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Brown, Bradford ~ Oral History Interview

Suzana Mic

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

Interview with Bradford Brown by Suzana Mic

Summary Sheet and Transcript

Interviewee
Brown, Bradford

Interviewer
Mic, Suzana

Date
July 8, 2016

Place
Miami, Florida

ID Number
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Use Restrictions

Biographical Note
Bradford Brown was born in 1939 in Worcester, Massachusetts. He received his undergraduate degree from Cornell, his Master's from Auburn and his Ph.D. from Oklahoma State University. He began working for the Bureau of Commercial Fisheries at the Woods Hole lab in 1962. He worked in Woods Hole, Massachusetts from 1962 – 1965 and 1970-1984. In between he served as Assistant Leader of the Fish and Wildlife Service's Oklahoma Cooperative Fisheries Units and as Assistant Professor of Zoology at Oklahoma State University. In 1984, he went to the Southeast Fisheries Science Center in Miami, Florida. While at the Southeast Fisheries Science Center Dr. Brown held the positions of Deputy Center Director, Acting Center Director and Center Director. He retired from NMFS in 2003. As of this interview in 2016, Dr. Brown was still living in Miami, FL.

Scope and Content Note
Interview contains discussion of: extended jurisdiction, foreign fleets, Magnuson Stevens Act, enforcing fishing quotas, preparing for fishing council meetings, workplace environments before NOAA, establishment of Fisheries Science Centers, commercial fishing during World War II, EEO officer, racism in NOAA, sexism in NOAA, ecosystem-based fisheries management, effect of technology on fisheries management, ICCAT.

In this interview, Dr. Brown discusses his time working for the National Marine Fisheries Services and NOAA, as well as his involvement with civil rights movements. He discusses the change in the work environment over the years as well as the impact of the outside social changes. Dr. Brown also describes his experiences managing employees and how technology has changed fisheries management and science in general.

Indexed Names
Bullis, Harvey
Carter, Jimmy
Duffie, Essie
Fox, Dr. William
Humphrey, Hubert
Lewis, John
Lux, Fred
Kennedy, John F.
Reagan, Ronald

Transcript –BB_001

Suzana Mic: So, um, I'm going to read our introduction, and them I'm going to proceed with the questions, if you don't mind. So this interview is being conducted as part of the Voices from the Science Centers Project funded by the Northeast Fisheries Science Centers. 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. My name is Suzana Mic Blake, and today I'm speaking with Brad Brown at his home in Miami. The time is, let's see, 1:25pm. I would like to let you know that you can stop me anytime if you need a break, also if there is a questions, question that you don't want to answer you can let me know and you don't have to. I will, I will verify your information a little bit. I understand that your date of birth is 1938? I mean, the year of your birth. And you were born in Worcester, Massachusetts?

Bradford Brown: If you say so. It's Worcester. It's Worcester.

SM: Worcester. Sorry.

BB: [laughter] It's not pronounced like it's spelled.

SM: I see. Okay. Thank you for correcting me. So, could you tell me what lab did you work for at NOAA before you retired?

BB: Well, I worked with NOAA in two places. I worked in Woods Hole, Massachusetts, and Miami, Florida.

SM: Right. So before you retired, you retired from the Miami lab.

BB: Yes.

SM: Correct. Are you currently still a part-time consultant for NOAA?

BB: Informally I still maintain contact with NOAA's International Large Marine Ecosystem effort, but I'm not on any contract.

SM: I see. Okay. And can you tell me how many years have you worked in total for the Fisheries Service, if you remember?

BB: Well, the Fisheries Service, or it’s predecessors, would be forty-and-a-half years.

SM: Forty-and-a-half years. And how many years have you worked for the Southeast Fisheries Center?

BB: I came to the Fisheries Center in 1984.

SM: '84.

BB: And I retired in 2003.

SM: 2003. Okay.

BB: And then I had some contracts with them for three years after that.

SM: Okay. Can you tell me a little bit of when and how you started working with the Fisheries Services? Like, what made you decide to pursue a career in fisheries?

BB: Well, they're really two separate questions.

SM: Okay. Let's start with the first one.

BB: Well the first one is, actually took, came after the last one.

SM: Okay.

BB: When I completed my master's degree, I was looking for a place to work and one of the places I had an opportunity to go to was Woods Hole and I went there primarily, as opposed to other offers I had, because my first wife, I was married at the time, wanted to go back to Massachusetts so she could be within driving distance of her family. [laughter] That's the reason I went to work with, at that time, the Bureau of Commercial Fisheries of the Fish and Wildlife Service.

SM: Okay.

BB: But I would've been in fisheries somewhere, but that was the deciding factor amongst several offers that I had.

SM: Can you remind me, what was your Master's in?

BB: Well I had…I got my doctorate later, but my Master's was in Fisheries and so was my [undergraduate degree]. I got into fisheries…I was interested in both fisheries and wildlife conservation at that time but I had recently gotten married and I needed to choose a major and I needed to get a job. And the fisheries department offered me a job so I said…it was prudent to major in fisheries and take a minor in wildlife courses so I could still go that way later if I wanted to. So the main deciding point for me to major in fisheries was that they offered me work and I thought, that would be a good idea to major there than in wildlife.

SM: I see. And what was the position you held when you started working there?

BB: Well, that was at Cornell University and I was essentially an undergraduate student assistant.

SM: I see.

BB: But since prior to that time, I'd worked cleaning rooms and washing windows. It was a great opportunity to spend your time helping graduate students do their job, working basically as a fishery technician.

SM: I see. And so, I will ask you a little bit later about all the positions you held at Woods Hole because I understand it was an evolution but, tell me a little about the kinds of research and work you focused on during your tenure there in Woods Hole.

BB: Well, obviously most of my personal research career, first half of my career, was spent in, basically in Woods Hole. And so most of my personal research was there and I focused on population dynamics, stock assessment and particularly looking at multi-species fisheries management and a lot of things that everybody put aside after extended jurisdiction so we looked at the…what today would have been called [an] ecosystem approach to fisheries. So I did a number of rather, you know, pioneering efforts in terms of the area of looking at multi-species fishing and fisheries...

SM: Can you expand a bit on this pioneer work? What do you mean by...

BB: Well, for example, I produced a…we were working very much at that time to try to get a handle on the fishery, the large fisheries that we had offshore that were dominated by the distant water fleets, the biggest of which was the Soviet Union which took, unlike our fleets, they weren't limited in terms of where they could go and they literally found use for anything that they could catch in a net, as opposed to the typical U.S. fleet which was focused on a, one or two high market value species within a reasonable distance from a landing port.

So perhaps one of the more interesting things was to try to look at what the overall yield would be expected from all of the fish that were being harvested at that time, together, in contrast to what was happening in management where you were adding up single species assessments. And realizing that that's not realistic because the total potential yield is not the sum of the maximum sustainable yield of each individual species. And those are all conditional on what's around. And so we came up with that and actually got an approach accepted well enough that just before extended jurisdiction took place, the international commission actually adopted an overall quota which was less than the sum of the individual quotas in order to adjust for the interactions between species and the different conditions, they would be in. So that's probably one of the things…but we used indices of overall abundance, I mean there were a whole host of things we looked at that led up to that.

SM: And this was in the 1960s.

BB: Well, beginning in, but primarily it accelerated in the '70s.

SM: It accelerated in the '70s.

BB: In the '70s.

SM: Can you speak a little bit about the state of fisheries science during this period; 1960s, 1970s.

BB: Well, if you look at the early 1960s, remember I started in 1962, the general focus of most of the fisheries was to increase exploitation. We were going to feed the world. And we were still urging, you know, people to go into different new fisheries and find ways that people could catch them. We were just beginning, and again because in the Northeast we were ahead of everybody because of the forcing pressure of the foreign fleets, to look at…looking at things from a population dynamics standpoint and beginning to look at, so, beginning to think…look in terms of regulation so for example, we did a significant number of mesh size studies in that, so that we could set optimum mesh sizes in nets so you would get a maximum yield per recruit. In other words you would harvest the fish at a size that would give you the maximum yield. Which is simple if you were working in a pond and drained it and took all the fish at once and they were all growing exactly the same. It becomes more a statistical issue when in fact you're hauling a net that has net sizes that some can escape and some can't and try to set an optimum mesh size. So we began to look at that; that was the first thing.

And then starting to look at what maximum sustainable yield would be and where we might be pushing the…getting to approach it. Today in fisheries, in harvest fisheries, you're looking at a much more of a complex attempt to look at the interactions between species, interactions with the environment and also the interactions [between] different things that may occur through time. You have powerful tools that were not available. We have huge amount of data we didn't have back then and we have tools that can analyze them that we didn't have back then. So it's become much more, you know, complex…become more statistical and perhaps less analytical in terms of the mathematics because you have the ability in a computer to look at…you can take a computer and make thousands of analyses, look at the distribution, the mean and other things and you couldn't do that back then. You had to be more focused on whether your equations were right.

So, and of course in the broader context, the…we were organized at that time…Not NOAA, there was no NOAA, in terms of the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries and Wildlife. So if you were in the Bureau of Commercial Fisheries and Wildlife then, commercial fisheries, then your goal was to provide information that would maintain viable commercial fisheries. If you were looking at recreational fisheries, you'd be over in the Fish and Wildlife Service.[1] Even if, in many cases, particularly in the Southeast, you may have a significant commercial catch but more than half of it the catch may be recreational. And so that's all been merged.

We looked at harvest, just before I came in I was down in the Gulf, people were even thinking of, what uses they could get [from] a fishery in dolphins, to harvest dolphins for people to eat. And, you know, with the Endangered Species Act and Marine Mammal Act, nobody would ever think of eating a dolphin. You might still eat turtles if they became abundant again, but nobody's going to ever, in this country, go back to eating marine mammals. So the two big…then obviously the only regulations that could be put on would be through, international negotiations because anything outside three miles was international waters, so it would make no sense in regulating a fishery that was mixed and that's…so in '76 when we got extended jurisdiction in the Magnuson Act and the authority to manage, and then in the mid-80s when the states got authority to manage under the Interstate Compacts, and then you've got the, the Endangered Species Act and the Marine Mammal Protection Act,

[1] Narrator Correction: Fish and Wildlife Service should be "Bureau of Sport Fisheries and Wildlife."

you have completely different total focus than when you looked at your constituency being basically the commercial fishing industry.

SM: So, you already touched on this, but if you could expand a little bit on how, how has your work changed and how have the paradigms changed after the 1976 Act? You were still in Woods Hole at that time. If you can expand a little bit on that, it's a very interesting transition and I'm sure it evolved even more....

BB: Yeah, although the transition was, from a scientific standpoint…the transition was less in the Northeast because we were already managing on an international basis. So you already had [international] quotas, then you had to set your own quotas. Each country had to set their own regulations for regulating how they were going to deal with their quotas, but they still had those limits. So, obviously there was always a great deal of distrust of whether people obeyed when you had an international fishery and this became particularly complex when you have state industries in certain places or, like Japan, where there's a very close union between the industry and government because you know, governments can't break a treaty. Now, individual boats or captains could violate the regulations. [chuckles] Pretty hard to make that distinction but…which made it very, very difficult to move towards a believable enforcement scheme, particularly in the Cold War era. So that, of course, went away, and unfortunately too many people thought that having the foreign fleets leave meant that everything would be fine. There was a lot of money invested in the fishing fleet. And very quickly many stocks that had been overfished…they got [fished very hard] and even those that had a blip [of an increase] got wiped out very quickly with the increased U.S. effort in the fisheries. And then because you were now able to fine tune the total management, you get into much more complex schemes rather than, for example, a simple overall quota, you'd now get, in some cases, down to individual quotas, some cases group quotas, you know, assignments of catch by gear, type, all of these things to try to deal with the socioeconomic impacts that you didn't do before then, that were brought in by the Magnuson Act and elaborated on as it's evolved over the years.

SM: I see. So you talked a little bit about the scientific aspect of this transition; what about the working environment, at the office, really, at your place and your lab location? Did that change after 1976?

BB: Well, there wasn't any real...any basic change in '76. There were some changes, obviously to the place when NOAA came in and there had been lots of changes over the years but the biggest actual change for people who had to deal with providing information for management was what, the Center Director at the time, used to call the logistics. And the fact is that you have a council meeting every month that you've got to deal with, go with, [to provide answers] to people who ask questions. On an international basis you would have essentially a negotiation a year. So while you had a huge amount of work to get ready to go [to an international meeting], you had some downtime afterwards where you could actually think about what you were doing, think about the science, try to prove…without having two to three councils to serve and somebody wanting something every month, it, we never caught up with the number of people and we spent much more time dealing with that interface rather than actually improving the science or the material that's provided to them.

And so that was the biggest thing and nobody... so, nowhere along the line were we ever scaled up to adequately deal with that kind of short term production and short term questions and analysis, many of which aren't worth a lot if you read the National Academy of Science

Review, they mention that a lot of times that all the people are measuring is noise, because they're doing things too, you know, it's too quickly on the same thing and too little, little bit of, much information, too little information to try to do re-analyses, but they're demanded by the council. And more recently the law forces them to take it so they flip flop over things. You have big changes from one time to the next that probably aren't real, and that basically is a factor that they never geared up to the fact that that whole schedule of producing information just wiped out the, much of the ability of the people to really do the science behind it and build on, build on it and improve it.

SM: So from what I understand your work schedule, depending…changed depending on the priorities you had at a certain time of the year...

BB: Yeah...

SM:... Can you...

BB: In other words, if you, if you have, even today, if you look at the Southeast Center, people at ICCAT [International Commission for the Conservation of Atlantic Tuna], you may have a special meeting occasionally, but basically they have a huge push to get ready for that ICCAT meeting, the Tuna Commission meeting. And after the Tuna Commission, they can actually spend some time doing some analyses and working on looking at the data before they have to actually produce another set [of analyses to present].

But with the councils, you have, in the Southeast three and in the Northeast two, and they have to meet every month. And if they think they'd like you to look into something next month then you've got thirty days to do it. That often isn't much time, you take the data that's available and you run your analysis, and what it is, it is.

SM: What type of analysis do you think would, in general, be useful in addition to--

BB: Well, it's not so much the analysis, it's a matter of--

SM: --the data .

BB: --of having time to think.

SM: Right.

BB: And actually be able to say that…and maybe document that it doesn't make any sense…we can't tell the difference between what's happening [between now and the previous analysis], there's not enough new information to understand something different. You need to look at this for a little longer period of time.

SM: Can you give me an example of a report?

BB: In ICCAT, for example, they moved in some cases to only doing a thorough assessment every two years. So…but with the councils it's not just the assessment status of the stock, it's what if you did this option, or we looked at that option, or we did that other management option…It just does not…you're never staffed up well enough to allow people to really deal with that as scientists as opposed to, in some cases, well…here's the new figures…and here's

the standard analyses. You run the data and that's what it is. Rather than, does this make sense? How does it increase our understanding? So we haven't increased our understanding at the level that we should have. Despite all of that, of course, we have reduced significant overfishing because the sum total has been meant – been able to cut back effort. But you knew that beforehand. That you had to make significant cuts in effort if you were going to allow recovery of the stocks. But it's that immediate turnaround management that drives the system but really the people who are doing that kind of work, which is the…and instead of having an adequate amount of time and the right amount of time to actually work and think about what you're doing.

SM: What do you think, well, you already explained a little bit, but why do you think they want, the councils, prefer this kind of like fast, fast-paced information?

BB: Well, because this is people's livelihoods. We used to say you couldn't have a meeting without a starving baby, you know, women would come to the meetings with their children that weren't going to be able to eat if we…if the quotas were cut. You know so this is not a …you're playing with people's livelihoods. And then in all cases in fisheries, you're asking for somebody to make a sacrifice with no guarantee that they'll ever get anything from it. It may be them, it may be somebody else. And yet they're the ones that have to pay the price and it all becomes extremely…nobody wants to have those kind of changes in how they can make their livelihood and the likelihood of making…what kind of living they're going to make in the next year determined, and they've got to do everything they can to…from all kinds of perspectives, not just arguing it down or saying it's no good…that's what happens, but also in saying well gee, if you'd looked at it this way, maybe we could do this, or maybe we could do that…anything. And I think all of us would be…would do the same thing if we were in their shoes.

But the workplace, the generic workplace environment, of course, has changed greatly because the country's changed greatly from the 1960s. And it's become a much fairer place, and a much more diverse place, you know. Women weren't allowed to go to sea and you didn't hire…have black folks working in professional positions, and all of that has been changed. We've gotten much more bureaucratic in terms of how we do things which means we're bigger and so we're not as…we put all kinds of things to be family-friendly but we were much more family-friendly when we didn't have [all the] regulations.

SM: Oh, can you expand on that? That's a very interesting point. So, the increased bureaucracy, which is meant to regulate certain behavior in a sense, what does that, what did that do... or how...

BB: Well let me give you an example. We always tried to be [person oriented, and you could] because it was all informal, I'm sure there were areas where people thought some of those decisions were unfair. But it was not uncommon to let people work at home, So if you had…I can remember people who…when women had children and they were staying home, we'd just, we'd send work home. We'd just write the time card in. They didn't have to say where they were working. Now you can't do that. One of the first things that happened, I remember when we tried to do that, an individual who had a new baby in the family, his wife wanted to go back to work as soon as possible as she was teaching school because obviously you can't do that at home. And we…previously we'd have said OK and the particular individual was one of these people that doesn't know a time clock, you know. Well, they were not going to let him work [at home]. It was all set up so you could apply and you could

do it. But since he was going to be alone with the baby at home, and would have to stop work to change the baby and to take care of the baby, they were concerned that we weren't going to get eight hours of work out of him and they didn't want to approve it. That's what I mean about…you set something up and then all of a sudden you set the things in that doesn't let you to use it. You know, people working take coffee breaks that would take as long as changing babies out of a day. And Steve never knew an eight hour day anyway. It was that kind of, informal kinds of things that we did.

SM: When did this change occur? Approximately...

BB: Well it was a gradual change...

SM: Gradual...

BB: It was a gradual change. And you know it became driven more and more by security kinds of considerations. But you know it's…I remember a woman that I hired, a single mother she had a child right after she graduated college. Made a lot of accommodations for her to deal with that child. On the other hand, these were the days before laptops, but we had computer capability here. We were working in a different time zone. We had it all set up with her to run any question that we got. A typical thing at international meetings then was to raise some question that created enough uneasiness about something that they could argue against the regulation on the floor, and you wouldn't have time to look at it until next year. So we had her all set up so she could do all of this anytime. And she actually took a computer home. She wired it into her telephone so she could commute with the data. So we went to that meeting and anytime someone raised a question like that that we didn't have the capability to [answer], we'd get on the phone and it might be…she worked all night to give us analyses that we had the next day. We got things done that would speed things up by a whole year. But if you hadn't accommodated her ability to do her job and to also look after her small, her son, it was not an infant, you don't get that other [effort] back for you. Now you've got all kinds of things you can do, to accommodate, provide more childcare, let people work at home and all of that. But in reality, sometimes it gets in the way of really doing things as creatively as when you were more flexible and more friendly about looking at taking care of your people and doing the work. And you built the kind of loyalty that [no longer exists]. One year we had a real budget problem and it was a real budget problem at Woods Hole. And people decided that what we would do…the most important thing was to keep our trawl survey data going, that long time...

SM: What data?

BB: ... The bottom trawl survey, one of the most valuable pieces of data in the world is that trawl survey on…off of Georges Bank and New England. And we…everybody said well, if we can't do any analysis, the most important thing is to keep the data. And secondly, we scientists are going to give up our overtime. So people went to sea and didn't take overtime. You wouldn't get that today. Today, federal people are treated like, you know, they're the bad guys, the federal government is not the solution, it's the problem, as Ronald Reagan said, and so you don't build that kind of loyalty and decide that we're going to accomplish something scientifically. But we were smaller, and the bigger you are, the harder it is to do and it's unfair. So, we lost some of those things that were really kind of good. And…but people still work very hard and they're still very dedicated and to a large degree, particularly those that

work at that interface of science and management are just tremendously overworked without really, enough opportunity to examine the science.

SM: Fascinating. Um, can you, reverse a little bit for me, the positions that you held, how you evolved in your career at Woods Hole before you moved to Miami. You started as a fishing intern technician, you said?

BB: No, that was as an undergraduate in college.

SM: As an undergraduate. Okay.

BB: In college.

SM: In college.

BB: And then of course I was a…working on my Master's, I had a three quarter time research assistant which meant I got a little more money to support my family then the half-time graduate assistants did but I still was able to take, go [and] do half time coursework. So my first job was I started as a GS 7 Biologist with a Master's Degree. I got to a 9 and 11, ran a small group. Then at that point I went…I took the position of Assistant Unit Leader with the Bureau of Sport Fisheries and Wildlife unit at Oklahoma State University, which allowed me to complete my Doctorate. I'd already had significant coursework toward it, but I was able to complete my Doctorate. I completed my Doctorate in '69 and returned in 1970 to Woods Hole and was there till '84. And I came back as a 13. I became a 14, leading the Population Dynamics Group. Then I became a 15 Senior Scientist, and then leader of the Resource Assessment Division. When we organized as NOAA, we in the Northeast organized the entire center into essentially…most of it fell under three big divisions and so I was a Division Chief. I had people at that time, initially, at several laboratories working for me. And I had all of the fisheries statistics, all of the stock assessment, anything to do with fishery above larval fish; from juveniles on up. We did the age and growth, we did the stock assessment, and so forth. And so I was there until '84 when I came here as a…the Deputy Center Director and not too long after that the Center Director was moved to the Northwest Center and I was running the Center from then on for a dozen years or so. And then...

SM: So...

BB: ...the last couple years I transitioned to… I stayed in Miami but I served as a Senior Advisor to the Director in Washington. And then I retired.

SM: And then you retired. Well, tell me a little about the transition from Woods Hole to Miami. What, I assume you were offered a position, but if you can tell me a little bit about that. How come you moved here, and tell me a little bit about, really, the transition, the differences in work and… what you noticed when you moved from Woods Hole to Miami, what was different?

BB: Well, the…I came to Miami, which was a lateral [move], to a position that wasn't anywhere as good as a Division Chief position – a Deputy you know. [As] a Division Chief you have something to run. You know it's like being Vice President. Somebody once said the job of the Vice President was to stand around and inquire about the health of the President. Well, that's not…not that the Deputy doesn't have more than enough work to do, but

solely…the only duties as a Deputy are what's assigned by the Director, as opposed to running, say…a laboratory director where you have certain things that, it doesn't matter who's your boss, they've got to be done. And you do them and you're responsible for them. Whereas if you're somebody's deputy, you have nothing except what they ask you to do or assign to you. But the new Director for the National Marine Fisheries Service, at that time, thought that it would be a good experience for me to be there, in terms of becoming a Center Director at some point so I…it's a lot of internal politics that went on that I just as soon [prefer] didn't get put on the record. But I came and the first thing that you noticed of course was that, well…the Center at that time was often referred [to] within the Fisheries Service…unlike the other Centers which were considered Centers, this one was considered seven dukedoms.

SM: Seven dukedoms.

BB: Yes. You know what a duke is?

SM: No. A duke?

BB: A duke.

SM: Like in the royal...

BB: In the English hierarchy...

SM: Right.

BB: ... you have the king and then you have dukes who actually pledge their loyalty to the king...

SM: The king.

BB: ... but they are in control of their dukedom; their area.

SM: Okay.

BB: Okay? And they, you know, would pledge so many troops in case of war and all that kind of stuff, with medieval titles.

SM: Okay.

BB: So the idea being that these were extremely independent. They tended to be moved towards the Center under Bill Fox. Bill Fox had left the center and they'd sort of moved backwards a bit by the time I came. The separateness…so it was almost like there was some connection to the Center [but] it wasn't all that different from what we were before NOAA, in terms of the responsibilities. So that was the biggest difference. The other one, of course, is that the Southeast is, which people don't understand if they're not here, is not only a huge geographical area but it's a vastly different cultural area. And, you know, if you're in the Northeast, you've really got one megalopolis along the northeast coast.

SM: Right.

BB: It's really one community that moves up and down. The…if you want to take two extremes, as an anthropologist, you look at the fisheries in northeastern North Carolina. They're basically of English descent and have been there since the 16…1700s, fishing. You go to Brownsville, Texas, which is across the river from Mexico, and it's probably almost [an] all Mexican American fleet. No connection between the two. Nothing that ties them together. That's not to say…whereas one of the biggest fisheries in the Mid-Atlantic, for years, it's not so big now, was the menhaden fishery. In the '60s, the menhaden fleet would move to New England for the summer to fish. So, you know, so you may have had differences, yeah, we fought against each other in the Civil War, but they were still all part of connected [region].

Here we had quite different areas: southeast and the Gulf as well as the Caribbean, which is you know, another completely different area, although we had no labs down there. And it was often hard to convince people that…people always want to try to close labs in the Southeast…always have. And then they'll move around to something else. And I used to argue that…how far Galveston was from Miami… if Galveston were Antarctica we could do fine running it all out of Miami. But fisheries is mostly dealing with people and you've got to have people out there who understand what's happening and what's happening with the people in the fisheries." You can't do that from Miami. You can send your research team over, like I said, if it was Antarctica, yeah you could run your research. So…and if you look at the other centers, the Alaska Center, right, the Northwest Center, all those are groups with real commonality within them. California, Northwest. But not the Southeast. The southeast Atlantic is quite different from the Gulf and [the Caribbean and there are differences within these areas as well].

So those were the kinds of things that you noted. So it was obvious that we had to have a much more cohesive Center, and I think I spent a lot of time trying to make the Center more cohesive. But you also had to do that with the understanding that you really needed people out there who were at the [laboratory] level, not just the field station [level]. You needed people to be there because you needed to be able to interact with the people and a lot of the information you get about a fishery comes from people, not just your research boats or your other observations, they come from the people who are in it. So that you had to have something that was more cohesive than seven dukedoms, but certainly not as unified as you can…into a single center…as you can do in the Northeast and the Northwest and the Southwest or Hawaii and the Pacific and Alaska Centers.

SM: So it sounds like this was one of your challenges, to…first to understand the differences between...

BB: No, I think it was very [easy to understand]…but also to in other words, so you move towards building that Center, but you moved it within the context of what was needed to be in the Southeast and to meet the needs down here, not a cookie cutter of what people thought was [being] done every place else. But since we are, if you will, an exception…and it's interesting that where you had some differences, you know, originally you had the Northwest Center – [the] Alaska Center – then it split into the Alaska Center. And of course originally the federal government ran Alaska, before it became a state, and for a long time, most of the fisheries, and the more near shore fisheries, the state ran and the offshore fisheries were fished more from Seattle than they were from Alaska anyway. But as that began to change, then they were saying we don't want to be run by somebody down in the lower 48, they formed another Center. They formed a Center out in Hawaii because Hawaii, in the far

Pacific, isn't the Pacific coast. And again, that's people…that's not…it's not the ability to run the resources. Whereas in the Southeast, we don't have a Center for the Southeast [Atlantic]…and a center for the Gulf. I mean the Caribbean's a little different simply because it's so small. But, those are the two big ones. [We] could've done what they did in…on the West Coast, we'd have two centers that would have ended up there. So you've got to…but there are synergies and advantages of size and pulling together. And I think we've moved, and the Center's moved, and has stayed that way and my charge was to make sure that we built something permanent, not something that would…as soon as the boss walked out the door would disappear, because you kept it in place because of utilizing power rather than trying to get people to the point where they realize that there was an opportunity to really be a more integrated, unit. I think that will always be a challenge in the Southeast because of the differences.

SM: So when you came to, so you told me a little bit about the position you started in here at the Southeast Fisheries Science, and a little about the challenges you had. What were some of the positive things you encountered that were different, if there were any, if they were different from Woods Hole? Was there any such thing?

BB: I would say a positive, I mean obviously the Southeast had real strength in terms of its research and its efforts in a number of areas that weren't dealt with essentially at Woods Hole because partly it is a different region with different conditions. So that was certainly a strength of the of the Southeast. I don't…I think, when I said the challenges before, it wasn't necessarily a negative challenge, it was the fact that when we merged in, we used to be separate laboratories. When I first started, the Woods Hole laboratory reported to the Director of Research in Washington. The Booth Bay Harbor laboratory reported to the [same person]. All of the individual laboratories reported to…directly to Washington. And there were some other times when they reported to Regional Directors, but they were always separate.

And…but they really merged more organically when the centers were founded in the early '70s and when they were first founded there were two centers in each area. There was a big center and a little center as some people used to say. But there were the offshore centers which reported to Washington and the inshore centers which reported to the Regional Director. And to stir the pot a little bit, of course, the Director of the inshore center was a 15 and the Director of the offshore center was a 16 which doesn't exist anymore but would be equivalent to the SES position that, you know…[now]. And…but then by the mid '70s they merged the inshore centers into the offshore centers but that was the original fight because the older people in control at NMFS didn't want centers at all.

Now the scientists didn't have problems with centers, but the people on the management side, the bureaucracy, they wanted to be able to have individual laboratories to deal with. And…so I'm just saying…if they moved in some ways towards this in the Southeast…all I'm saying…the point I'm trying to make is that you had to deal with it differently in the Southwest because [of the different cultures] and [that's] one I think we've done successfully because we haven't ended up with the demand for two centers. I mean, Alaska and Hawaii were political. They weren't somebody that sat in administration and said this is the best way to do business. They were political demands for people to say, "We want our own centers because we want [to manage our own]. The Gulf hasn't, for example, insisted it have its own center different from the east coast. And so I think the Center Directors have been successful.

SM: What, why do you think you've been so successful in the...

BB: What?

SM: Why do you think it has been successful...

BB: Because I think we've recognized the need to have enough stature in the individual laboratories that people feel that they had people there that they got close to, that they could work with and deal with their issues and address their concerns without [them] having to have to be in Miami all the time.

SM: Can you describe a little bit the process of interacting, you said a very interesting thing, you said that fisheries, managing fisheries is not about managing fish, it's about managing people...

BB: Right.

SM: ... in a sense. And so can you describe a little bit about this process of really interacting with the fishing communities in that time when you just started here in Miami and how that evolved over the years.

BB: Well…with…to a large degree, for much of the history of the Southeast when it had been dealing with…in the fisheries component, you had Beaufort [which] was the menhaden laboratory. Miami dealt primarily with tuna and to some degree with southern shrimp. And the tuna constituency in that time was in the West Coast. It was in La Jolla, which was…which meant…that's one reason the Miami laboratory had never gotten the kind of local political support was because you build a laboratory in Florida and you have it responsible for a constituency on the west coast.

SM: Right.

BB:... constituency on the West Coast. But that was, those were the days when the U.S. had big tuna fleets and they fished the world. Now we don't have tuna [tuna fisheries of such a large scale].

SM: The most important kind of fishery, right?

BB: But we don't...

SM: Commercial?

BB: For a long time we had…now of course we have a much smaller tuna fishery that's still very important, but it's in the Southeast. We have the yellow fin fishery and…particularly here in the Southeast [also swordfish]. The laboratory in Pascagoula had built a reputation in terms of exploratory fishing and gear development. And the laboratory in Galveston was focused on shrimp…the big shrimp fishery was out there. They actually developed the core aquaculture [method for] shrimp, but that never got developed because our industry didn't want aquaculture and that was more…[they] stifled that. So the rest of the world adopted what Galveston did. And since built on it, of course. But they also…when turtles became important, Galveston became a significant factor because that's where the endangered turtle is, the Kemp's Ridley. So the interactions with industry [before extended jurisdiction] weren't

being regulated and it saw…I remember one of the leading menhaden industry people saying that he considered us as to be his inventory people. So we helped and so he would use our estimates as he planned his allocation of fleets. And...Galveston spent a lot of time trying to make predictions and look at what the shrimp catch would be in the western Gulf. So the industry tended to look on people here as a…somebody that was doing things for them. And of course that all ended in '76 but you know it was fairly slow getting started. But by the time I got in in the '80s then industry was obviously now being…becoming regulated and all of a sudden we weren't...

SM: Friends.

BB: ... weren't their friends. We went from being the Social Security department handing out goods to them, to the income tax people, taking things from them [laughter]

SM: That's a nice parallel.

BB: Well, you know…and there is a parallel. When I first worked in '62, the first thing I did was go out to sea on commercial fishing vessels to learn the industry that I was going to be working with. Everybody was so glad to have me. Anything for us. Why? Because there were still people who were here during World War II. During World War II, everything was rationed, so if you needed to get a part for your boat or for your engine or anything like that, you had to get some priority that you were feeding the country in order to get something, because everything was going to tanks and military equipment you know. So of course it was the Bureau of Commercial Fisheries that was the one that certified everybody so they'd keep their boats running and get the amount of fuel they needed. And it would make the case that yes, this is the right amount of fuel they need to go out and catch fish. They're not going out for a Sunday jog. And we even were involved in the draft decisions of keeping some people from the draft because they were essential to feeding the country. So you talk about being a good guy, you know, and so if we wanted to go aboard a vessel and measure their catch, and look at things that was fine, we'd love to have you. And now, we go aboard a boat to see if they're cheating, right? So, you're not going to be welcomed the same...

SM: In the same way.

BB: ... in the same way. Or making…not just even deliberate cheating, just making a mistake, you know. They're going to be in trouble. So that's the big kind of change that went from particularly…say in the Northeast by the late '60s and '70s we were into managing under International Commission for Northwest Atlantic Fisheries [ICNAF], so then all of a sudden we didn't know anything anymore. And that was very much part of that transition there where…I remember where…yellowtail flounder, which I was working with, and we drew the condition [that] it was overfished and we needed to restrict it. And we just created what was then called the Population Dynamics unit that I was running and the…previously, we had species projects. We had yellowtail flounder project. We had a very nice guy, very personable, who primarily worked on yellowtail flounder biology, worked out age and growth, he dealt with some of the food habits you know, that kind of thing. So his relations with the industry…they all liked him. Didn't bring any problems and he was nice to them because they got him samples that he could use to analyze. Well, he was still working on that biology but at that particular time he had taken a detail to Washington D.C. and I came in of course, with this assessment. So of course we were out to get the fishermen. And we had managed to – my boss and I – my supervisor…We had managed to get Fred Lux…was the

person's name, pulled off of that and sent to Washington, you know, so he couldn't tell the truth about the fishery and all of a sudden we were, called every name in the book, and things got pretty hectic. Which was interesting on an aside, because at the same time I did that, in 1970, I thought of that last night when we watched those horrible…night before last when we saw the horrible shootings in Minnesota and in Baton Rouge. The nearby city of New Bedford was one of the last of the '60s blowups in the black community. And it was the result of police…over-policing and…but in the process, one of the…a couple of white guys came in in a pickup truck that were going to…with guns that killed a 17 year old boy because they were going to help the police put the disturbance down. The boy was actually a nephew of one of my neighbors in town, so [I felt it more personally] but I was on the [state] advisory committee [to] the U.S. Commission on Civil Rights at the time and actually led an investigation down there because didn't have enough staff to look at the police and citizen interactions. So on my paid job I was telling New Bedford that they had to stop, they couldn't catch as much of their number [one]– their big finfish [yellowtail] fishery…that was their biggest fin fish fishery. And then on my personal time I was telling them that their police were abusing black citizens, so I wasn't the most popular person in New Bedford.

SM: So tell me a little bit more about this part of your career, the way it meshed, your work as an affirmative action activist.[2]

BB: Yeah.

SM: From what I understand, and, you know, parallels or things that you found in your work, both, you know, I'm particularly interested in the time when you moved to Miami, but please do speak about the time before that...

BB: Well, obviously I have…I was involved even in school in the civil rights movement so I was a civil rights activist before I came and became active in Woods Hole and as that merged with other efforts, like trying to get women allowed aboard vessels and into…You have to realize how important that was because you had very few women scientists. Everybody thought women made good technicians in the laboratory, you know, they were good with details and things like that. So they could [devise] plans and look through a microscope, but obviously you wouldn't hire a fishery scientist if they couldn't go out to sea. So there were very few – there were a few – but they were mostly in very specialized areas where they were [say] microbiologists, you know, something…kind of thing that really wasn't in...

SM: Data analysis job...

BB: ... that was in the mainstream of…they provided important information, so I don't mean to downplay, but it was strictly in their science in the laboratory, not something that fed into management. They weren't the people that interacted with fisheries people up the ladder and all, and that sort of thing the way those people who were actually working in the areas with the fish.

So that opened a door for women to be hired as scientists. I'll never forget [when] I hired a woman, a mathematician…it's a tragic kind of story because she died young of cancer and would've been a very significant scientist, in my opinion, in her career had she lived. In fact in Woods Hole, we established a young scientist award to in her name. The first time we

[2] The interviewer's question is referring to civil rights more broadly than specifically affirmative action.

wanted to send her to a ICNAF meeting, you know, you had foreign travel [and] you send the stuff into Washington for approval and I'm at my desk and my laboratory director calls me and – center director at that time – and says, "I want you to bring down every document with Judy's name on it you're taking to the meeting." I said, "Okay." He said, "Just do it." So she had a stack about like this, right? And these were mimeographed things on one side, right? So they were thick. And when I got down there, he said, "I got this call from Washington. They wanted to know why I was bringing a secretary with me to the ICNAF meeting." So, we sat there with the fax machine and fed about six inches worth of sheets of paper! So that was…we never heard anything more from them. But that was the kind of attitude you were facing, the idea that she would be a member of our scientific delegation to an international fisheries negotiation was...

SM: Inconceivable.

BB: [Inaudible]…so I'm sure they had all kinds of ideas of why he might be bringing his secretary to Europe, right? [laughter] But it opened the [door]...

SM: This was in the 1970s?

BB: Yeah.

SM: Yeah.

BB: Things really began to move…they began to crack open in the '60s…but in the '70s things began to move. And I hired the first woman whose sole job it was to go to sea and I remember because she interviewed at my house, she came down to see me. I had a lot of people in my house. She was…she ended up running [and] being in charge of the surveys before she retired. But that was the first…by that time women were more accepted at sea, but we'd never had somebody who was actually hired whose full time job would be to actually be responsible for things, go to sea a lot but also be responsible for it. So I remember talking with her when she retired and I said, "We both kind of gambled on each other that it was going to work." And it did!

So…but I did things when I was in Oklahoma…I recruited black graduate students, I think the first black graduate students to the Corporate Fisheries Units. I hired the first black secretary on campus. They'd never been hired before. And we…you know early on in the '60s when I was at Woods Hole, I was threatened by our administrative officer with being fired for conduct unbecoming to a government employee for doing sympathy pickets and things like that. But, it didn't happen. But in the '70s when the government became more proactive and…the first black summer student who we ever had was at Woods Hole the first summer, first year I got there [in1962]. And he was sent there by President Kennedy and he was the…at that time there were no civil service to hire. Some students were political referrals and he was the son of a very distinguished family that had...His mother had actually been in the room in Hyannis Port when Kennedy came down and said he would run, so she was one of the first black supporters of Kennedy, because most people…the larger black community initially supported [Hubert] Humphrey in that election. But she supported him. She became a judge in Washington, D.C. And his father was the lawyer that won the legal case to desegregate the train cars – Pullman sleeping train cars. That was our first and he was going to…had finished undergraduate at a very exclusive, private school and then was headed to

Harvard that year and wanted to be a lawyer like his father.[3] And he was just looking for, you know, a summer job.

SM: Did he continue there?

BB: What?

SM: It was, it remained a summer job, or he continued...

BB: No, no, he finished that summer and went to Harvard and probably went on [to graduate]. I worked with him at that time because I had him work with me because that was the summer that the Governor of Arkansas sent reverse Freedom Riders to Cape Cod to...Freedom Riders were the people who took the Interstate Commerce legal decision seriously, that you couldn't segregate interstate travel. States still had the power to segregate within state travel, but not busses that would go inter-state and of course there were Freedom Riders [who] took busses through the South and the busses were burned, some of them were permanently brain damaged and beaten so badly. John Lewis was one of them, although he survived. So the Governor of Arkansas took women with children who were on welfare payments [and] gave them a one-way bus ticket. Told them to go to Hyannis Port and tell the Kennedys to take care of them and…literally with the intent that if you didn't leave, we were going to take you off welfare and you wouldn't have any money to eat. So I got him involved with that…working with me on that. We actually were able to place a number of men in jobs that summer. The Cape was an easy place to place people for jobs in the summer time, because that's when there's work. In fact, they import people from all over the world to fill their summer jobs on the Cape.

But anyway, that's what I mean by [noting that] things began to open up a little bit when Kennedy got in. But by the '70s and with Carter, we began to get requirements for Affirmative Action. We got requirements for equal opportunity. So I established summer internship programs, I established co-op programs with colleges that were effectively open to everybody, whereas before they'd been [all white]. Before, we used to be the biggest user of co-op students at one particular school, that literally sent us only people who lived on the Cape who had families there. That was who we got. Rather than something that went out and recruited…gave people an opportunity…and then…Of course you had to find ways to find [where] people could live in the summer when they came here.

So I've always considered…I wrote – when we were first required to have Affirmative Action plans – I wrote them for the lab. Volunteered to write them and did…first EEO [Equal Employment Opportunity] Committee when they first had EEO counselors which if you've read your EEO [procedures]…if you have a complaint, the first step in the federal service is that you – you don't have to, but they encourage you to – meet with an EEO counselor who will try to see if there's a possible way to get a resolution before it goes all the way up the chain...so I became one of those. So I always, mixed my outside work with my concerns here.

I was particularly able to work with a number of historically Black colleges and [universities]. It was one of the opportunities of being in the south because that's where the biggest and strongest ones are, in the southern area. And so we built some strength there and

[3] Narrator Correction: The student had just completed his high school degree and was transitioning to his undergraduate studies

built it up, and that of course led to eventually to NOAA's minorities serving institutions program that I helped develop, but I mean, it was a logical move from what we started here in the Center [Northeast and Southeast Centers].

SM: In, in the south? So, by the time you moved to Miami in 1984, how did you find, how did you find the lab here, and the work atmosphere here, in terms of, in terms of the work you had done as an activist in Woods Hole?

BB: Well, it wasn't the hostility that people had felt when they first came a number of years earlier there. You knew Essie Duffie before she retired?

SM: I…no.

BB: You didn't get…

SM: I would like to interview her.

BB: Okay.

SM: I'm trying to establish contact with her.

BB: So I won't tell her story, but this is really the idea of the extreme that…She was hired and she was told…one of the first groups of people…there was an effort to go out and recruit Black people down from [headquarters in] Washington and they sent them to the centers, basically. And most people didn't want her there and she was hired to go to sea. And they were getting a new vessel, which was a modern research vessel and it had you know, separate cabins and all that kind of thing for scientists, with showers and toilets inside it, shared by two cabins. But the old vessel was an old fishing vessel and their shower was out in the open and it was their, you know, completely open shower. And she was taken aboard and [told] well, this is where you're going to have to [shower], this is where you're going to sea. This is...

SM: These are the conditions...

BB: Yeah, and if you don't like it, you probably ought to quit now. And she was smart enough to talk to the Director about it who said, "No, that vessel's going out of service and we've got a real research vessel coming in now that'll have appropriate privacy for all of the scientists." And he said, "If anybody ever tells you [something like] that you come and see me.

SM: The Director at the time, was...

BB: This was the…this was the first Center Director [Harvey Bullis]. So this would've been in the early '70s.

SM: Okay.

BB:. So by [the mid '80s], there wasn't that kind of open hostility but there still was a general feeling, for example, I remember things being said about one woman scientist that she ought not to be so interested in women's rights and spend more time doing her research. And, so

there was still, [not real acceptance] and that was still fairly evident. There still was no real outreach available. And you really hadn't had any…you'd had that first group of hires that had come in early and then a long gap before anything else was happening. But I always thought that [was] one of the things [that could be done]. And this is one of the things that's not done, and I think that it would probably do more to change things than anything else. Everybody gets their annual letter on EEO at the beginning of the year and everybody knows that it's another piece of paper you throw in the circular file because it has to be signed every year and sent out to everybody so what does it mean. If people who go visit places would always put this on their agenda…because when…if you're sitting in an audience and you get somebody from outside, it might be a Center Director [or someone from Headquarters] going to one of our other laboratories, because Harvey was here [Narrator Comment: The thought being articulated is incomplete]…and you…people want to hear what they have to say because what they say is, "This is what's important in our agency…where we're going." And when you never mention anything to do with [EEO] it becomes a very obvious message of, well that's not very important. That's the letter we get at the beginning of the year.

I always raised those issues and I'll never forget at one of our laboratories, I won't mention which one, there was a Black employee who had been there for quite a while. He was [part of] one of the early groups that had come in. And I met him when I'd been there and talked to him but I wouldn't say I knew him very well. But like I say, when I met, it [EEO/Diversity] was always on the agenda, and I always made a point to have a brief meeting with whoever chaired the laboratory EEO committee. And he [that employee] left for a job with another agency, which was a good step up for him, but when he left he sent a note to me. He called me and he said, "You'll never know how much better my life has been at this laboratory since you came." And I never did anything, specifically with regard to him, except for the fact that they knew these things were important to me, and it made a difference. And that really stuck by me…that's what I would say to…if I were the administrator of NOAA, I'd force all of my people to [talk about diversity] because that's where you get the message across to people and that's when people know that when it's part of the regular stuff, it's important. When it's just part of the fringe stuff around the edge, it's not important. And in terms of how he felt, people saw him, or how he'd been treated, it was different. Didn't stop him from leaving, but that was a promotion! So…

SM: Right.

BB: And I always…but it was always confusing because I always had certain [diversity] responsibilities that were part of my job, but I also spent much of my own personal time, so people think you're spending all that personal time and it should be either spent on your job or on something else. I remember two instances that I'll tell that I think are descriptive of the time. I remember once being told by a supervisor, I won't say where it was or where he was in the system, that he thought I might be spending too much time on EEO kinds of things instead of the work. And my response to him was that, "Look, what you're talking about is stuff that I do on my own time. You golf, I don't golf. You take off in the afternoon and go golfing. Nobody says anything. If I take three hours in the afternoon and go off and go to a community meeting, I'm taking that time off. Look at my time sheet." You know if you're going to do these things you better do them right. I wouldn't go do something…sure, I did as much as I could on the job because I believed that you…but those things were all job-related. And then I did things on my own…but you know, the idea that if I'm doing that I must be doing it on my work time instead of something else.

And I also interviewed for an Assistant Center Director's job once. I don't know whether I would have gotten it or not. I decided that I didn't really want it anyway after talking to people and deciding my job was better. I didn't quite want to be…I wasn't ready to be somebody's deputy at that time. But he said, in my interview, "Well, I know you're very concerned about EEO and I'm perfectly willing to hire women and minorities as long as they're qualified." And told him, "I'm insulted. You didn't ask me that you were all right with hiring white men as long as they were qualified and if you think that I would hire anybody that I didn't think was qualified to adequately perform the job, then until you make that qualifier for everybody that you hire, not just hiring somebody like that [I take umbrage]. And of course, that's always been the problem people have. That if you're a white male it's assumed you're qualified. If you're a female or a minority, you've got to prove that you are. So which means that one person may be able to get away with a few mistakes, a few slips and be forgiven because it may not even be known. Another person's going to be seen, because it's certainly… you're looked at differently when you're given the position [as a minority] and now we want to see if you can really do it. Whereas if you're given the position and you have to show me you *can't* do it before I do something [where a supervisor takes action]. But as I say, that wasn't a deciding factor in my not pursuing my application. I might have gotten it and been hired anyway and that wouldn't have kept me from hiring cause I could've gotten that statement from a lot of other people too. But, that attitude has not gone away.

SM: It hasn't? That was my next change, uh, question, if you've noticed a certain evolution from...

BB: Yeah, but there's still in many areas that dualism of one person is, you know, "I'm going to hire you but I'm going to make sure you can really do the job, and the other person is…has to prove…has to really goof up because they assume that they're going to do everything right." And you can just look at the statistics, and look at the placement of women. You know, we get women at the very top as political positions. That's not been a problem for some time. You know, two women Directors of NOAA now. We've had two women Assistant Administrators of NOAA [for Fisheries], now three, but if you look at the system, there still seems to be a glass ceiling as once you get above a certain level, you see very few women and virtually no minorities. If you look at the lower entry levels, women do fine. So I think probably at those levels there have been enough women, enough time and you know, women are coming out of graduate school in strong numbers so probably I think people aren't questioned perhaps anywhere near as strong at those levels. But if you look towards the higher levels, why don't you get more people above the mid-level? And I would have to say that I think some of it is just that additional questioning about a person being able to do the job, as opposed to somebody you assume will do the job. And it's those subtle biases that really come in. I remember in Woods Hole…I remember a Black woman. She was a microbiologist in one of our laboratories and there was an opportunity for a center wide training position and we were sitting around at a laboratory director's meeting and her boss said that, well, you know, she probably wouldn't do, you know, she's really a bench scientist. She really kind of likes to work by herself just with the microscope science. She's not really the kind of person to interact with others. And that's what you'd be looking for in a Center position...Well, I was there, and I happened to know she was a member of Toastmasters. You know what Toastmasters is?

SM: Yes, I do.

BB: Right. If you're a Toastmaster, you're certainly not afraid of going before people and saying something, that's what you do not because you have to on the job but because you [like] to do it. She was also very active in her community and her church. So I don't doubt that…I have no question that he was being truthful in saying what he saw, but he was the one who created the climate in the laboratory so it's very easy to throw yourself into your work, if you're lucky enough to be able to have the kind of job where you can do interesting things, just you and your lab technician and be fruitful. But in terms of saying that the person didn't…at the at the end of the day, she got the position and later left and went to D.C. and served in one of the more senior positions not at the level of Director but in the Office of Science and Research in the Washington office. So it opened a whole new opportunity and career for her. But she would have never gotten it if I hadn't taken time to know a little bit more about her than her boss did. And I think those things still come up and [people] still face them.

SM: What do you feel is the contribution you are the most proud of in your career at the Fisheries Center?

BB: I think I'm most proud of the people that I've hired or I've promoted or I've selected for a position [where] that I had something involved in their career. Not just people… I had two Chief Scientists of NMFS…one of whom I hired over the objections of my boss who did not think he would be the best person and I've had people that have been Director of the Science Office in Washington. But I've had people who moved to division or branch chief levels and some people who just have done a great job in terms of the particular role and area that they played in. So I just think that I…I'm very proud of the fact that I think I've made relatively few mistakes.

And I've always prided myself, and I remember once my Center Director in Woods Hole, he wanted to know what my secret was that I always seemed to hire better people than anybody else. But I always did two things. One is I wanted to look at everybody. Second I didn't want to look at what they were going to do for me today. I wanted to look at what they thought they could do in the future. That's…you know it's hard to put a finger on that. But I think…so my interest wasn't necessarily in getting the best junior biologist who does technician work well and accurately, but somebody who was going to have a career and go somewhere and be really responsible...Whether that was somebody with a Ph.D. or whether…[a high school graduate]. We used to have a terrible time in our Age and Growth unit where they would hire…People would take those technician jobs that didn't want them [but] it was a way into the service to try and get something else. So I started saying, "Well I want to look around for people to whom…and we're talking about Falmouth now. I wanted to look for people whose other job is a clerk in a grocery store or maybe working in an electronic assembly plant, assembling little things, to whom working for us is going to be the best kind of job, the nicest environment and that's really are going to work and do it, [the tasks we need done well], and as a result I hired some people [like] that and trained them and they became outstanding employees and workers and got…were able to get promoted as high as they could be promoted, but they still had [one of] the best jobs they were going to…have compared to others in a place they were gonna look to [instead] of running someplace else…And so I was so proud that I was able to pick people who could, who do that, who came through. [So] whether it's that person or whether it's someone I hired with a Ph.D. who became the Chief Scientist of the agency, it's the whole body of them that I'm proud of.

SM: What changes do you foresee in the fisheries management of the future?

BB: Well, I think we're headed…we talk about ecosystem-based management but we're not really trying to…we're not really there yet. But I think we will be there and I think we will be looking at it on a very broad basis. I think that eventually we're going to have to come to grips with this overall ocean planning [process]…despite the [hurdles] that were set up in federal waters and legislation when Congress said you can't spend any money on them. At least in New England those are beginning to work on their own because the states believe in it. And…so I think then fisheries is going to be a set [in that matrix and] it's really able to interplay with all of the other uses in the ocean.

And we're going to have to come to develop systems that are not so micromanaged that allow greater flexibility to people who run their lives and live their lives, [depending on it for their livelihood] and still protect the resource as opposed to the kind of micromanagement that we've gotten into where every little thing is a zillion regulations about every fishery. I think we've got to back off to more simple regulations that serve to maintain the resource but allow people more flexibility and look at it in a broader context of what's happening in the ecosystem. And of course that's a lot of what ecosystem-based management is focusing on but we've got a good ways to go there, and it's…everything is fraught with problems because it's so easy to…with today's technology, to overfish. You know, I mean, human beings have fished for hundreds of years without overfishing. But they had very low-scale and they fished only a tiny fraction of the ocean that was available to them and now the whole ocean is available, and the technology becomes more sophisticated all the time. And I just think that you've got to find a way to not overburden the management but still maintain that resource's sustainability.

SM: I'll go back quickly to one more question about, you touched a little bit on the change, the changes in data collection and really scientific technology, evolution, and, how that impacted really the way you do science today, as opposed to earlier, in the earlier days. So can you, can you talk a little bit more about that, how, how the new technologies of modeling fisheries and all of that...

BB: Well, first of all [it's] the ability to collect data and observe…the ability to automatically record things you know and have ongoing observations. Years of historical [studies] have been done because of the temperatures taken in Boothbay Harbor [Maine]. Well now you've got buoys all over the Gulf of Maine giving you temperatures. But if you go back a hundred years, you got a temperature in Boothbay Harbor. In most places you don't even have that. So it…the scale of what we're able to collect and take is so much greater and we can do it so quickly and more accurately and we can have it in real time and almost real time, environmental data, satellite data and of course the computing power is just unbelievable. We used to…I remember when we thought we were really something when we had hand calculators that could go E to the X and nobody in Europe had them. And we had them! And we thought wow. Other people were still looking things up in tables. That's what I grew up [with]. Now we can do E to X on a little hand calculator…the scale of the mathematical models and particularly the statistical aspects of them, can increase so much when you've got that machine power to use it. And…that just…when I started in ICCAT, everybody would bring their own analysis. The Japanese had theirs. We had ours. The French had theirs and you could not address the differences between them until the following year. Then we got so that we could do them a bit quicker and quicker to the fact where you could do all of these right there on the spot. Everybody brings the data. They don't need to bring their analyses. You can pool the data and you can look at the whole data all at one time, not something that's

come from one set of data and something that's come from another country's data. And…so the modeling has expanded because of it and because of the ability to do it. But much of the modeling…again the nature of biology is variation so to treat it in a statistical sense rather than a deterministic algorithm is really critical to be able to do. I did one of the first papers where I used standard risk analysis in fisheries…standard risk analysis methods…and I used to argue that…and we're doing it now [routinely]…that we should express our advice in terms of the risk of things happening. So it's not the point that this is the amount of yield that you can get at this year at this rate. You'd say well, you take this yield, there's this amount of risk of the stock going down. You do this one you get another risk. So you've got a point here and then you've got a fan going out. So that's how everybody does things now, but we didn't have the tools to do it before. And if you look at…if you go it back and look at my paper, that was the best paper of the year in one of our journals. It looks like it's kindergarten, [chuckles] compared to the analyses [now] and how they can express it today. But the concept at that time was brand new because before then you had your point, you had your mean estimate [and perhaps some confidence limit], that's what you could do. Now people talk about [if] you want to recover in so many years, here's the probability of doing it. So that's the kind of power…but the temptation is that you get too far ahead of the real data. When you get too far ahead of the real data then...you may be measuring noise which is sampling variation, you know, just variation in the sample rather than variation in the biological results that you're actually trying to measure. [The pressure of society for results pushes things in that direction].
SM: What is the remedy for that?

BB: Data.

SM: Data.

BB: And time. Time and data. You've got to have enough data and you've got to have enough time to work with it and time to actually see what happened.

SM: Well thank you very much. Is there, um, anything else you would like to add to this interview to this historic record, please do. Anything that you think...

BB: No, I think…[laughs]

SM: Nothing? We didn't touch on, that is important?

BB: You know, when you get to my age, you get accused of telling stories rather than fact and so I could tell stories forever, but they probably...

SM: This is what we're doing now, this is what oral interview is about.

BB: So, no, it, you know, we used to, in the '70s I used to spend January in Rome every year, every year. If you wanted to call the United States, first of all, you couldn't go out to eat. The restaurants don't open until after nine, so you'd have to go to the Chinese place or some place that was open all the time and get a little something and bring it back to eat. And you'd call the overseas operator and you'd place a call to the United States, a collect call. And then you'd wait. And you'd wait. And maybe in the middle of the night, two, three o'clock in the morning you'd get a call back, "We've got your call through to the United States." Today, you go with Viber or WhatsApp, and I can call anywhere in Africa, anywhere in the world I just

sit here and call them like I'm calling the house down the street, for nothing. As long as they're attached to WiFi. But even without it, if I want to pay the…

SM: The data.

BB: … the cell phone charge…but with the voice over internet, you don't even need to do that most times anymore. The isolation of the world is just…an amazingly collapsed place and so I think that's…never ceases to amaze me as I travel around [as] I do and then I think of what it was, you know, to travel in the '70s to Europe, cradle of western civilization and you sit there and couldn't, couldn't get a phone. And then you couldn't mail. You didn't have email and people would say, and the mail was so bad in Italy that the UN FAO used to drive their mail to Switzerland every day to mail it. And then there would be scandals, mail just sitting in a post office in Italy and not getting mailed. But even in going to Switzerland, we would joke, well, you might send them a Christmas card and they'd get it you know, at Christmas, but this is January, right? Now, you send somebody an email and boom.

SM: Right away.

BB: Right away. Yeah. Or you chat with them on Facebook or something, you know.

SM: It's a different world.

BB: And it's a…so much more…these people that want to go to the islands and not be connected to the world are really going in the…bucking against history and what's happening. But that just…opens all kinds of things that didn't…weren't available before.

SM: Avenues for research are so much more...

BB: And in fact the fact that you, you can actually work with colleagues in research that aren't next door to you. And you can access the same database, see the same analysis on your screens and work with them on the other side of the ocean just like if they were down the office, down the hall in another office. There isn't enough of that done right away, but that's what's going to be the future, never mind more and more, you don't all have to be in the same room, I mean, personal contact has its value so I think that there always will be a need for some of that but you can do an awful lot just between two people on both ends of a computer.

SM: That's true.

BB: And you couldn't do [that] before. You're seeing more and more papers with people, authors from different places and work and of course if you put several people together you're probably going to get better. You work faster. Because before you might have had those four or five authors each do a similar paper somewhat differently from different locations, and then as they got published you kind of compared them and looked together and then over time you kind of saw how that all pointed in the same direction. Today all five of you can work together on all of your data and just leapfrog that. So, that's, I think that's...

SM: That's the future happening now.

BB: Right, it's the future happening now. It's happening, it's not happening...

SM: As much

BB:As much as it has the potential to really grow and they'll have ways where you can probably both work, just how you can take over somebody's computer. Probably have it so you can each take over each other's computer, actually can work together on the same computer.

SM: Right, right

BB: Just like in a sense you can because when somebody's got control of a computer, you can still move your mouse so you still have some control too, so if you were able to really work together, you get, yeah. I foresee things like that happening.

SM: Well, I want to thank you very much for all your time and the interview you gave me. It was very, very helpful and I've learned a lot. So thank you so much.

BB: Okay, good…me too.