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Turner, Steve ~ Oral History Interview

Suzana Mic

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

Interview with Steve Turner by Suzana Mic
Summary Sheet and Transcript

Interviewee
Turner, Steve

Interviewer
Mic, Suzana

Date
September 6, 2016

Place
Southeast Fisheries Science Center
Miami, Florida

ID Number
VFF_MI_ST_001

Use Restrictions

Biographical Note
Dr. Steve Turner was born on May 23, 1949 in Providence, Rhode Island. He began working in 1974 at what was then the Mid Atlantic Fisheries Science Center at the Sandy Hook lab which was merged into the Northeast Fisheries Science Center. He received his Ph.D. from Rutgers University in 1986. He moved to the Southeast Fisheries Science Center from 1984, and is currently the Fisheries Statistics Division Chief at the Southeast Fisheries Science Center in Miami.

Scope and Content Note
Interview contains discussion of: FCMA, Magnuson Stevens Act, challenges in international fishery management, impact of the Magnuson Stevens Act on international fishery management, conducting recreational fishery surveys, Marine Recreational Information Program, public reaction to recreational fishing surveys, benefits and challenges of being a government scientist, data systems

In this interview, Dr. Steve Turner discusses the challenges associated with international management as well as his experiences working at various NOAA labs along the East Coast, specifically the Sandy Hook and Miami Labs.

Indexed Names
Blondin, Carmen
Brown, Bradford
Fox, William

Freeman, Bruce
Parrack, Mike
Powers, Joseph
Scott, Gerry

Transcript –ST_001

Suzana Mic (SM): ...sure that it's on now. And sometimes I will listen just to make sure that the audio is, is right.

Steve Turner (ST): Okay.

SM: But I will go ahead and start. I'll read you this small paragraph. 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 Service Office of Science and Technology. My name is Suzana Mic and today I'm speaking with Steve Turner at his office at the Southeast Fisheries Science Center in Miami. And the time is... do you have the time? Let's see, the time is 1:20?

ST: Yup.

SM: Yup. So before we begin I would like to let you know that you can stop me anytime if you want to take a break or if you feel uncomfortable with one of my questions please let me know and we can skip forward. Could you please tell me first the date and place of your birth?

ST: May 23, 1949; Providence, Rhode Island

SM: Providence, okay.

ST: Rhode Island. New England.

SM: Rhode Island, right. So you are currently the Chief of the Statistics Division here at the Southeast Fisheries Science Center. Could you please tell me when you, when you have started in this position and what were your positions before?

ST: So the Fishery Statistics Division was formed in 2010; it was formed informally out of the Sustainable Fisheries Division which include both, which included, prior to that, both Statistics and Stock Assessment. So the job was really much too big for the Chief Stock Assessment scientist, so they split the division out. Apparently it had been split out, um, twenty, in the '80s and prior to that, for some period of time, but then they amalgamated it and now they've split it out again.

Prior to that I was, I've spent my entire time at the Southeast Fisheries Science Center, I started at, in the north, in the Mid Atlantic Fisheries Science Center much earlier, but we'll go into that later. But I started in the, the predecessor to the Fisheries, to the Sustainable Fisheries Division in 1984, came in as a stock assessment scientist and worked in various roles in that division until, well, throughout my career until Fishery

Statistics was broken out in 2010, but in about 2005, I shifted from being a stock assessment scientist to working on data, taking over a group that dealt with monitoring of log books and commercial landings. Mostly we dealt with fisheries logbooks. So that, that role as a supervisor gave me experience as a supervisor, which allowed me to move into the role of the Division Chief in the Fishery Statistics Division. But also, because I have an assessment background, a numerical background, how data are needed for both stock assessment and management, it's, I think, it's a useful history for working in a statistics group to be able to understand the information that we need to pass to the people doing the analyses.

SM: I see.

ST: The type of, understand the type of information they need.

SM: So what year did you start working for the Fisheries Center in...

ST: For Southeast Fisheries Science Center, I started in 1984. In 1974 I started in the, um, what was then the Mid Atlantic Fisheries Science Center, I believe that was the name of it. And then in 1977 or '78, the Mid Atlantic Fisheries Science Center got amalgamated into the Northeast Fisheries Science Center with the reorganization that went along with the enactment of the FCMA [also known as the Magnuson-Stevens Act].

SM: Okay.

ST: So, and at that time I shifted most of my time from working in what became the Northeast Fisheries Science Center, to working on a graduate program at Rutgers University. So most of that time I was working on my graduate degree, which turned into a Ph.D. and though I did continue working a small amount for the Fisheries Science Center. And then towards the end of that graduate program, before I got my Ph.D., I came down here. I came down here in 1984 and I got my Ph.D. in 1986.

SM: I see. Okay. So can you tell me, I kind of get a sense of why or how, but why did you decide to pursue a career in fisheries science?

ST: Well, it was, I just wanted to find something in biology and ecology that, you know, was, well just, to work in biology and ecology. And I ended up starting out at this Sandy Hook lab in New Jersey as a volunteer, assisting on looking at the biology of tile fish that was off the coast there. And also doing some work on recreational fisheries.

SM: I see. And that got you interested--

ST: Yeah--

SM: --further.

ST: --got me very interested.

SM: So if you, if you look back and think back at your years, the years that you spent in this, in the fishery science, can you tell me, what were some of the most important, most defining moments, both in term of fishery science and management?
ST: Well, certainly in terms of management, well, I guess, management and fishery science, you know, the, clearly the enactment of the FCMA really had a very big impact. And, I guess, the second version, I don't know if it was the second version, but a later version of the FCMA really had a much bigger impact than the first. The first version, the criteria for management was basically setting, setting your stock goals was what proportion of the stock was being exploited. And the second, the later version set targets related to both spawning biomass and exploitation rate. And that second version really has resulted in lots of improvements in the status of stocks.

Prior to that, you could harvest a stock at some rate, twenty percent, thirty percent, I don't, you know, forty, fifty percent of the rate at which you would get MSY [maximum sustainable yield], but if the stock was depressed the stock would likely, very, you know, it would take a very long time or never recover. If you, so you have to really reduce that rate to a very low level if the stock is highly depressed. So. I think that was probably, in terms of management; that was probably the biggest impact.

I spent most of my time with, as an assessment scientist, from '84 through 2002, I spent most of my time with highly migratory species; blue fin tuna, swordfish, other Atlantic highly migratory species. So I had less, um, responsibility or interaction with the FCMA than many, most stock assessment scientists, because they were working on domestically managed species, whereas the HMS [highly migratory species] species are managed through the Atlantic Tuna Convention Act and through international. And with ICCAT [International Commission for the Conservation of Atlantic Tuna], until recently, and maybe even now, but, the goal has been, you know, maximum, maximum sustainable catch, or something of that nature, and that's, so that's not as robust a goal and it's also managed by consensus internationally and that's a difficult arena in terms of rebuilding stocks. Yes, some stocks have come back and been rebuilt, but not all stocks, certainly.

SM: I see. So you saw a difference between, between the management, the international management and could you kind of rate the Stevenson, the Magnuson Stevenson Act in terms of, like, was it better than...

ST: Oh yeah. Magnuson Stevens Act, you know, was far more robust and, you know, really, not that I'm an expert on it, but you know, the domestic management under Magnuson Stevens was far more supportive of rebuilding stocks and maintaining stocks at a sustainable level. And because of the mandates in the Act, the difficulties one can run into in internationally managed situations where political interests and economic interests can impact decision-making by the management body, that certainly can weaken the ability or the, the movement of, to bring a stock into, you know, a sustainable level or into a, a stock status which is potentially not highly depleted, and can bring a stock back from potentially a highly depleted level. You know, a few stocks in, under ICCAT, have been brought back from relatively, from overexploitation, you know, people bring up swordfish, but swordfish never was very far depleted; it was maybe down at, you know, seventy percent of BMSY...

SM: What's a BMSY?

ST: The biomass that would sustain maximum sustainable yield.
SM: Okay.

ST: The reproductive biomass. And so, and maybe it was higher than that at its' low point. So yes, it came back, but blue fin tuna, which has been down at, you know, two percent, at very low levels, you know, has not been brought back in thirty-five years. And hasn't come back, it's come back a tiny bit, but it's not come back very much.

SM: Do you remember, or can you, can you describe an episode of one of these very contentious moments, if there were any. It sounds like there were, in that early part of your career, in trying to manage international, the international, I don't know how to call it, but...

ST: So, I saw the results of the management, not so much, I didn't see the management. I attended only one Commission meeting at ICCAT, but certainly the, in the scientific arena there was, there were always a lot of interaction with a variety of people from various nations, including the U.S., who had alternative opinions. I, and very often the, um, …so in the ICCAT arena each scientific delegation is selected by the represenat-, by the Chief Scientist, or the, probably by the Chief Scientist for that nation. And so there would be U.S. scientists in those, U.S. federal government scientists in the delegation, there might be scientists hired by industry representatives and recreational fishery representatives, and NGOs [non-governmental organization] as well. Basically non, non-industry related organizations.

And over many years, we had extensive, difficult interactions with representatives from the fishing industry. Typically, if problems were found in analyses we did, the industry reps would make a big deal out of those and if problems were found in their work, those problems would be downplayed. I remember one situation where a really fine scientist working for the industry, you know, basically miscounted information; he had double or half of the, of the number of tags of blue fin tuna floating around that had been released. And I had worked on that data extensively and was able to identify that they had a problem. And, you know, so it was just, it was an oversight on their part. Whereas in, probably it was 1993, when management, the management put in place in 1982 for blue fin tuna, said they expected the population, I don't know, increase or, they expect, they thought that they, I think, - I'd have to go back and check the wording - but they, they thought that the wording should stay in, stay in place, the management actually should stay in place for ten years.

So in 1992, we brought up the fact that the wording had expired and so some management action was recommended. So there was an extensive review of the information that went into the stock assessment that suggested that alternative, more restrictive management action was needed to help rebuild the depleted population, the severely depleted population. And so they brought in some people from, probably as consultants, but one of the person was, one or two of the people worked for IATTC [Inter-American Tropical Tuna Commission], and they found a one fish error in one of the indices of abundance and a huge amount of criticism was generated from that tabulation error so that that one fish was not included in the index of abundance. Had it

been included, I doubt that it would have made any difference. I think we showed that it didn't make any difference. But that doesn't matter once the press releases are out. So certainly there were difficult times in, in those environments, in that environment.
SM: What is, what is the situation with the blue fin tuna now, with the blue fin tuna stocks internationally?

ST: I think they're still depleted. There may be some, some beginning, some, some recovery, I'm not positive because I'm, it's now been more than a decade since I've been out of that. But I pay a little bit of attention to it. There still is a debate that's been going on for ten or fifteen years as to whether the depletion is associated with exploitation, essentially in the '60s and '70s, or whether the environment has changed such that blue fin tuna is never going to recover because it's in a new regime. And so that, of course, is...

SM: Debatable?

ST: Yeah, and you can debate that sort of thing ad infinitum.

SM: Do you think the standards created by the Magnuson Stevenson Act had some sort of influence on, on reshaping the international standards, if they did?

ST: I think over time they have. My understanding from one of my people, one of the people in Fishery Statistics Division who participates in the ICCAT arena very actively; they're just now beginning to develop and adopt management control rules. So basically a set of criteria that would define the management action, but one of the dangers of that at, you know, the action by the Commission to potentially adopt the management control rules would be that the management is carried out, I guess, by consensus rather than by majority rule, so that anybody, if somebody objected then they, one country could basically negate a decision that would support improvement of the stock. So while they might, so that, it's not clear, I, I don't think they've made a decision, a final decision there, but that certainly would be a dangerous situation, you know, the Commission might look good, the ICCAT Commission might look good by adopting management control rules, but in reality, they'd be setting themselves up to not be, to be able to be weak managers. So.

SM: Okay, well, let's come back to the U.S. and think a little bit about your actual work environment. Like, what it meant, like, initially working as a, in stock assessment, what was your daily routine, kind of, the people you worked with. And this was the Northeast Fisheries... what became later the Northeast Fisheries Science Center, the early part of your career.

ST: In New Jersey at the Sandy Hook lab, I worked with a man named Bruce Freeman, and worked with him on, eventually worked with him on recreational fisheries in New Jersey. We did a survey of the New Jersey fishery and we also worked on tilefish. I went out on commercial boats and collected some tissues for trying to age them, but later I did a lot of work in my, for my thesis, I did a lot of work on tile fish and found from reading otoliths that they live a long time; twenty-five, forty-five years, maybe older than that. And, but, at the time I was collecting scales and taking impressions of scales and so scales are not a very useful tool for determining the age of very long-life animals.

And people in the laboratory that I was working on were using impressions of scales from blue fish and maybe a few other species to try to age them, and perhaps with blue fish, you can use scales, but I, that was not a very successful project for tile fish. So I did some work on food habits, most my time was spent, you know, on recreational, recreational fisheries survey in maybe '74 and '75, on the New Jersey coast. Let's see--

SM: Were you, the survey was--

ST: --but I also--

SM: --I'm sorry. The survey was related to, again, the population of fish?

ST: No, it was trying to quantify the number of fish landed--

SM: Okay.

ST: --by species along the coast, from various fisheries.

SM: So that involved interacting with fishermen?

ST: Um, yeah. Yeah. We were, we were interviewing fishermen and getting information on, you know, their catch and catch rate, how long they went fishing, things like that. So we did that for a couple of years. I also was, went out on the *Delaware II,* basically to help out with ground fish surveys. And so I did that, and I think I went out on the *Albatross*, you know, once or twice, further north. So I was out at sea few times. Or a bunch of times, helping out there. So I was doing a variety of things.

SM: How was, how was that? How was the field work? Both interviewing fishermen, and knowing that you come from a federal agency and, how was that relationship?

ST: That was, that was pretty good. I also, one summer, probably the first summer... summer of '74, maybe? And then it would, it would've been, '75, '76 we were working in New Jersey. The summer of '74 I spent, I spent the summer in Ocean City, Maryland, doing dockside interviews there, and we did beach sampling, we did bridge sampling, we did charter boat sampling, private boat sampling, tournament sampling, so we did a lot of sampling of recreational fisheries in Ocean City, Maryland. So how were the interactions with the fishermen? They were, they were generally really good, you know, I didn't run into a lot of animosity where, you know, I remember questions about, you know, fisheries and fisheries management, but that was before the FCMA. There were, you know, we, I dealt with a number of tournaments, fishing tournaments, for white marlin and that sort of thing, the big pelagic fish, fish down to Ocean City, and so I worked, you know, those docks as well. And, you know, things, things were pretty simple. There was not much animosity at all that I recall.

I worked with a local guy, he, some of the time we'd get in the boat and interview people in the bay, you know, find out what they were doing in the middle of their trip and stuff like that. And he and I would walk the bridges and stuff like that. And he pointed out that there was, when we come along the bridge, he spotted a, one guy who always disappeared when we showed, when he saw us coming. So we were, that guy really

didn't want us to be interviewing him or sampling his fish. And I was probably a bit ignorant, you know, picking up great big, you know, a lot of people had tiny little fish or nothing, and some people would have really big fish, they'd be great fishermen, and they wouldn't know where to fish and how to fish. And I think this guy was one of those and, you know, I was an ignorant kid, and you know, here I'd pick up his fish and weigh it and measure it and show everybody what he had, which I think he didn't want. So anyway. He didn't, I don't think he'd like being interviewed, but he wasn't, certainly wasn't vociferous about it.

SM: Did you continue some of that work after, after the Magnuson Stevenson Act, and how was that different?

ST: I haven't directly done that sort of work but I've been, since, well, that's not the case. After, when, when I came down here, I worked with...

SM: That was '84, right?

ST: Yeah, in '84, some point in there, probably in, toward the late '80s, early '90s, we took over a survey called the, which originally was called the blue fin tuna survey for small blue fin tuna in the Northeast and then it got called the large pelagic survey, and I can't remember who was running it before us, it started here and then perhaps it moved, I don't know where it, maybe it stayed here, I don't think so, and then we took it over and we ran it here for a good while. So, and then the Northeast took it over. So there we were on the dock for people who were catching especially blue fin tuna, yellow fin tuna, marlins, so we did that for a good long time, did that for several years in, - in '92? Yeah, Hurricane Andrew - We, we, it became more formalized in '92, we contracted, at some point we contracted through, we added a subcontract to their contract to do our work with a, a better survey design that we had used previously to do the dockside sampling. And we had the…and the concern was, oh, in, probably '91, there had been some regulatory changes at ICCAT. There was concern about the quantity of small blue fin tuna being harvested by the U.S. The Canadians basically took some analyses that came out, probably in '91, and basically said, "well, the harvest of small blue fin tuna should be cut in half".

So I believe that harvest went from fifteen percent down, of the annual quota, the ICCAT quota, maybe the U.S. quota, I'm not sure, but probably the ICCAT quota, down to eight percent. And so my reaction to that was that quantity could be taken in two weeks off of Virginia, and had been in recent years, so we really set up a very strong monitoring program with weekly reporting and we processed the data down here every week, estimating the quantity. And from '92 onwards, we have never seen that quantity landed in Virginia.

So there was a big change, it seemed to me, probably in the population at that point, where the fish were moving, but obviously it could've been in the fishery itself. But of course, we couldn't predict that. And '92 was the year that Hurricane Andrew hit, so when we set up this contract, we insisted that the data be delivered two places; one to Woods Hole and one to here, and so they, Woods Hole was just storing it. But as Hurricane Andrew was coming along, we shut down this lab for, probably three weeks, and I was out of my house for five weeks. We just shipped all our software and data up

to Woods Hole and they took over. But, you know, another guy and I had put that together and that, that was of course very difficult for them to pick up and take over. So I, I'm off the subject a little, you asked about, you know, interaction with people at the docks, and continued work with recreational fisheries. Um, I can't remember, you know, I was here in the lab rather than out on the docks and things like that. So I don't remember whether we ran into a lot of people who were upset or not. We probably did, because of restrictions and things like that on blue fin tuna harvest and, and stuff like that. In other recreational things since, since 2000 when this division got formed, we've been, and I don't know when we started this, we've been, I guess, for years someone in the, the what is now the Sustainable Fisheries Division, the old Miami lab or whatever that group was called within the Miami lab, probably Joe Powers was, Joe Powers and Gerry Scott were the Division Chiefs, had a person there who provided data to everybody, and to the assessment scientists, and to the economists and the managers, and so she integrated the information, she'd provide the head boat data and she'd get the information from MRIP. You know what MRIP is?

SM: No.

ST: The Marine, the, the Recreational Survey, the Marine Recreational Survey run out of headquarters that covers essentially Texas to Maine, and they support recreational fisheries statistics data collection throughout the, and the West Coast as well, and Hawaii. So we have a history of working with those data sets doing quality control, processing them so they're easier for data managers to use, or the users to make use of and things like that. So I've been involved with that stuff for awhile and in, in the last several years involved with thinking about survey design and recreational sampling in the Gulf of Mexico and the south Atlantic. So we've become more and more involved in, or it's become a larger part of my job to know what's going on with recreational fishing. So certainly the Gulf of Mexico recreational fishing activities are very different than I encountered with the large pelagic survey and the surveys in Maryland and New Jersey prior to FCMA. The tone is very different, you know, people really doubt, cast doubt on the recreational fishery statistics for a whole variety of reasons.

SM: What people, who, who are...

ST: The public.

SM: The public.

ST: The public.

SM: Okay. Why? So what are some of the doubts?

ST: Well, I don't think they understand the need for statistical surveys in very large populations, such as the population of fishermen and fishing trips. It's, the evidence of that is the clamor going on right now for, to shift to log books for charter boats. There's probably 3,000 charter boats between Hatteras and Texas, and those are, you know, federally permitted charter boats that would fish in federal waters and I may be wrong, it may be a higher number than that, but there's also lots of charter boats that also fish inside of federal waters, in state waters, and there's probably at least another 3,000 of

those boats. So there's probably 6,000 boats or more fishing, taking fishermen on charter trips from Maine to North Carolina. So that's a very big population to survey and previous, some experiments have been done to try to test the feasibility of log book reporting, electronic log book reporting, by charter boats and the initial survey had a forty percent non-reporting rate even though these people volunteered to participate in the survey. You know, they eventually backed out and said "no, I don't want to do it". Or they just found it too onerous or something.

So that kind of non-reporting can introduce huge bias. So if you, so you compare a logbook approach to a statistical sampling approach, statistical sampling could have high variance but it wouldn't necessarily have bias. And so there's, a lot of the public's concern about recreational fishing surveys, I think, really has to do with not understanding statistical surveys, but also the fact that they're being managed on these data. And so there's uncertainty around the data and... also some of the techniques, you know, you know it's much easier just to add up a bunch of fish and say, well that's the amount. But you usually have to correct for non-reporting, as I mentioned earlier, or other problems in the data sets if you're dealing with, say, a logbook. So...

SM: What are the concerns with the uncertainty? So how does the public interpret uncertainties in the data?

ST: I don't think they, I think it's more yes or no. Situations where, during one hurricane, the statistical system estimated a much higher number of fish landed than the fishermen thought was at all reasonable. Well, the statistical system uses a two-month wave. And a hurricane is a three day, ten day event. So, and also the statistical system was using multi-year averages on the effort, probably trying to smooth out noise because of low sample size in their effort estimation. So, you know, that, that sort of ways of handling the data, multi-year averaging, could result in these anomalies. And when people see anomalies then it introduces uncertain, you know, disbelief, really. So I think that's a large part of the problem.

They, they also, you know, it's hard to comprehend that a lot of people who catch very little fish could have, end up, when most people catch very little fish on a fishing trip, and if you add that up, it can add up to a huge amount of fish that can have substantial impact on populations. So there's the scale, the number of fishers, versus the low catch rates leads to disbelief. They don't understand the multiplication scale, factor of very large populations. And Florida apparently, you know, for fifteen or twenty years, the number of boats in Florida, registered in Florida, was growing exponentially. It may have leveled off after 2008 when the crash came along, but, you know, there's a huge increase in fishing pressure, recreational fishing pressure and I think it's hard for people comprehend.

SM: Can you...

ST: The public to comprehend.

SM: Right. Can you tell me about your, like, how did your paradigms change in terms of survey design in doing these surveys, if they did?

ST: Well...

SM: Over the years, or...

ST: With the large pelagic survey, you know, we needed, you know, we were dealing with a very rigorous survey design and then over time as we got advice out of the Office of Science and Technology, we moved into slightly better survey designs and then over time they've actually, once they got staff to take over, staff to be able to take over that responsibility, then I think they probably have even better survey designs than in the past. Survey design is really a critical question for the recreational survey, and there's been some real, there's been some flaws in what has been done at the national level, this is stepping away from the large pelagic survey going to the previously, previous national or coastal, Atlantic Coastal Survey, MRFSS, Marine Recreational Fishing Statistical Survey, that, that has been superseded by MRIP, the Marine Recreational Information Program. And that was, that transition was brought about by a NRC [National Research Council?] review in about 2007, something like that.

And there one of the people who's leading the review basically used the words, somebody asked him in a public forum if he thought the MRFSS was fundamentally flawed, and the, the man leading the review said yes, he, he thought it was fundamentally flawed. And so that really set off a hullabaloo. And yes, there certainly were some flaws in the survey, but, and so MRIP has been working to through, working through, you know, experimental surveys, sub, sort of sub, regional, regional surveys or local surveys, to test a variety of approaches and they're gradually adopting various approaches.

One flaw that they identified was at least as it occurred in the Southeast, was that samplers had, could, either stayed on site for a specific period of time, or if they met a sampling quota, number of interviews, then they could depart. Well, that ended up in real bias. And correcting for that bias, because what would happen is on a busy day, samplers would leave early so then you wouldn't get samples from the fish coming in late. And the fish coming in late could be different from the fish coming in early.

So that was a real flaw in the execution of their design. They also made a bunch of changes in how they make assignments and how they do, do the estimation which incorporates weighting for, this, weighting the estimates for the weights in the sampling sign, of the sampling assignments of the sites to be sampled, to site weights. So that's resulted in some changes. And then there's just changes in the probability of encountering people in, when you're asking about their fishing effort over the telephone has changed over time with the incorporation of cell phones in the U.S. population. That's, um, the response rate has gone from, the high twenty percent on this effort telephone survey, down to, you know, in the, you know, five to ten percent range now. And so they're looking at and about to implement a, I think, it's a two stage sampling approach that's using lists of people and postal addresses, or something of that nature. But it's a, and that survey is getting more than, perhaps on the order of thirty-five percent.

So they're running the two surveys in parallel now, I think next year is the last year of the two surveys, or it may be the first year of only the new survey, so they will have run

the two surveys in parallel for three years at the end of this sampling, this, this overlap period. And so then they'll use that to develop a, try to develop a calibration to, or multiple calibrations to adjust for the change. So they're, and this sort of need for adjustment and correction such as the dockside sampling window problem and this effort survey problem, those lead to the public not having faith in the numbers, which is understandable, I mean, but they're what we have. And so I think, my opinion is, that sort of uncertainty needs to be incorporated in stock assessments.

SM: How does the, how does the, how does the public opinion impact your work, if it does?

ST: Well, for instance, we, we monitor commercial landings, especially for the south Atlantic, the Gulf of Mexico, most of the commercial landings are handled through another program, an IFQ [individual fishing quota] program. Whereas in the south Atlantic, there's no IFQ, so we just monitor the landings. So the landing statistics are collected by the states.

So federal dealers are required now to report electronically to the states and we grab that data and we, on a weekly basis, we attempt to tabulate landings and correct the landings for non-reporting, and report that information to the Regional Office for their, the management established by the South Atlantic Fishery Management Council. We also do this for the Caribbean but not on the, we do that on, for the Caribbean on an annual basis, not on a weekly basis. But we do some for the Gulf of Mexico, but much less.

So the public is constantly looking at those numbers, and we will spend huge amounts of times documenting why one number looks the way it does, so we're very low-staffed and so when we're asked to document this sort of information, it takes a big bite out of what we can do. In, boy I don't know, probably about 2003, we, the South, we stood up in the Southeast, a stock assessment process to replace the previous process for developing stock assessments. And the new process was called SEDAR, Southeast Data Assessment and Review. And it basically was designed to be, to develop, include the public in the stock assessment process. So we would hold a meeting on the data and the public would come in, typically fishermen would come in and we'd have a commercial group and a recreational group and we'd have groups on catch rate indices and, you know, life history. So a lot of times the public would be involved in these data meetings in the commercial or recreational groups. And then you'd have an assessment group and you'd have some other public involved in there. So your question was how does, how did, um, the public...

SM: Opinion, how, how does it impact your work?

ST: Well, in a lot of times, the public's opinion, you'll see people come in and they're working their side of the story as their opinion, so you'll see people saying oh, the discard rate for my fishery is very low. Or the discard mortality for my fishery is very low, you know, and so they're trying to influence the stock assessment to, you know, come out better for them. In the south Atlantic in recent years, we've seen a huge amount of questioning of recreational statistics, especially head boat statistics, and you know, fishermen saying, "oh twenty years ago I lied". So now you can't use the data

because they don't like what the data is showing and that kind of stuff. We saw that just last year and the year before with respect to the head boat survey for a couple of species. So, the first time that came up for the head boat survey, the assessment got postponed a year and the head boat team and some other people spent a whole year going through a very extensive analysis, an incredibly detailed analysis on the quality of the information. So there can be very huge impacts on our work and our ability to, to do our normal jobs, never mind respond to the public's questions, some of which are legitimate and some of which are, um, create a great deal of work, and maybe intentionally create a great deal of work.

SM: I see.

ST: Probably not, but, and sometimes with, we'll see the same question come up over and over again, even though it's already been resolved. Or it's been answered, but it comes up again and again and again, and that's always difficult.

SM: Can you tell me a little bit about, you moved in, to the Miami lab, the Southeast Fisheries Center in a different position, what, what was the position when you...

ST: I was a stock assessment scientist.

SM: Right, and before, at the--

ST: Oh...

SM: --the Northeast--

ST: For several years, oh I don't know what I was there, you know, probably a biological technician or something--

SM: Okay.

ST: --like that. But I spent--

SM: So you moved here as a stock assessment--

ST: --I spent five or six years at Rutgers getting my Ph.D.

SM: Right.

ST: You know

SM: So you had that break in between.

ST: Yeah.

SM: Nevertheless, can you think about some of the things that was similar or different when you moved, what, what was kind of the thing that stuck with you when you moved to Miami, what you felt was culturally different, in terms of the work, work culture--

ST: Well...
SM: --but also the type of lab. You moved. What was different about it?

ST: Yeah, the labs, the labs were very different. Sandy Hook Lab was essentially not the lab where the stock assessments were conducted. Stock assessments were being conducted out of Woods Hole. Whereas down here, I moved to Miami Lab where stock assessments being conducted here. So when you move from what I regard as an out lab to, you know, a lab where the Center is, you know, it's a very different environment. It's a much higher-pressure environment where the Center is. One, because the stock assessments are being there though, in, here in the Southeast there are stock assessments being conducted at other labs, especially Beaufort but also a little bit in Panama City and some in Galveston. But a lot of them are being conducted here. So life was, you know, far more intense here. And also I moved in to the ICCAT arena where in the '80s things were pretty intense. In 1981, '82, very difficult assessments and, and negotiations went on at ICCAT over blue fin tuna. And, you know, that...

SM: What were some, who were some of the actors in those negotiations?

ST: Well, Bill Fox was a primary, he was probably Center Director at the time and he was probably very important in those negotiations. I don't know who, probably Carmen Blondin was the Chief of ICCAT scientists and he would've been with NOAA, probably international affairs or its' equivalent back then. I don't know if he, he was in place in '81, '82, I assume he was. He was when I was involved in the mid, late '80s. The primary stock assessment scientists for blue fin tuna was Mike Parrack and I came down here to work for Mike Parrack. Brad Brown was here at that time, he had come down, I don't know when, '82, I'm not sure, '83? He was on my committee at Rutgers and he's the reason I came down here. Also the Northeast Fisheries Science Center wanted to offer me a job. I called them up and said, "well, if, you know, when I graduate, what kind of job would I have?" And the initial reaction was recreational fishery, whereas Brad was offering me a job to work on fish, blue fin tuna and I was far more interested in working on fish than on working on people. So, anyway, Brad was here, Mike Parrack was here, and I worked for Mike Parrack on blue fin tuna. And then there were, you know, a bunch of international folks.

SM: So what do you think are some of the positives and also the challenges of working for a government agency as a scientist?

ST: Oh, I think one of the positive things is, you know, the way I see it is you're working for, you know, essentially publicly owned resources and you're trying to understand and make the best use of publicly owned resources. And so that's a pretty idealistic position to be in. It's a lot better than selling things on the street.

Challenges? You know, well, we can't lobby Congress. We have a lot of people, you know, who cast aspersions on our work because it, our work impacts their interests. And as we see with climate science right now, it's easy to cast doubt. And the doubt being cast on climate science I've seen cast on fisheries statistics, whether it be recreational surveys, whether it be stock assessments of blue fin tuna or some other species, you know, it's, it's easy to cast aspersion and create doubt.

SM: Doubt.
ST: So, do you have a lot more questions?

SM: No.

ST: Okay.

SM: Are you running out of time?

ST: Yeah, I have a huge amount of personnel work to do in the next day and a half.

SM: I'm sorry. Um, well, I guess, I guess if you could tell me just a little bit about, what do you, what is your most, your contribution you're most proud of.

ST: I think I, you know, I did, we did good stock assessment work for fifteen, twenty years, you know, I think that was really useful. There were a few pieces in there that really were, you know, helpful. I was, I, I ran stock assessments rather than develop methodology and stuff like that, so I can't say I'm real proud of this method or that method, but, you know, I think that was just a reasonably good body of work. We certainly were able to, with blue fin, we were able to at least stop the managers generally from increasing when really things should've been decreased.

In more recent years, I really am proud of what we've done in the Fishery Statistics Division. We've taken a bunch of antiquated databases, and we're still doing this, and we're modernizing them. For instance, the menhaden database is made up of a bunch of dBase files, and files in a whole variety of different formats, fifty, sixty years of data on the biggest fishery on the Atlantic Coast is on PCs [personal computers] that might fail and never be recovered. And this year we'll be moving that - this is just an example - we'll be moving that into our modern database system, complete with some capability for electronic reporting.

We're starting to make, um, well, let's see, we're working with the Gulf States Marine Fisheries Commission, their GulfFIN program to we're just beginning to begin to work with them on modernizing their system. Their system is crude, extremely crude. And I hope in the next few years we can, I know this year we're going to take the first little step in make, modernizing their data handling approaches. This'll be highly beneficial to us but it will also carry weight in the long run, I hope, and, and their new, uh, I guess he's Executive Director down there, is interested in doing some of that with their biological data as well. That's his initiative rather than the, the one we'll be doing this year is our initiative, and then for next year we'll have one that's his initiative and I, I hope we can just continue doing this. And I hope we'll have another one next year in, in addition to the biological one, that goes further with their basic data handling approaches. This will solve some huge problems throughout the Southeast for our quota monitoring problems with these data sources, give us huge difficulties on whether someone's reported or not. And some work being done by the Gulf State, by GulfFIN, will also contribute substantially to that, and that's their own program that we're just encouraging and we've been working to facilitate.

Another example of this is in the coming year we'll take the recreational data sets, we integrate three recreational data sets, Texas, MRIP and head boat and we pass that information to stock assessment and managers and we standardize in a whole variety of ways through fairly laborious activity, we do this every two months and we support the managers with this information every two months. And this is going to get even more complex given that Louisiana has now, has their own survey, so now we have to bring in a fourth survey. We should bring in data from the large pelagic survey so there's a fifth survey, and we deal with the calibrations for MRIP and we deal with all of the, a lot of these things internally.

We're going to take this data file based approached and move it into Oracle and move a lot of it into just Oracle systems. This will allow us to do things, things that I think take us four, five, six days now, we'll probably be able to do overnight. We'll be able to streamline and then the time that we have, that we save there, we can put into one quality control and into taking the person who's doing this work and allowing her one, to do the quality control, but also become involved in higher level activities, chairing committees and working on national committees, which is, we need, we need that support, we need that person active, but we also, you know, it'll be good for her career.

We also have taken the first few steps of taking the data that we have put into Oracle and into an Oracle data warehouse and we're outputting this information, putting it out on the web so that users can get to their data automatically. Most of these users are confidential data users, but we do have some public coming in, fishermen coming in to look at their own records. Also law enforcement is coming in and looking at records that they want to look at. So and that's just in fledgling stages and we have a hundred and fifty known users, a hundred to a hundred and fifty known users on that system and we haven't begun our big push. Our big push probably will occur in a couple of years… no, we'll probably do it in 2018, we'll start our big push and, you know, so we're, what I'm really proud of is modernizing our data systems and improving, we're just working on quality.

One of the things I've pushed in the division is quality and improvement. We rebuilt our logbook system about two or three years ago, we installed it in mid-2014. And we now have the system, you know, identifying a large fraction and resolving a large fraction of the data problems right, you know, automatically, rather than having that done by people. So we're able to be far more efficient and move some of that, some of that staff time into better quality control and, you know, working on other components of improving data quality.

For our dock side sampling program, the man who came in and now is the Chief of our Sampling Branch, which includes both dock side and at sea, highly migratory species, pelagic long line observer program, he moved from the pelagic observer program into the Sampling Branch Chief, and he's really made some huge strides in the quality of our dock side, commercial dock side sampling work, working to ensure that the sampling is, is as representative as possible. The sampling design established here in the 1980s was representative sampling so try to get a representative sample of all the trips coming in. Other Centers use stratified random sampling and things like that, we're using a simpler approach, so one of the things Larry [Beerkircher] has done is to ensure that we're getting as representative sample as possible. He did this by looking at, he's done some

of this by looking at providing information to the samplers on the vessels that are landing in their area and the vessels they're sampling. So some people were doing a very good job, some people weren't doing as good a job and this information is provided to the samplers and we're seeing a, you know, a, you know, a more, far more representative sampling there.

He's also worked on sampling fractions and worked to bring all samplers up to a consistent fraction, our, our minimum across the board. He's increased the sampling, the overall sampling fraction from, in pounds, from .75 percent, he's increased it a third essentially to 1%. That's in weight. But if we start looking at number of trips we're a much higher rate than that. I'm very proud of that.

The quality improvement in, in the log book program, now I know, I was talking about the improvements in the log book program, we developed a system with a log book program that uses probability based error checking and the idea for this came from the economics group here, but the application they used wasn't, in my opinion, the proper application. And they were using normal distributions on the distribution of say a property, pounds landed of this species, or days fished, or something like that. We used empirical distributions, what does the historical data look like, and we were able to develop this system to, so that the data manger could refine the system and apply it, you know, at very small scale. Ideally, I think, it ought to be applied at the vessel level, but it's currently probably being applied at the, something like gear, region, season level or something like that.

So they're identifying a lot more problems in the data and we've automated our systems for outreach to fishers, the reporting people whether it be fishers or dealers, we've automated our system for recording interactions with fishers and dealers, so we've done a lot in those, those areas to really improve our systems. I, and something that could be very useful to the Science Center is that this year we're starting a three year project, it'll be, '16, about twenty months worth over, over three years, to look at our commercial sampling design for both observers and dock side samplers. And so I think that really could be very useful to the Center in the long run, so what'll come out of that is recommendation on sampling design and then there'll be discussion as to whether to accept that recommendation or not, but, anyway. So...

SM: Well, that's very impressive.

ST: Yeah, I'm, I've been lucky in that, you know, money is started coming in, you know, money has been made available through the catch shares program, through the IFQ program, through FIS, the Fisheries Information System, and more recently through Congress for electronic reporting and electronic monitoring. And we've been able to support a lot of improvements around here and I think it's showing up in the quality and the data, so.

SM: That's wonderful.

ST: Yup.

SM: Well, thank you very much for all your time. I will stop the recording right now.