you need to work through that. And what does it mean. And you also need to compromise in the sense that, well, maybe we don't have to really, I mean, in the Northeast the groundfish fishery was shut down for several years. There was no groundfish fishery. And so in the Southeast, you know, there was certainly potential, but there was incremental steps that could be taken and sticking with those resulted in some good results, as far as the fishery was concerned. But in the Northeast, it was very, very different. So, I would

say that for many stocks, for many species, you could work through them and get there. I think Magnuson Stevens, the last iteration of it, which was in, '07? I think it was, the last?

**SM:** Yes, I think '06, '07.

**NT:** Yeah, took it to the point where it needed to be, in terms of actually defining boundaries. And defining requirements and time periods for recovery and that kind of thing. I think some of the difficulty with the application of that is how some people have interpreted it literally when I think there is still flexibility. I mean, for example, the ten year limit on overfished, and if you don't achieve it, what are the consequences?

**SM:** Ten? The ten year limit on overfished? Can you explain that?

**NT:** So, if you have stocks that are overfished within, you know, within a ten year period of identifying that, they have to no longer be overfished, right? Or, if it's a longer, if it has a long generation time that comes into play so it can go beyond ten years. So that became huge, in terms of its' interpretation. You know, my view is, if you're making progress and you come to ten years and it's not there yet, I mean really, what are the consequences? Let's talk about it, let's figure it out, where are we, where do we need to be? Can we accelerate that recovery and maybe get there in another year or two, or what? But it's been interpreted somewhat literally, I think, too literally, of late. And I think that's just opened up problems again, that didn't need to happen.

But again, you know, my view is you get people who are in there and in leadership positions who really understand these things, you know. You want someone who comes in to, say, run NOAA, who goes to a fishery management council and you don't want that to be their first fishery management council meeting. Or they decide they're not going to deal with fisheries, which I think is the whole point. The head of NOAA is a political appointee. The head of Fisheries is a political appointee. There's a reason for that, and that's because the head of NOAA's got all this other stuff they can deal with, satellites are huge, you know, the Weather Service is huge, everything, all of that. And the fisheries person is there to take care of fisheries. But, you know, you get people who come in and don't really know anything about fisheries and they decide they do, and they want to make changes, and it doesn't work. That, that's, opens everything up again.

**SM:** Um, what were some of the scientific paradigms that guided your work and research while you were working for NOAA?

**NT:** Well, one of the big things is, you know, you always know that you're really speaking for the resource, because the resource can't speak for itself. So, when you can, and it's easier to do this in protected resources than it is in the fishing, in fish, in the world of fisheries because again, people are making a living, people are making a living and sometimes species get in the way, but it's easier to be ... you argue for the more conservative approach, and your science, if your science justifies that, relative to the resource. Because the resource needs to be on a trajectory to recovery. And in protected resources, so you make a decision and, um, if you're wrong, I mean, if you're wrong about a decision and things get worse, then you obviously, you made the wrong decision. So you try to err on the side of the resource. And then if you're wrong and you could have maybe been a little more, you know, you can give, you can give once you see the data.

On the fisheries side you try to do the same thing as well. It's a fine line between biology and the biological science and people who are out there making a living and the economics and the sociology. I mean, there's so many communities and you know this better than I do, that the fabric of their community is based on fishing and has been. And you see that in Gloucester, and New Bedford, and places in Mississippi and Louisiana and Texas even. You know, in Florida it's mostly about sport fishing, but it's still about, that's about fishing.

Um, so again, you know, my, it's always just explaining that if you make that decision, here's what the potential consequences are and some of them aren't going to be good. And then as a result of that, there may be greater restrictions imposed on you, so if we just give a little in the other direction, maybe we'll be able to move forward and maybe give a little more and a little more and a little more, and then, you know, you kind of, you see that you've got a stable fishery and no overfishing, not overfished, and you know, you can, you've put your boundaries around it, so. that's probably one of the biggest, that's the biggest, I'd say, for me, in terms of my science. You do your science and you're objective. You're completely objective. You don't go into it with a preconceived notion. You let the data tell you what that result is. But then you can interpret it as a scientist in terms of what that's going to mean, obviously, as far as the resource is concerned, and you have legal obligations. You have legal mandates. Um, and I think fisheries has demonstrated that they've done pretty well with those legal mandates and the decisions that they've made because they rarely lose. And even more rarely, lose based on the science. Science is, always comes out as being strong, and appropriate. So.

**SM:** Um, so, from what I understand, the, you know, regulation has been good, in terms of recovering species of fish that were overfished and all of that, so it was good for fish.

**NT:** That's right.

**SM:** Um, what do you think about the impact it had on these communities, of fishing communities?

**NT:** Oh, there's no question that there's been impacts on fishing communities and ... It probably was the initial implementation of Magnuson Stevens and people certainly saw it coming. And that there's a limit to how much fishing mortality any stock can handle. And you really need to restructure fisheries so that it reflects what a stock, what a, what level of fishing mortality is appropriate for sustainability. Um, so yeah, there's no question about it, it has. And I think the agency has paid attention, in the past, to allowing, or helping, fishermen, in particular, learn new trades, or you know, figure out what their alternatives are. Um, when I was in the Southeast and working with fishermen and actually doing cooperative research, when I was still doing science, I'd ask them, you know, "what do you tell your kids?" you know, in terms of what are they going to do next? And they'd always say the same thing, "Stay in school. Stay in school. Get as much of that as you can." You know, and they were looking at supporting their kids through college, and all of that. So it's not like they didn't see it coming. I mean, and this was in the, this was in the '80s, um, so yeah, I think it has had an impact.

I think some communities have embraced their heritage and done a really good job working, developing working waterfronts, and that kind of thing which is tourism based. Some communities probably haven't. Florida, as we were talking before, still undergoing development and gentrification. The Keys are a perfect example. When I was a kid the first

time going down to the Keys, it was just a series of little fishing villages, you know, and, uh, fish houses and fish camps, you know, in the '60s. And now it's high-end real estate and multi-million dollar homes and "I've got my piece of paradise, stay out" kind of thing. So, you know, Florida. But, but I think still some of the communities have highlighted their working waterfronts. Certainly places like Cedar Key, um, I'm trying to think, on the east coast, um, yeah, I'd say around New Smyrna and that area. Um, you know, and they highlight that. But yeah, there's no question it has certainly, contracted. And not as many participants, for sure. So yeah, you wonder what's the future.

**SM:** Exactly.

**NT:** So. Ah, you know, I'm not going to speculate. And then there's aquaculture. And aquaculture has been viewed by the commercial industry as a potential threat, and there's a valid concern there. All of a sudden, people are going to be farming fish or whatever, and it competes with them. And so there's just one more intrusion. And then in the shrimp fishery in particular, what are we dealing with? Imports. Most shrimp people eat isn't home-grown. It's coming from Indonesia or South America, Central America. So I mean, that, those are valid concerns. And how important is it to the community or to us as a nation to sustain commercial fishing? Personally, I think, I don't have a problem with people wanting to earn a living, you know, and if they're fishing, that's fine. And as long as we're able to talk with people and ensure that that resource is sustainable, then that's a good thing for them. So, um, but, you know, not everybody has that attitude. So, I don't know.

What is the future of commercial fishing? I think there are some fisheries that have done an extraordinarily good job establishing a brand. Key West Pink Shrimp, I think is, they've, they're remarkable. You buy Key West, or Keys, or Florida Keys Pink Shrimp for fifteen bucks a pound in Islamorada and you buy it for fifteen bucks a pound in Narragansett, Rhode Island. I mean, it's pretty remarkable. And I think there's some other species that are moving in that direction as well. I also think that overall, the fishing, the commercial fishing industry in this country has been making, I think, some progress in promoting products from the United States as opposed to imports. And I think that's something they need to really focus on. So, I think there is a future, and they're going to have to figure it out, but it's probably going to be help from people like you, more than people like me.

**SM:** Interesting. I want to ask you, so you mentioned that you have an expertise in modeling, and that was, you had an early expertise in modeling. Modeling became a important a little bit later for, for, in terms of stock assessment, research, and NOAA. How do you think the advent of modeling and other research technologies affected the work that scientists did, and the science and the regulatory part?

**NT:** Okay, well first let me be clear again. I can apply existing models and the traditional ones back in the day, the bio-statistical modeling. I do not build models. I do not create models. There are a lot of people that do that and are very good at it, so I just want to be clear about that. I can take data and plug it into a VPA and come out with results and interpret those results and understand the uncertainty, going back to what the modeling approach is, but I am not a modeler per se; I don't consider myself a modeler. I consider myself a fisheries biologist and, even, you know, more of a wildlife biologist than an actual modeler. But I do understand the inputs into modeling and I do understand the outputs as well, and where the uncertainty comes in, which is what you really need to understand, are the results and why

they're uncertain. Sometimes you can affect that uncertainty through your sampling, sometimes you can't. But you can at least explain it.

My view is that there are a lot of people in NOAA and at the Southeast Center, and in the Northeast Center, who are those modelers, who create those models. There's some outstanding people. And can apply them and that's what they should do. I mean, there should be, and there's a toolbox, you know, in fisheries. And a lot of these tools become part of that toolbox, which means they've been evaluated, validated, evaluated, validated, and standardized. And anybody can be able, should be able to apply them, as long as they know what they're doing. And so I think, I think that's a really good thing.

I think the science and I think NOAA, in particular, has been instrumental in that, has moved fisheries science along really well in terms of making more tools available for evaluating stock condition and health. And I also think there are some new sampling tools that have come online that have tremendous promise, that will improve the accuracy and precision of the results; meaning reducing the uncertainty. Because everybody, unfortunately, ends up going to a council meeting and what you're talking about is the science and here's the uncertainty. And you know, that's where people get concerned, and rightly so, and the feedback loop on that should be that there's, that you can identify those that are most important, relative to creating that uncertainty, and you can fix it somehow either through the modeling exercise, more likely through the actual sampling in terms of what the data are that you're getting. So, I see it as, as really progressing and I think right now, in terms of sampling tools, there are some that are being developed and potentially that need...well, they need to be tested, that could come online that are really going to make a big difference, I think, in fisheries science and the quality of the science advice coming out. So, I think it's an interesting time.

**SM:** Can you give me an example of a, you know, one situation, instance, when the uncertainty in the model could have a big impact on what happens with the fisheries?

**NT:** Oh, you, you name it. I mean ... um, mackerel. In the '80s, that was a huge issue, king mackerel in particular. And there were issues related to recruitment and got all these fish out here who are, that are capable, who, (that's anthropogenic), that are spawning, but recruitment seems to be kind of depressed. And then you realize that again, there's an interaction with the shrimp fishery and, you know, so there's this disconnect between what you're seeing in terms of populations and productivity, and what the actual productivity is, so that was huge in terms of uncertainty, obviously, in terms of what you could allow, in terms of actual fishing and fishing mortality. But then we realized that there is a huge by-catch issue with juvenile fish in the shrimp fishery, and so TEDs then became by-catch reduction devices, and so you know you have TEDs, which are reducing by-catch of turtles, and then you need to start reducing that by-catch of juveniles in fish population so that you have more of them that can grow up to be spawning adults and improve productivity, and so there is a big gap there in terms of uncertainty, relative to what you thought you should get from the adult population in terms of recruitment, in other words, adults being recruited into the adult population or into the fishery and what you were seeing. And it's because there was a lot of by-catch, and so, and that was true for a number of different fish species, and so that was the, that was the reason why we ended up developing the by-catch reduction devices. So.

**SM:** Um, I want to go to another theme and ask a you a little bit to talk a little bit more about the time that, that you had your children and how you managed that. How, like, what was the

day-to-day difficulty? What was the day-to-day good thing about working at NOAA and having children, being a scientist and a female scientist in a leadership position, because I think that's a fascinating subject.

**NT:** Well, I had my kids when I was a bench scientist. I had like--

**SM:** Can I, can I ask quickly to define "bench scientist"?

**NT:** Oh, okay, so it's an old term that goes back to when scientists were actually sitting at benches, you know, doing laboratory work. And so you're an actual hands-on scientist, actually being a scientist and, maybe that term is no longer used within NOAA, but when I came in 1980, people were still using that term to describe themselves. And, I wasn't sitting at a bench, per se. I had a desk and I was going out in the field and collecting data. And in 1980 we had dumb terminals but we still had, you know, a computer that we could access and we were doing things on a computer.

Anyway, so I had my kids in the '80s and I had, I was obviously relatively young, and um, it was kind of a surprise, I think, to people in the sense that, it hadn't really happened before with a woman scientist. And first of all, there weren't that many women scientists around and I think probably the leadership, of course, was all males, and I'm sure, to a certain extent, they were thinking that I wasn't going to come back and, of course, I was thinking of course I'm coming back. And so, there was nothing like maternity leave back then. I don't know what the leave, what you, what you're allowed for leave now but I used sick leave and...annual leave and sick leave and went into the hole on sick leave because I stayed at home for six months with each of my kids. And then, um, what we ended up doing is, because my husband is a university professor, we were fortunate in terms of, there was somebody in the neighborhood who took care of Kevin till he was about, well, until our daughter came along and then we ended up bringing somebody in to the house to watch the kids. So we were really, really fortunate because we were capable of doing that. Not everybody is. And childcare choices were not numerous. I don't think they're particularly numerous now, and people still have to make choices that are not fun nor are they easy. When I had our daughter, though, Kevin was three and our daughter came along and I took the six months off for maternity leave and the agency allowed me to work at home for another six months, I think it was. And it was part-time, kind of thing. Maybe it was sooner than after the six months. But anyway, it a part-time kind of thing, and I had to come into the lab like one day a week or something, and that was not hard for me to do. My husband could just stay home for a day and he was fine. University professors have plenty of flexibility and time. And so, we had a woman though, eventually, came and stayed. And one rule my husband and I had, and he traveled but not as much as I did, and as my career was changing, I traveled more and more, and our rule was that both of us would not be gone at the same time and we never did do that. And so there were times when I said no to travel because my husband was going to be gone and people were like, "okay, we get it, we understand." I don't know how understanding people are now, you know.

That was my experience, and certainly I carried that with me and I think what was interesting is during the evolution of my career, more women were coming online as scientists and I was happy to see that. And it gave me colleagues, you know, that I felt were more like my peers, not that guys were a problem. But I don't know how the agency handles things now but it was interesting because, of course, when I stayed home, there were no regulations. It was, at the time, the Lab Director, the Miami Lab Director, that's not the Center Director, but the Lab



Director, sent a note or had to put a memo together, probably, a piece of paper, asking the head of the agency, the Fisheries Agency, if it was okay for me to stay home for six months, or whatever it was, eight months, and work at home and this was the deal. And he wrote back and said, "sure." So, nobody came and checked out the safety of the environment and they gave me, there were laptops then. Were they laptops or were they suitcases? I don't know. Anyway, and they gave me that and I worked at home and it was dial-in, but it was still available and accessible and I could do it. And it wasn't that hard, quite frankly. It, and, you know, your second kid comes along and things are easier anyway, I mean. You know, and babies do a lot of sleeping. I really enjoyed it because I got to spend time with my, our son and then I had, and he was really easy to deal with, and there were kids in the neighborhood, you know, a woman who, who had watched him, she was still watching kids and things like that and so he, I mean he was playing with kids all day long. He wasn't stuck home with me. And, which would've been difficult to work anyway, but.

It was interesting, and I know that, you know, now there, it's evolved into maternity leave or family leave, and then if you want to stay home and work and there are these things you have to do, and check these boxes and stuff like that. It wasn't like that back then. It was just, sure. And so as long as I got things done, I mean, that was always, that was always the credo, it didn't matter. And I think it was the, starting the change of the mindset that, you know, maybe you don't have to be here 24/7 to get things done. Of course, we were, so there were times when I felt like I was working 24/7 and I'm sure the stock assessment and a lot of the science folks at the Center, not just the stock assessment folks but the survey folks in Pascagoula and the folks in Galveston and everywhere and Panama City and Beaufort and all feel like they're working 24/7 because they are sometimes, because the deadlines you're up against are real. They're not phony deadlines, they're for real. There's a big difference between that and academia. Academics I don't think really understand that you're under the gun.

**SM:** Yeah, I can attest to that. I guess, one of my final question, or set of questions, is related to general challenges as well as opportunities in working as a government scientist.

**NT:** Well, um, the opportunities... you're not constantly writing proposals, so there's funding that comes in. But within the agency, there certainly is competition for programmatic funds, and there's always not enough. You always need more resources and in some cases it's to support the surveys. I mean, the big, the large synoptic surveys are the key data sets that drive the results of the stock assessments. So the good news is, you know, you get funding. The bad news is, maybe it's not the right funding or enough funding and you're constantly fighting for that funding. But you're not constantly writing proposals, spending your time writing proposals. So that's a big plus. You know there's money coming.

On the downside, there's always a little bit of money, it seems like, going to programs and so, decisions that are hard are getting rid of programs. Those are very difficult because there's always people associated with them, so you kind of have to think in terms of, "if I get rid of that program, these three people then need something else to do," obviously, and they need to feel productive. I mean, you don't just want to put them somewhere and say, "here's your job now." So that's a challenge as well, and you don't get that as much in academia on the research side, because your research proposal, and I've done these now, now that I'm at, I'm actually at the University of South Florida, you know, the College of Marine Science running a laboratory for the Florida Institute of Oceanography down in the Keys. But I've written proposals and it's very limiting. You know, you want a post-doc and that post-doc is two

years so that person knows they have two years and if you don't get additional funding, they need to move on. You know, you're supporting X number of graduate students and it's very well-defined.

But you know, in the government you get funding and the first thing you've got to do is pay your people. And that generally puts you at a disadvantage in terms of your budgets, and so there's some very hard decisions that have to be made. Now, I'm not saying that at the university level, in terms of the numbers of people that work at the university, not grad students, post-docs, that kind of thing, those decisions don't go on, of course they do. And in the corporate world, too. I mean, your decision is, you pay your people first, and then what are you going to do after that. So that's a challenge in the federal government. But what I really enjoyed about working in the government was the opportunity to advocate for new programs and to find new money, you know, and, or create new money for new programs. And seeing new money coming on and then advocating for a piece of that new money because that's a really important issue in this region or that region.

So those were really the positive kinds of, and interacting with Congress can be a plus or a minus. You go in and explain your science and of course, you know, they have to go back to their constituents and say your science is terrible, kind of thing, versus going and saying, you know, if we had, if we had this bit of money we could do this bit of work and we could improve these results by this amount and give better science advice, which could result in these management changes. And you know, that kind of stuff is, I enjoy doing, having those kinds of interactions. And, like I said, you know, new programs. And or new processes. A big thing in the Southeast and even when I was doing assessments, we never had a formal process for conducting stock assessments that was open and inclusive. You know in a formal process, here are the steps, here's the protocol. Boom, boom boom. And of course, everything you do and, you know is a function of other people working with you on it. I mean, I didn't do anything on my own. I mean, I may have had an idea but, you know, you need people to help you. So in the Southeast early on and when I became Director, we implemented a process called SEDAR which I think still exists, it's Southeast Data Assessment Review, which is a formal process for conducting fisheries assessments. Never had it before, it always seemed like people were in a back room ...

**SM:** When was that? In what year?

**NT:** Um, I don't know, it was in the late '90s. And so, you know, it's kind of fun seeing those kinds of things and um, what I mentioned before was in the world of sea turtles science, back when I came online, there wasn't a lot of quantitative expertise being applied or considered for doing assessments with sea turtles. And so again, I was the first chair and started a process, we were told to start the process but I was the one who did the follow through basically in that case, again it's a bunch of people involved, to start a process. And it was the Turtle Expert Working Group and it was the first time a group of people, and it included people from academia and we even had people representing the fishing industry attend a series of workshops to actually do the first quantitative assessments for sea turtles, to look at trajectories towards recovery and that kind of thing. So those kinds of things were fun as well. I really enjoyed doing that kind of thing. And you know, and then, just looking at the, doing the science and you get all of the data together and you're looking at it, at your results, and you realize there's something happening that, it was like, wow, you know, I never saw this before. Like, a really strong year class that may be actually sustaining that fishery for some period of time, and then after that, that year class, then it's not as strong and you can kind of

forecast and hmmm, you know, it's going to be great for the next five or six years, but maybe not so great after that. And it's just cycles and fish stocks and that kind of thing.

**SM:** Did you say "year class?"

**NT:** Uh, "year class."

**SM:** Can you...

**NT:** Yeah, so you have a cohort, basically what you're looking at with stocks is what's really important is the age distribution. So you have some really old fish and you have lots of really young fish, kind of thing. And what you hope is that, you know, the numbers that you have up here as young, will be sustaining a population of older fish, reproductive fish, so that they're around and, you know, sustained, and so you look at that age distribution and sometimes, you know, there's just natural fluctuations in the population, probably based on resource availability and environmental conditions. And sometimes a given reproductive stock can produce a really, really strong spawning product that then, you know, it might be way up here and you can see that under constant mortality, that still is a really strong class or cohort, and that, once it hits the size or age of the fishing, the fish population can really be strong and sustain a fishery for a long time. And then maybe after that it's not so strong, you know, because of environmental conditions again and so you can kind of see these, you know, like a blip, kind of thing.

So, you know, you get, kind of results like that. And when you're looking at trend information, say numbers of whatever over time, that trend then leads you to asking a question, and that question is always: Why? Why this trend? Why these changes? What's happening with this population or the environmental conditions that are resulting in this trend? And that's what leads you to do research, you know, that's the "why" question and then you develop a hypothesis. Climate change, you know, that's huge right now. Why is this trend occurring? Are the thermal/pH conditions changed sufficiently to have an impact? How do I test that? You know, so, to me, that was always the fun part of science. And you get to do that a lot in fisheries. So, I always kind of enjoyed that. So.

**SM:** What do you think was your major contribution during your time spent in the Southeast Center and the Northeast, in your career at the Fisheries Science Centers?

**NT:** Yeah, I thought about that a lot. I mean, you know, again, it's based on people. And the agency, people, it's people, you know, and how you interact and treat people is what's more important than anything. So from that perspective I feel like I was able to bring people together, to work together, collaboratively, as a science center, particularly in the Southeast which had a history of like, little fiefdoms, kind of thing. And my predecessors had been working towards that as well. And they were, you know, they set the stage for that so when I came on it wasn't that hard to do. Plus, people knew me, because I had grown up in that Southeast Center, and I had had my kids and it wasn't just Miami, it's Galveston, Pascagoula-, you know, it's all around. But they all knew me, and so it was easier, I think, for me to do, to bring people together plus be there for them and have their back, whether it was for professional reasons or personal reasons like storms and things like that.

From a professional standpoint, I, you know, I...sea turtles were what I spent most of my personal time on, and certainly bringing that science culture along to accept assessments and

look at numbers and how important that is to recovery of stocks, I think, was a big contribution. There's processes like the Turtle Expert Working Group, I mean, that was important, I think, to that. You know, there's things like SEDAR [Southeast Data, Assessment, and Review]. I started the Sea Turtles Stranding Network, I started the Cooperative Turtle Tagging program and there's a bunch of things I started, but really it's more progressing that science and community. And it's interesting, when I was starting to work for NOAA, I was asked about bringing maybe a handful of people together to talk about sea turtle research and home in on some issues. And it was essentially a workshop that we did and that was something early I did, although I think I missed the first meeting because I was having Kevin. But I was involved in organizing those, and in all of those all along, and eventually it became the sea turtle, the International Sea Turtle Society and there's a symposium every year and it brings in about 1,500 people. And so it's a, it's a scientific meeting now, and a society and stuff. And again, it wasn't just me, it was somebody in NOAA who had the idea, and but they came to me first and then I went to a group of people and brought it all together. So, you know, that's kind of interesting to see as well. But I don't know. I still think it's about how you treat people. I really do. And respect. So, I don't know. I don't know. But it is, it is kind of interesting to reflect back and see things that have gone by the wayside and things that haven't. So yeah.

**SM:** Is there anything that you would like to add to this interview? Something we didn't touch on and you think it's important?

**NT:** Well, no, I mean, I worry about the future of NOAA. There's no question about it. I wonder where it's going. You know, I was always very proud to be identified as someone, a scientist with NOAA. I don't know where it's going and it worries me. I think there are, I think NOAA is comprised of a huge number of really good people and it's not just in Fisheries, I think it's in the Weather Service, I think it's in OAR [Oceanic and Atmospheric Research] and NOS [National Ocean Service], NESDIS [National Environmental Satellite, Data, and Information Service], there are a lot of really good scientists. And I worry that they're not given the same opportunities I had, or that they're not treated the way, with respect.

I can't say at the very end of my career that I was particularly happy with where NOAA was going or with how people were being treated, including myself. So I do worry about that because I think, I think the idea, even though it was concocted by Richard Nixon, I think it was really a good thing to do. I think there were tremendous benefits from bringing those disparate agencies together into a single, you know, marine science looking agency. It doesn't mean there aren't opportunities for reorganization, but I, and I'm not so sure there's a lot of interchange between the various line offices in NOAA. I worry about that, but I really am concerned about where NOAA is going. And so we have a new election. It'll be interesting to see, you know, who comes in as the political leadership and I hope, I hope it's people who understand how government works and they understand that scientists are objective and that it's not about pushing a particular opinion. You know, again, my view is that as long as you stick to an advocacy position of information, I'm an advocate for information, that's where NOAA needs to be, then I think it'll be all right. But it really is "who". You know, much of what happened with me, or because of me, is because who was there in the agency at the time, at the top, at the middle, and at, and at the lower ends as well, so. I don't know.

**SM:** Can you expand, if you wish, on some of the change in the treatment of employees at NOAA that you noticed towards the end of your career.

**NT:** Yeah, um, there was, like I said, for the vast majority of my career... It was interesting, you know. I came in when Reagan was elected and there always decisions that are made outside of the science advice but you were told, you know like, okay, so this was your science advice, but this is what we're going to do because of sociological reasons, community integrity reasons, economic reasons more than anything else. And we, and that's the way it was under everybody. And I would say that when Clinton came in in particular, there was increased transparency. And then under the second Bush, again, you know, the leadership in NOAA was very transparent and explained everything. And then we got to a change and there was leadership that really had no experience with the federal government, as being, understanding how government worked, or that the employees were not loyal to a particular administration. We were loyal to science. And so as a result there were agendas being pushed that were inappropriate and I think there was also the lack of support from that leadership. And so, you know, you sit there and you see people being thrown under the, first of all, things that are being done that really were more than inappropriate.

**SM:** Like what?

**NT:** Well, in terms of how money was handled, for example. Or making mistakes and then not admitting they were making mistakes, kind of thing, you know. Admit it, you know that you're on a learning curve. Or take advantage of the people who are there who can provide advice and listen to them. But yeah, and so they weren't, they weren't really there and so you know, you just sat and watched people being thrown under the bus, essentially, just left and right, and not taking any responsibility or being accountable. And then taking credit for things that they had no business taking credit for. And this is getting off, I don't know where this is going to go, or what you're planning on doing with this, but yeah. And, um, and just not treating people, or protecting people or treating them, you know, with any respect in terms of what they had to offer. It was different. It was the first I'd ever encountered that. And people could disagree, but, you know...

**SM:** When, when, more or less when did you, I mean, you mentioned already when it changed, things changed, 2008? Around 2008?

**NT:** Yeah, I'd say it was around '09, 2010.

**SM:** Do you think it had anything to do with the recession, or?

**NT:** No.

**SM:** No.

**NT:** No.

**SM:** There was one more thing I wanted to ask you and I forgot now. Yeah, I don't know. It was there. But, yeah, that's fascinating, to notice that change.

**NT:** Yeah.

**SM:** So that makes you feel uncomfortable about the future?

**NT:** Yeah, it does, because, you know, I hate to think of what that did to the agency and that would be its' legacy.

**SM:** Mm hmm. I do remember now what I wanted to ask. Because you mentioned some people that don't really understand how the federal government works. Can you, how do you think it works? In relation, obviously, to the work you've done.

**NT:** Well, there are legislative mandates. There are laws. And, I mean, the government, you learn that in civics class, right? That we in the agency are part of the Executive Branch, and the Executive Branch is responsible for carrying out the laws. We don't create them, we don't make them, that's Congress's responsibility, right? And then there's the Judicial part of it, which makes sure, ensures that everything is constitutional, so. You know, so, so, we didn't create the laws but our job was to interpret them and people need to understand that and I think that most people do who have at least some experience within the government. You don't have to be a career bureaucrat, but you have to be involved. I mean, for example, from the fisheries perspective you could be an academic, but you could be an academic who has been a science advisor on a committee for say a fishery management council. And as long, you know when you're involved in something like that you get a, you get a really good idea of how fisheries management works, and that takes you back to Magnuson Stevens. That's a law. We carry out the law. The Endangered Species Act is a law. Our job is to carry out the law. And I think that that's important and, you know, a lot of people maybe come from academia and they've had absolutely no experience with that, and they think that we're actually sitting as scientists doing science that is based on some agenda that we've developed. Well, no. You know, we're trying to meet the mandates of Magnuson Stevens, or the Endangered Species Act, or the Clean Water Act, or whatever it is, you know. So, there needs to be an appreciation of that, that sure, I mean, we vote, but who knows who's going to come in? And you just want to be able to do your science and left alone to be objective about doing your science, and like I said, you know, my view is for the most part of my career, regardless who was the administration, you know, they weren't interfering. So, I don't know. I think, you know, the, the last few years there was some consideration that there was that kind of loyalty, and there was interference. So.

**SM:** Is there anything else you would like to add?

**NT:** No, um, no it's been interesting. I hate talking about myself so much. Like I said, you know, everything, it's a group of people and you work with people and the results are a function of people. And like I said, I, there's a lot of really good people in NOAA and I really admire them and respect them. And I just hope that they can have careers and opportunities like I did. So. I don't know.

**SM:** Well, I'd like to thank you for the time we spent in this interview. I'm going to stop the recording now.