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Overholtz, William ~ Oral History Interview

Madeleine Hall-Arber

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

Interview with William Overholtz by Madeleine-Hall Arber

Summary Sheet and Transcript

Interviewee

Overholtz, William

Interviewer

Madeleine-Hall Arber

Date

July 18, 2016

Place

Unknown

ID Number

VFF_ WH_WO_002

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Biographical Note

William Overholtz was born and raised in Lima, Ohio. He received his Bachelor's and Master's degrees in fresh waters fisheries and limnology from Ohio State and his Ph.D. from Oregon State. He began his career with the Fish and Wildlife Service at Rock Island, Illinois. In 1976, Overholtz began working at Woods Hole and completed many survey cruises on various foreign vessels. His work focused on groundfish and herring. He spent time in the population dynamics group as well as working on acoustic surveys and assessment modeling. He retired from NMFS after 34 years of service.

Scope and Content Note

Interview contains discussions of: foreign survey vessels, data analysis, evolution of technology in the fishing industry, fish recovery, groundfish, haddock and mackerel.

Indexed Names

Correia, Steve
Edwards, Steve
Griswold, Dr. Bernard
Jack, Mike
Jensen, Henry
Link, Jason
Michaels, Bill
Studds, Gerry

Transcript--- WO_001

Madeleine-Hall Arber: Alright... the volume is a little high. It's um-- my own voice is very loud but what I'm going to ask you to do is introduce yourself. Give me your name and... where you're-- where you were working [chuckling]

William Overholtz: So, uh, my name is William J. Overholtz, Jr and I worked for the National Marine Fisheries Service, NOAA Fisheries for roughly 34 years. My entire tenure was in Woods Hole.

MHA: Okay, great. I should have said that-- in the beginning that this was an interview for Voices from the Fisheries as part of Voices from the Science Centers Project funded by NOAA's Office of Science and Technology. I'm Madeleine-Hall Arber and I'm speaking with Bill as he just introduced himself. And it is now about... quarter to eleven. So, where were you born?

WO: I was born in Lima, Ohio.

MHA: Okay, and what date?

WO: Uh, December one 1950.

MHA: And is that where you grew up?

WO: Grew up in Ohio? Yeah, went to Ohio State, got a bachelor's and master's there. Went to work in Woods Hole in... 1976.

MHA: Okay, now I wouldn't have associated Ohio with marine sciences particularly.

WO: Yeah, they had Sea Grant program that dealt outside of our fresh water fisheries and our wildlife program.

MHA: Oh, okay.

WO: I-- my initial degrees were in fresh waters fisheries and limnology... I came out here because one of my professors had worked in Woods Hole and got us on some of the survey cruises--

MHA: Oh.

WO: First time I had seen the ocean.

MHA: [gasps] My goodness.

WO: -- We did our first survey cruise and then, I think it was 1973.

MHA: So what was your impression?

WO: Ah, I was sea sick the whole time but I enjoyed it

Both: [laughter]

WO: And then somebody canceled a year later and I came back and I had a great trip so, I enjoyed it.

MHA: And so the switching from fresh water to marine life seemed like a natural progression for you?

WO: It was a fairly simple hand off. The first several years I was in Woods Hole, I worked in a survey group.

MHA: Okay.

WO: And then after that I moved over to uh, the populations dynamics group and helped a couple of the-- assisted a couple of the senior scientists with their stock assessments.

MHA: I see, okay, and... so that was your first real job, I guess?

WO: Uh, yeah I mean, minus, you know a lot of different summer jobs and different activities but as far as that goes, yeah. My initial foray into the Federal government, when I got out of Ohio State, I worked up at Lake Erie for a couple of years-- a couple of months and then I got a job in-- with the Fish and Wildlife Service at Rock Island, Illinois and I worked there for about six months and that allowed me to transfer from there to Woods Hole eventually.

MHA: I see, okay... so when you came-- when you transferred who was your immediate supervisor?

WO: Uh, the guy that ran the survey unit at the time was Henry Jenssen, and he had been the... supervisor there for a number of years prior to me getting there.

MHA: Who was your professor that sort of brought you over there?

WO: Doctor Bernard Griswold who only wound up heading Sea Grant in Washington D.C. for a number of years.

MHA: Okay, and so when you started what was the research focus?

WO: Well, at that time... the survey here in Woods Hole was just beginning to accumulate fairly long term data set so I was working mainly as a chief scientist and also as a data technician in the survey group so we were accumulating the data and then... initially the assessment scientists here were using that data namely to index what was going on. They weren't using specifically in assessments, in terms of tuning models or whatever, in terms of the way things have gone more

recently-- well, the last several decades, at least. So we were, you know, involved in collecting the data, auditing it, making the hand-off to the senior people.

MHA: So, I assume you continued to go out on cruises?

WO: I went on a lot of cruises, I also-- that was the tail end of the ICNAF [International Commission for the Northwest Atlantic] era and we still had a lot of foreign vessels coming over then so I had an opportunity to go out on a lot of foreign vessels. I went out on a-- with the Russians and the East Germans and the West Germans and the Poles and uh... for a couple of years I did that regularly. I spent a lot of time at sea initially.

MHA: So, when you went out with them you actually went on their boats and stayed on their boats for a time?

WO: Yeah, for extended periods of time. The longest I was out was 24 days with the East Germans. And uh... generally was at least a couple of weeks when you go out.

MHA: So how did you communicate? Did they all speak...?

WO: There was always plenty of English-speaking scientists on board and you didn't interact with the crew much, mainly interacted with the scientists and the captain and etc. It's a great experience, um, I wouldn't trade that time for anything just in terms of getting a chance to experience sort of an international, you know, flare for fisheries and just, you know, getting to meet people from different countries in a way that, you know, you wouldn't meet them if you went to their country for vacation for example or something. Or even, even went there for a scientific meeting or something, it would have been a different-- different you know, environment, a different flavor to it.

MHA: Right, well just the length of time being together.

WO: Exactly, yeah. Yeah, you're out there 24/7 for at least a couple of weeks so [laughter]

MHA: Do you have any favorite anecdotes from that time?

WO: I mean, there were a lot of things going on and uh... it's pretty interesting going out with the East Germans and the Russians and you know just getting their... their take on you know, the Cold War and politics and, you know, in general. Being out with them in big weather and stuff-- I was out on a Russian ship during the Blizzard of '78 so we were out there for three days in that. Couldn't work, but we also... basically batten down the hatches and just rode it out. Because-- they never-- once you left, they never came in you know until the thing was over. And many of them were gone for 6 or 8 or 10 months or a year from their home countries when they came over here.

MHA: So where did they-- did they process everything on board?

WO: Yeah, they... the purpose was to basically collect data that could be used in the regional stock assessments process and... some of that data was used to, in a lot of cases it was more of a PR experiment. There was an opportunity to collect a lot of things and do a lot of things but... there were so many platforms that it was not clear how you could integrate all that together and you know... but it was-- it was a great experience to, you know, to be on board with those vessels and just to do what we did. You know, often times what they were doing was out of sync with our trawl survey, things weren't calibrated and they were using huge nets, you know, and that kind of thing. But if you needed to collect samples or anything like that, you could get them in a big way [laughter].

MHA: So, did you ever discuss the sort of what they were-- what they thought they were seeing and did they have any concerns about the status of the stocks and that kind of thing?

WO: Yeah, you know, they did in general although not to the extent of ownership. They definitely did in terms of access and... had fished over here for some decades up to that point. But that was about to all dissolve when the law of the sea came into play and when the U.S. took over jurisdiction now to 200 miles. So... that rapidly transitioned, but you know they were interested in what was going on and had a... I don't know, had a feel for the resources but I mean you take, for example, the Russians. They had a fleet that was fishing all over the globe, from the Antarctic to the North Pacific or wherever they, you know. So many of those scientists and... ABs and officers had been, you know, all over the world. So this was just one, you know destination for them --

MHA: -- Right. I remember when I would talk to some of the fishermen from those days when they were fishing, they would say it was like a city out there. And they would also talk about not being many seagulls because everything was used.

WO: Yeah, I don't know about that, I never saw them eat seagulls although--

MHA: No, no, I don't mean that I mean they--

WO: --Oh you mean --

MHA: -- the seagulls weren't attracted because they sort of--

WO:-- Okay, yeah I got you-- that there was nothing discarded. Yeah, um, they all had fish meal plants because these were big vessels. So anything that they didn't process for human consumption was either converted to fish oil or fish meal or you know, those kinds of products. Pretty similar to the city of Alaska Pollock fishery now. They used everything, you know.

MHA: So, were you able to tour through the whole processing plant and everything?

WO: Oh yeah, yeah, uh, I had access to anything. I mean, there were-- you know, all I had to do was ask or... you know-- there really weren't any restrictions on the vessels in terms of wandering around and that kind of thing so.

MHA: And did you find yourself in disagreement on any of the science?

WO: Uh, not with them. I mean, when I-- you know, years later when I attended meetings, you know, around the world-- over different issues and different areas, I certainly had disagreements with the Russians and other scientists over other issues, yeah. But they were generally... you know, spirited debate so to speak.

Both: [laughter]

WO: It seemed that everybody was generally at odds with the Russians because they were... ah, you know, at the time they were trying to keep their fleet going so they would often come in with an assessment that was kind of out of bounds, you know, an outlier. And they would have to defend it publically, privately in a meeting-- even when the public meeting was over they would --often apologize--

Both: [laughter]

WO: -- And, uh, a lot of times when you were with the Russians, they would apologize and say something like, uh "Excuse us, Bill, but you know this is our system" [laughter] so there was kind of a general working agreement [more laughter].

MHA: Interesting, okay. So... do you keep in touch with any of the co-workers that you had from the beginning or any of the foreign fleet people?

WO: Uh, no, I don't keep in touch with any of the foreign nationals that I had met over the years. I uh... I do keep in touch with people in Woods Hole, either see them at Christmas parties or I had-- there are a few guys that I, you know, interact with, after retiring, you know and have coffee and stuff. Um, and I generally am fairly well informed about where things are going. Everything that's being done is online, too. I can access all the reports and everything so.

MHA: Yeah, I was curious about that, whether you kept up with the--

WO: I do keep an eye on things, um, I kind of... you know, dropped out of the whole scene when I retired. My last paper was published in 2011 or 2012 so I hadn't published anything since then either.

WHA: So, do you miss that academic? Or into--

WO: One of the things I was most proud of in my career was the chance and the... initiative to publish so I, I did spend a lot of time on publications. I was able to do that and I'm pretty proud of my record in terms of publications. I had a couple of colleagues I worked with closely there and they were uh... willing and able to put in the time and effort to publish and so-- a number of other scientists down there, I don't think they have the time or the opportunity or just the inclination to publish as much as they should and uh, to me that was one of the real... interesting and useful aspects of what we-- what we were involved with and I really kind of-- was fully invested in that. So I do miss the that. I miss the people, the uh... issues and that sort of thing.

MHA: What do you not miss?

Both: [laughter]

WO: Well, to me, it's become more and more political every year and I don't miss that and I don't miss the confrontational aspects. The last several years that I was at the center, we had formed an ecosystem group and uh-- so I was really involved in a lot of new ideas and new initiatives and new thinking and that was pretty stimulating. We had some meetings and we did some-- went through some exercises that I thought-- and a lot of colleagues thought-- were really useful and I thought we were at least sort of paving the way to some new thinking and that kind of thing. So that was very exciting. Prior to that I had been involved in herring for about 10 years and I really enjoyed that too. And before that I was involved in groundfish... I did the stock assessments for haddock and yellowtail flounder for a number of years. But I'll-- a lot of the-- a lot of the process became highly politicized, I thought, and -- I thought we were getting away from the science in a lot of ways, etc.

MHA: So, was that driven you think by the national office or it just went along the whole ..?

WO: Uh, it-- the influence of the national office over the years, it's waxed and waned I think. It depends on who's there in terms of the Chief Scientist for NOAA Fisheries and who is the Chief of the NMFS so to speak and the Chief of NOAA...and-- so some influence from the national level and then, always here in New England, it was regional issues and politics and uh, the state directors and the way the council is organized and that sort of thing so.

MHA: Okay, I'm going to ask you a little bit about-- more about that in a minute.

WO: Sure.

MHA: I'm going to turn this off for a second [indistinguishable talking and the sound of the microphone adjusting]

MHA: Okay, this is very cute little stand that holds it up off the table so in theory it won't-- but maybe it's too heavy now that I have all this other [laughter] paraphernalia on it...

[more adjusting]

MHA: There. Good... so I'm going to go ahead and keep the microphone on and-- just to make sure. Thank you.

WO: Okay.

MHA: Just for the sake of the recording, we took a quick interruption in order to... find a quieter spot. So um, so what challenges did you face early on, if any, in your work and in--

WO: Well, I mean early on in the... in the '80s and early '90s, I mean, the challenge that I was involved with was groundfish. We had a lot of-- there were a lot of reviews that were conducted of our work. There were a lot of court actions going on... there's a lot of-- there was a lot of confrontational time because... there had been a major decline in groundfish and there was conflict between NOAA Fisheries and the fishermen and the council in terms of how we would rebuild the stocks. That went on for years as far as I was concerned, way too long. I mean it originated with Gerry Studds being a very strong advocate for New England Fisheries and for the fishing industry and for fishermen. As opposed to the science side that we had that said hey, you know, we need to cut back considerably in order to recover these stocks and so I think the conflict from then on, at least during that period, was, you know, are we going to do anything significant or are we going to put in some measures that won't be as effective. So I think there was always a conflict between the science and the council and the industry about how much we needed to do. And it's pretty clear from the science side that we never felt that we did enough. I guess, one of my major regrets was that we weren't able to recover a groundfish. I think we could have, I think there was plenty of potential back then I don't think [laughter] that's the case now because we've driven everything down to such low levels and also I think the environment is a major player and is taking over now so-- in a way that it wasn't then. I think we had the opportunity back then but I'm not sure we have it now.

MHA: It's interesting that you were saying earlier that you and some others had gotten kind of involved in more of an ecosystem approach?

WO: Right.

MHA: About when was that?

WO: That was uh ... about ... let's see, let me just get this right... about 10 years ago. There were a group of us across the center that got involved in some sort of thinking about the sort of ecosystem level issues. The center, for years, had been collecting data from all aspects of the system. We had plankton data, you know, long time series of plankton data and other data series that were being collected but weren't necessarily being integrated into the whole process. So a whole group of us from the center got together and went through a process of organizing that data and bringing it into some modeling efforts that-- I thought were really pretty exciting. I and another group of scientists that were involved were-- we were pretty excited about what we were doing and I think-- I think we were starting to develop some really interesting thinking about the system, so to speak, rather than just this small component the fish component, for example.

MHA: So is there anybody still doing that?

WO: Yeah, there's still an effort going on. We were at the point where we needed to basically have some major funding input into that process, that was about maybe 10 years ago. The group was formed, we got the senate director to sign off on the group and actually form the group. There was money allocated at NMFS at the national level but a lot of issues with stock assessments came up and that money was reprogrammed into, into the other processes. There was never enough funding to basically do the ecosystem thing and the way it needed to be done and then also do the other things and also... uh you know provide for observer coverage and all

that things... always I think the issues are always competing in terms of the budget, what we had and what we could do and all that kind of thing so. There's still a group working on that and still a national coordinator Jason Lank at the center and at the national level and uh, he's full of good ideas and it was a joy to work with him and there were some other scientists too. One of the nice things about that process I was mentioning was that the first time we got the entire center involved in a project of that scale. In other words, we got people from all our labs in Sandy Hook and Milford and Narragansett and-- we had a series of meetings over a number of months that culminated in these analyses we did and then we publish some papers that came out of those so that was pretty exciting and then when the group was formed, we began to put together products that were at, like I said at this sort of, higher level there's a there-- we did an ecosystem report and there's a yearly update that comes out at least maybe once or twice a year and then some other products that are coming out of that group... that, sort of, have a flavor of that.

MHA: Does the social science branch get involved in that now?

WO: Uh, I'm trying to think if whether we had, uh, I don't know if we had the social science branch involved we-- I work closely with one of the economists who, unfortunately, he was a great guy, great researcher, had tons of good ideas and he-- he passed away, you know, way early in his career, Steve Edwards and uh-- so he was really interested in that kind of thing and I had worked with him-- [clearing his throat] excuse me-- on a number of projects we ah-- I thought made some progress and I'm sure he would have been involved in that. I can't remember whether or not we had any economists involved at-- at that level. I know we were talking with you know, keeping in touch with the social sciences group in terms of what we were doing and then, you know, trying to get them to be players in this whole thing but uh... whether that's only successful or not I don't know.

Both: [laughter]

MHA: Okay. Um... can you talk a little bit about the state-- um, you've addressed a little bit, but the state of the science when you first started and how it's evolved.

WO: When I first started when I was in the survey group like I said that the survey was sort of an ancillary piece of information being used to kind of index what was going on. After that and after I went back to school-- I went back to school and got a Ph.D. at Oregon State and then I got more involved in this whole assessment modeling process. The-- I guess the way I would look at the science over the years, it evolved quickly and... the tools changed dramatically and the software that was available, the models, the way you could integrate information into that process changed dramatically, in fact it changed every year. You had a-- it was pretty exciting in terms of the evolution that was going on but also you needed to stay on top of things almost every year. I mean, it was changing so fast and still is, I mean so uh. I think the science was progressing dramatically for a number of years. I'm not so sure recently at least on the stock assessments side because of the data that we had and some of the issues that have basically come to light recently and-- also we started to see some problems with the data like... it'd be a couple of decades ago, at least and uh--

MHA: --What kinds of problems?

WO: Well, a lot of the stock assessments were starting to have these issues. They're called retrospective issues where we couldn't reconcile...the fits-- the data that we were getting from the survey and the results a couple of years after we came out with a stock assessment, that kind of thing. We couldn't resolved the differences we were seeing there and... so that became a point of contention and an issue-- serious issue.

MHA: Do you think that's an artifact of the modeling or of the data that's coming in from the surveys?

WO: I think-- I think the modeling, it can stand on its' own but it does require good inputs from both the survey side and also the commercial catch side, that kind of thing... model's are always data dependent. You got to have good data to make them-- make them work, you know. And uh... I mean there could be some-- there were some issues with the survey over time that I think were resolvable and I think have been at least addressed and resolved and there's certainly some issues with the landings data and the data that we were getting.

MHA: So I know that some things have changed in terms of landings data because there just aren't as many boats going out.

WO: Right.

MHA: So, do you think that's affected it?

WO: Yeah I... there's that and you know ... The fleet has obviously changed dramatically over time, there were a lot more vessels involved back in the '70s when, you know, for a few years we had some stock to work with. There were big landings that took place and went through this rapid decline and then after that vessels were going out, things were changing. It's more dramatic recently because of the low stock sizes and etcetera. An accurate accounting both on the survey and the landings-- you know the commercial data side is, you know, paramount in terms of making these models as useful as they can be you know. And I, you know-- you can speculate as to the causes and some of the things that have happened, so. I had an opportunity to also ride on a number of commercial vessels back in the '80s and it was an eye opener to me.

MHA: How so?

WO: Well, I saw things that ... you'd have to see to believe. I think fishermen are very good at what they do and very inventive and ... very smart in terms of putting a trip together, whatever way they need to, you know. And so it was an eye opening experience to ride some of those vessels and see what could happen out there and that kind of thing. Especially when-- you know, I was going out as an observer not as a, you know, part of an enforcement issue or anything like that. And the time that I went out there were, there weren't any significant regulations. It was during the interim plan and there were trip limits and that kind of thing so... there weren't any penalties for what was being done but I think it was, it was fairly-- like I said it was an eye-opener [laughter].

MHA: Now do you think that-- um, I don't know have you had any contact with fishermen past that time? Did you go out on any boats later after there were more?

WO: Well, the only-- the only direct contact I had was with the herring industry. I worked with them for about 10 years when I was working for the herring assessment, you know, the acoustic surveys and all those things. And-- so it was quite a different experience there as opposed to groundfish... and quite a good experience. I look back on those years as being beneficial on both sides and I think I learned a lot from them and they learned a lot from me and-- I was also doing-- I started the MREP [Marine Resource Education Program] program as the-- as the lead person and was involved in that for many years and giving some feedback to fishermen and... A number of the people in the herring industry were really involved in that process and I had constant interaction with the fishermen and the owners and the captains and that kind of thing and it was sort of a completely different situation then, you know, then you had with groundfish where it was constantly antagonistic and stuff. They actually wanted to know what I knew, they wanted to be updated. I was interested in what they were doing, you know, if they were finding fish and you know, how their businesses were going and that kind of thing, so. That was a completely different experience.

MHA: Have you kept up at all with the ... constant fight between choir and the-- the people who want the herring as prey?

WO: That came into play as-- toward the end of that 10 years and in the herring PDT process and those things were starting to ramp up which to me was kind of ... Well, that was one of the things that kind of turned me off about the whole process. I had done a lot of work integrating system level ideas into stock assessments and then also multi-species modeling and looking at predator-prey data. One of the things I didn't mention, is we also, over time, had collected a tremendous amount of predator-prey data on our surveys. So we were-- and there was no good outlet for that and I and some other colleagues, we pioneered some ways of integrating that stuff into stock assessments but then we also when we were doing those ecosystem projects, we integrated all that data into that, too, so that was another significant change in the way we were able to use data and use the data that had been collected over the years.

MHA: So um, so do you think then that the data, that the analysis of the herring fishery biomass incorporates the-- that information that you pioneered?

WO: No, not to the extent that it should. To some extent, the herring assessment and the fishery are still plagued by the same issues that were there 10 years ago or more in terms of ... delineating the stocks and where the catches are coming from and getting the fishery to move offshore, that kind of thing? And basically being able to break the catch down from its origins, you know, when a landing is brought in, depending on the season, those fish could be coming from 3 or 4 different spawning contingents or they, or again, depending on the season, they could be totally from, for example, the Gulf of Maine or something like that, so. Those were some issues that I was trying to work on and resolve and-- but I-- we never did get to the point where we could pin those down the way we should or the way we'd like to, I think. I think those things still plague the whole process. It's a lot cheaper for the industry to catch fish right off in Stellwagen or somewhere in the Gulf of Maine close to shore because they can make a quick trip

and bring it in as opposed to steaming out to Georges and searching for fish and that sort of thing. It's clear the vast majority of the resources always been off shore, but getting the industry to go out there and use it has been a struggle because of the ... the economics of the whole fishery.

MHA: And that retrospective pattern shows up and herring--

WO: -- Herring had started to show up, too and it's a little more mysterious there, I think, but some things work really well for herring. Again, if we had unlimited budgets, there are a lot of things that scientists could do to, I think, address some of the issues with herring but it would take, you know, a fairly substantial budget and some dedicated ship time and a lot of other things of need would come into play. A lot of background research, I think too, that still needs to be done, you know, relative to the stock components and being able to break the catch out to its' point of origin and that kind of thing.

MHA: S um, we-- we didn't really get down to the level of scientific theory per say did-- have those changed over time?

WO: Uh ... well, I-- let's see. In terms of the science, I think there've been huge projects of that progress on the technical side, what you can do with data, the modeling and that kind of thing. I think that, you know, integrating various sources of information into the assessments that-- I think that's more and more feasible, whether that's being done or not, that's a question that needs to be addressed. Whether these system level issues can be brought into fishery management or not-- we were proposing a number of ways that could be, they still haven't, still haven't gotten much traction so. I think, the quality of science is good, I always, again I go back to the fact that I don't think it's been used particularly well here in New England. It's been used in other areas in terms of NOAA Fisheries to a much greater extent and utilized much, much better, I think.

MHA: Where?

WO: Oh, uh, well, one good example is the Alaska Pollock Fishery. After Y2K, there were a number of years where recruitment in that fishery declined for whatever reason and the industry there responded favorably to the science and took a hit for at least a half a decade and they had to reduce the catches tremendously in order to match them up with the level of the resource. They were willing to do that and again, you're not talking about as many players, talking about a lot more money and a lot bigger fishery, a lot bigger vessels, and a considerable level of employment. I mean, each one of those vessels, even though there's only 12 or 15 or whatever it is they employ hundreds of people both at sea and on shore. But they were willing to listen to the science and take major hits in terms of their catch for a-- like a five year period until things improved. And then, some other places that... the Gulf-- some of it relates to state fishery management, for example, red snapper have recovered pretty dramatically in the Gulf and people had to take a hit, major hit, in order to do that and they're still operating under that. You know, I have to think there are other examples too, uh. You know one good example here is ... the scallop fishery has really ... blossomed under some sort of different thinking and different approaches then had been used in the past and so, I mean that's a good example of putting, you know, some measures in place that really work and translated into major economic gains over

time. That industry is much more healthy than it was in the '80s and '90s. So, I think there are some good examples on the fishery management side.

MHA: Right. I'm curious about, since you were involved with the MREP program did-- over time, I don't know how long, I know you started but- how long you were involved with it? Did you see over that time period some changes in attitudes even among the ground fisherman for example?

WO: At the meetings and maybe talking to people one on one but, I want- want the fishery to-- you know the fishing industry here in New England has done over the years is they definitely supported the ranks, you know. I mean, in a public situation, I don't think that the industry would ever support NMFS or the science. Whereas in a private situation or with individuals or for example, at those MREP meetings that we had, MREP presentations we had, there's a lot of give and take in all of our ideas and... so uh... probably-- the answer is probably a little bit of change and a little bit of at least more understanding of the science and where the science-- and what the science was trying to do, in terms of the resource. I think there is a better level of understanding out there. And certainly some members of the fishing industry have learned a lot from that whole process. I know a couple people in the herring industry, for example, who I think benefit greatly-- I think it translated into allowing them to better sort of, integrate their own business and be able to talk about the science at a level that scientists were talking about it and that sort of thing. So I did see some of those things happen and again, the deal, as I mentioned before, dealing with the herring industry that was a completely different scenario then with groundfish.

MHA: So you've talked a little bit about the changes in the data and the technology and the methodology ... what do you think the future holds? What do you think will go from here?

WO: Well, since I haven't been in this directly for probably the last 10 years ... I'm not too optimistic on the groundfish side of things in terms of recovering the stocks. I think we have an environmental situation that's deteriorating. We're starting to see much more warmed conditions, big changes in the marine environment here and a coupled with major declines in stocks. So a lot of these groundfish species are already at the southern extent of their range and I just don't see that you can depend on much recovery or, in fact, I think you'll see continued loss in habitat in both the Gulf of Maine and on Georges Bank. I don't know whether southern species will be able to move in and take up the slack, my guess is it would, it won't be as quick as the decline. It'll take more on the order of decades or centuries for that to happen. Assuming we stabilize things at all [laughter].

MHA: Do you have any thoughts on the cod moratorium on the... Canada and why it took so long?

WO: Well, I think they were still being fished in shore and maybe even off shore on the tail and nose of the Grand Bank by foreign nationals. But I think the extent of the decline there was so great that it's just a matter of inertia too, it just... uh ... things in that colder environment take, you know the biological processes take a lot longer to occur and, I just think that it was a

combination of a whole bunch of factors that have, sort of, caused things to be so much slower there.

MHA: So maybe the warming of the waters will help that a little bit.

Both: [laughter]

WO: Uh, yeah although you're not seeing that up there to the extent yet that you're seeing it here and although as we melt out the Arctic, there has been a much fresher, colder intrusion of water coming in through the Grand Bank and Scotian Shelf area.

MHA: Right, so the freshness of the water might also--

WO: --That might be a factor too, yeah. But I guess there is some recovery going on there and then you might even see a stock of cod off of Greenland someday materialize [laughter]

MHA: So haven't haddock improved?

WO: Well, they have and that's kind of the one outlier right now, you know, understanding why haddock have improved a little bit. One thing that, it's pretty clear that the area closures in the early-- in '94 and then subsequent-- and the way the-- the differences in stock size of the groundfish in terms, of sort, of weak stock management that we've had in play, that's sort of benefited haddock because the landings have never been able to reach where they could have and the area closures and the Canadian zone and those kind of things have played in haddock's favor. And there have also been some good recruitments and why that is, I don't know. Maybe we've-- if we had a large cod stock, we might have seen those kind of recruitments, too but, it just hasn't materialized. I mean, we've kept the pressure on cod, if you look at the landings and the stock sizes over the last 4 years or something it's-- it's been the main stay of fishery, everybody wanted to focus on cod and we had, I think we could have done a lot more of a recover cod then we had done.

MHA: Even with the harsh-- or pretty strong quotas, low quotas and stuff...

WO: Well, yeah, whether they were being kept or whether there was discarding going on or a lot of other things that could have potentially occurred-- yeah, I think given the right ... decisions years ago, we could have recovered cod, kept it at a much higher level than it is. Of course, now it's pretty much sinking into nothingness.

MHA: Well, it depends partly on who you talk to but yeah, I think generally speaking and um, but-- I remember when they first started putting in place the tiny quotas, the couple hundred pounds of stuff. There were people talking about the incredible discards.

WO: Sure, trip limits, that kind of thing.

MHA: These were fishermen that were upset about it.

WO: -- Yeah that kind of thing--

MHA: What could have been done differently?

WO: I mean, it was clear back then that we needed to match the fleet activity with the recovery process we wanted to have in place and monitor closely and get a recovery that would have made sense. We had a fleet out there that was trying to make trips up, fairly large number of vessels and in order to do that, they were going through tremendous quantities of fish and ... that wasn't helpful at all so. I think going to trip limits back then was a real mistake and a number of other things that were done were a real mistake. I think we probably needed to sit down and think of some solutions that would have not allowed that sort of thing to occur and allowed to have-- allowed us to have the recovery we needed. I think, there's always a dozen ways to solve a problem and I'm not sure, we -- with what we did, and the pace that we did it, really matched what we needed to do very well.

MHA: Um, let's see I-- oh, I know I was-- you mentioned that you started out with groundfish and then you founded the... [laughter]

WO: I first started out with the groundfish stock assessments. I began to-- my Ph.D. was on multi-species fisheries so I had put together a number of models and simulation-- I did some simulation work looking at multi-species models and we were trying to get things to evolve in that direction here and then also through ICES [International Council for the Exploration of the Seas]. ICES had a major effort for a number of years on, you know, in terms of multi-species modeling and that probably was in play for about a decade so things-- in spite of the fact we were doing just single species assessments through that whole process, there was a number of us working on these multi-species models. And then as I got out of groundfish and into herring, I started integrating more of the ecosystem level data into the assessments and trying to look at the impact of all the predators that ate herring, for example, and what their level of removal related to what the fishery was removing and what the status of the entire herring resource was. There clearly was a major recovery of herring that occurred post-ICNAF. It a couple of years because ICNAF did a-- foreign fisheries did a great job eliminating herring particularly on Georges Bank and it took a number of years for recover to occur. But when it did, it occurred in a big way and we were monitoring that both through our groundfish surveys but then also we started an acoustic survey and it's clear that a huge recover occurred.

MHA: Yeah, I was going to ask you about that acoustic survey. What sparked that idea?

WO: A couple of the guys at the center had been working on some of those ideas, Bill Michaels and then we hired a Ph.D. who had acoustic, an acoustic background, Mike Jack, and he-- the three of us got together and we put together a, eventually put together a sonar survey for herring and sort of developed a lot of the background technology and information we needed to start up an acoustic survey on herring. So we were going out every Fall on-- particularly off shore trying to survey the big pre-spawning aggregations of herring that were out there. And we pinned that down pretty good over a number of years. Like anything else, things can go awry. For some reason, after 4 or 5 years, the acoustic survey that we were doing, and again it was limited and we didn't have much of a budget, we were piggybacking this whole thing on the Delaware--

which was one of the NMFS research vessels, and things, after the first 5 years, weren't working as well as they had been for whatever reasons, we never quite figured it out why we weren't getting the results that we had previous to that. I don't know whether there was a big die off in herring or some issues with our equipment or, but again, we didn't have much of a budget to work with either [laughter].

MHA: So they may have just moved.

WO: Yeah, there could have been some movements or some changes in the seasonality because we were only out there for a few weeks and after 5 years, it looked like there were some changes in the way herring were moving to Georges Bank to pre-- the pre-spawn aggregations and it looked like the timing in that was changing and some other things but as far as pinning that down, we just didn't really have the budgets or the manpower or the ship time to do what we needed to do, so.

MHA: Well, I know herring is like some other species like the sardines and anchovies that's considered fairly volatile, right?

WO: I think the sardines and anchovies might be considered a little bit more volatile than herring I mean, they do live a long time relatively. I mean, adult herring here off shore can live 10-12 years. It's possible for the stock to be stable in a way that sort of prevents the kind of fluctuations you see in sardines. Well, sardines they have an age structure or whatever. Let's talk about anchovies, they are prone to wide swings because they only live a few years. Next year's fishery and stock size depends dramatically on recruitment. But yeah, herring can fluctuate, too, no doubt about it, the recruitment year class sizes have-- fluctuates quite a bit.

MHA: So when did the mathematical modeling start, you had mentioned that a couple times but--

WO: -- It started--

MHA: --was that before--

WO: -- It's started in the ICNAF era in terms of the ability to try to put a stock assessment together and but the models weren't very sophisticated. They weren't tuned with survey data. There wasn't a real good ability to bring in all of the sources of information and integrate it into the model. So those were, those were the sort of preliminary VPAs [Virtual Population Analysis] at that point and, I think they were useful in terms of starting to integrate all the information and get an idea of the way things were going. But it really became ... available in the mid to late '70s so to speak where some scientists and colleagues were, sort of, envisioned a way to incorporate information right into the model like survey data and, you know, the commercial catch data in a way that hadn't been done before. And then there had been various improvements in software since then that have allowed that ability to even improve greatly as time has gone on.

MHA: I would imagine, too, that the developments in just hardware have--

WO: --Yeah, I mean, early on we were all using the mainframe computer that was being administered by Woods Hole Oceanographic Institute, for example, but, just a few years later, every scientist had right on their desks more computing power and better software than that entire main frame system had just a few years prior to that so. The hardware thing changed dramatically over time, too. So, I mean, combination of software and hardware. I mean just, you know, commercial software packages like Excel and you know, stat, various statistic packages and things like that just allowed things to be done and organized in fashions that just weren't even feasible just a few years prior to that and that's only improved over time.

MHA: So did you find that challenging for yourself and figuring out how to use all this?

WO: Yeah, as I mentioned this before, you had to, on a yearly basis, commit yourself to basically relearning and improving your skills otherwise it would just rapidly proceed ahead of you, so to speak. So yeah, every year you kind of had to retrain yourself-- I almost thought, through that time, every year I was doing the equivalent of doing a Ph.D. science degree in order just to keep up with the improvements in technology and software and that kind of thing. You had to put a significant amount of time into learning the new stuff and getting familiar with it. But it paid off. I mean there were huge gains and just any of the things we were doing, manipulating data or analyzing data or just modeling fish stocks or whatever we were doing.

MHA: So how about your colleagues? Did the majority of them?

WO: I think the same thing was true they had-- everybody had to step up to the plate every year and get involved and spend a fair amount of time at their desk learning new things or getting trained or whatever. My case I wasn't so much going off somewhere to be trained, it was basically getting a hold of the products and maybe asking a few questions about learning how to use them and investing in a significant amount of time in keeping my skills up to speed so to speak.

MHA: Um, let's see... I-- you've, sort, of referenced a couple times the climate change. At what point did you start noticing that in your career?

WO: Well, I noticed some things with fish stocks some years back. I also was involved in the mackerel stock assessment and mackerel migrate long distances here on the shore. They used to over winter down off Cape Hatteras because there were water-- the water regime down there and the shelf slope area where there's a lot of depth and then temperature stability. The mackerel stock in the Northwest Atlantic, a fair amount of those fish would go all the way down there during the winter, over winter there. The Russians and the foreign fishery found them down there back in the '60s and '70s. But over time, those fish never, they didn't have to go down there to find that temperature regime-- in fact I, some, myself and some colleagues published a paper recently-- it was my last paper-- and we documented from the survey data that over a long period of time mackerel basically had-- and short stopping a lot further north, even now in Georges bank during the winter. Their northern extent has been about 250 kilometers further north in terms of the center of distribution compared to what it was historically and that's only moving further north and also the habitat that was available to mackerel more recently has gotten a lot larger because they do seek a little bit more warmer water. That's why they were going all the

way to Hatteras historically. It's too cold for them in the north Atlantic off of Canada and then also Gulf of Maine and Georges Bank even though they were out there during the summer and moved up into that colder water during the summertime up in the-- up off the Grand Bank and whatever. Gulf Saint Lawrence, sorry. Actually, there's a contingent that spawns in the Gulf Saint Lawrence but it's in the summer and later than around here. So I guess mackerel was a key to me that something was going on and... and then... kind of in the background... back in the-- I read a paper back in the early back in the early, just after Y2K, that six of the major ice sheets that were attached to Canada for a millennia all detached back during that time period and that was kind of a clue to me that things were changing dramatically in the Arctic. I had visited the Arctic a couple of times on vacations back in '88 and then also a few years later. When I was there in '88, it was way too warm. This was late June and it was already, it was like 85 degrees. I was way above the Arctic Circle and up in the Arctic National Wildlife Refuge and it's great to be there and everything but it seemed awfully warm and that trend has continued to get worse. Now the major warming that we're seeing on the planet is occurring up in the Arctic I mean you're talking six, eight degrees. So inklings from fish stock distributions and movements here and then that ecosystem group that I was mentioning that I was involved in, we did some analyses-- this had been eight or so years ago, eight or ten years ago-- where we're looking at the distribution of a lot of fish stocks and we're starting to see major changes and then a number of other issues have come up like, for example, the distribution of surf clams down off the Delmarva Peninsula. That used to be a major commercial fishing area for them but that habitat is gone now. And so whatever surf clam stock we have it's further north than it had been historically. And there are a number of those things that have popped up that are starting to become apparent so. Plenty of signals [laughing].

MHA: Yeah I've heard about some of the different fish like flounder and I don't know if I heard about surf clams but I think the issues are going to come with management, plenty of issues but that's one of the major issues. How involved did you get in management, I know that you...

WO: Well I... I was involved during the '80s and '90s providing advice for managing groundfish stocks and so I was on some of the plan development teams that I was on the multi species monitoring-- was it group or committee? I forget. Anyway, I was on that, Steve Correia was the chair and so we were trying to provide advice based on our assessment of the whole set of stocks. I test-fought a lot of New England Fishery Council meetings or provided background for them and a number of the modeling efforts that I did-- couple of multi species ones that I did and then some of the stuff that I did with Steve Edwards that at least became part of the conversation whether it actually entered the decision making process, I don't know. But I was... that's the extent of my involvement. It never went beyond that.

MHA: Did you ever feel like you were getting pushed back from either council members or the different, the various stakeholders?

WO: Uh, trying to think. I don't-- I don't-- I don't have a sense that it was coming that way. I think the push back we were always getting early on there was from headquarters and that was through Congressional pressure and that kind of thing. But it wasn't-- you know, it was... yeah, I mean there were times when it was probably fairly major in terms of... I think there were times we were told we had to stop what we were doing and that what we were doing was not going to

be part of the process and that kind of thing. Particularly when Gerry Studds was involved, like I said he was a real supporter of the industry and supporter of fishing jobs and that kind of thing.

MHA: So when they were telling to stop, what exactly were they telling you to stop?

WO: Well, there were-- there were some plans that were developed that were not allowed to move forward when the word got back to headquarters. That your budget is going to be cut or something like that if you continue or if you try to push this forward so.

MHA: So there were plans on controlling fishing and that kind of thing?

WO: Yeah. There were basically the science advice that we had developed and had been asked to do in many cases so we did what we were asked to do. Put a plan together and here's the results, here's what is needed and never went anywhere, that kind of thing. That's a disappointment for me that because that was the time period and just thereafter. Also when CLF [Conservation Law Foundation] at '91 won their court case and basically had a federal judge that said "okay, we're going to do this" and then CLF walked away. I mean as far as I'm concerned they walked away because they discovered that what they were doing was going to result in some job losses and that kind of thing. I mean that's my way of interpreting what went on. It's maybe sort of paraphrasing the facts but whatever. Those two times, you know, were a disappointment because I thought at that point we actually had a real possibility of recovering any stocks and actually managing them. Having large stock size, having-- having an industry that was viable and made economic sense and that kind of thing. Those decisions were made and as far as I'm concerned, it was just death by a thousand cuts from there on down to where we are now in terms of the decision that were made, that kind of thing. So those were kind of disappointments, I mean that's just the way I look at it. That was kind of a disappointment because I think we lost our chance to recover stocks and manage them well in the Northeast.

MHA: Very interesting. Um... so I guess the other question I-- you mentioned MREP and especially working with the herring industry folks... and that you had been out in the boats in the early days with the groundfish. Did you have any later opportunities for collaboration with anybody other than-- apart from the fishermen?

WO: Um, through the Gulf of Maine Research Institute. I think even after I had-- I'd been involved with MREP for seven years and even after I turned that over to somebody else, for a number of years I would go up there and make presentations and I frequently made presentations like I said. In fact, I'd give the captains and the owners and anybody else who was interested in terms of the herring fishery or the mackerel fishery for that matter. I'd give them annual updates and go to their meetings and, you know, give a background half hour or hour presentation about how things had transpired over the year, what we knew now that we didn't last year, you know, all those things. Those were fairly productive and useful meetings even though some of the captains were antagonistic to what we were doing. They still were on board with wanting information and the a lot of the owners were definitely wanting those kind of you know, processes to occur. So, that's what I did subsequent to MREP and then after that I was involved in an ecosystem group and pretty much more operating on an academic level.

MHA: I am curious, you had mentioned earlier that there were some opportunities where you would learn...there was a lot of back and forth so you would learn some from the fishermen or the boat owners and then they learned from you. What kinds of things could you say you learned from them?

WO: I felt like I could at least get an impression from them about what was going on when they went out to sea whether they were... major violating the regs or whether they were minor infractions. Interactions with them in terms of getting samples for some of the things we were trying to do and some of the issues we were trying to resolve. Locations of fish... what their fleet activity was and where they were going and what they were doing and that kind of thing. So there were some of those things that were possible at least.

MHA: Did you ever have any inclination to move in a different direction in your research-- I mean obviously you've told me about what you actually did is there any time when you thought oh I wish I had done that instead.

WO: Sure the five different careers I went into.

Both: [laughing]

WO: Yeah I always wanted to be a family doctor.

MHA: Really?

WO: Or uh-- maybe work for the Weather Service-- a meteorologist or a climatologist or something like that. But... [laughing] you only have one life so.

MA: So when you think about your career, what would you say is the most interesting thing or most--

WO: Well, my publication record like I said before, I think that's the thing that I'm most proud of and in spite of everything that happened and transpired in the agency and you know in New England and over time, that was the one thing I could fall back on and kind of work -- when I could carve out some time -- I could work on a publication and either with a colleague or on my own, usually it was sort of a collaborative effort, two or three people getting together and putting something together. We'd sit down and talk about an idea and go out do some initial things, come back together and have another meeting and we could decide how things were going to go. A lot of the things were my own initiative and a lot of them were from colleagues. I either glommed onto something they did or they glommed onto something I did. But my publication record is the one thing that I think as a scientist that's like your legacy or it's something you can always point to and you know. That's why when I retired I didn't have any qualms about just cutting the--

MHA: What made you decide to--

WO: Well uh... a couple-- a number of things. I was having some health issues that I've resolved now with my back and stuff so I really couldn't sit in a meeting anymore for five or six or seven days or sit at my desk for hours on end anymore without having to move around and stuff. A couple of those issues at the end kind of got so bad that I just had to think about that and then... lack of funding and budgets and then the political arena that was beginning to really develop and also it got to be a lot harder to work for the federal government in terms of-- you talk about Hillary Clinton's e-mails, well just to, just to manage your e-mail or have some software on your computer or have a computer that you had some control over or could do your work on, it just started-- and the amount of training that we were required to go through and stuff. Sometimes repeating the same thing twice a year or the same test every year either to drive a vehicle or to maintain software or whatever and passwords and just. Things that were silly for an agency like NOAA Fisheries when everything is public record anyway. So why were we required to go through all of these hoops and it just, it started to get more and more onerous as far as I'm concerned and a lot of... a lot of things weren't necessary and were making it harder for you to get your work done and harder to do your work as a scientist. I mean... the whole idea of government security is a necessity but how do you make an-- how do you create an environment for scientists that allows them to do their work without being encumbered by a lot of things that don't make sense for scientists to have to deal with. Especially when you're dealing with things in the public arena and all the data, I mean make a FOIA [Freedom of Information Act] you can get all the data requests there's no-- as far as I know there's no... no problems getting any NMFS stock assessment data or survey data or any data that's there, it's all public record. It's not like...like there's some need to have things classified or you know, someone can't hack into the system. They can, or they can just get-- make a request.

Both: [laughing]

WO: So there were a few things like that that are starting to be an issue and I was in the old retirement system too so I-- and I already had quite a few years in so.

MHA: So you mentioned that you stay in touch with some of your former colleagues, have you heard whether things have gotten worse or better or same?

WO: I... hesitate to say anything on the record for that.

Both: [laughing]

WO: But I... I don't think things could be as good as they could be you know in the federal government right now, just in general and... I mean I'd like to see science be thought of as a friend rather than an enemy or a-- as a something that can be used by decision makers to make informed decisions rather than being suspect, that kind of thing. Across the whole government I'm talking about now, but also in fisheries issues. Yeah, I mean from talking with colleagues who still have spouses working for NOAA Fisheries or whatever, knowing what's going on at the national level and stuff, it could be better. [laughing]

MHA: It's very diplomatic.

Both: [laughing]

WO: I hope so.

MHA: Okay... so I already I guess pretty much asked about how things have changed over time and a little bit about the future. Do you want to talk any more about what you might see coming down the road?

WO: Well, I probably have already mentioned everything that comes to mind. I think we're in for a real rough road with the climate issue in terms of natural resources and in terms of just dealing with a lot of the feedback from climate disruption. It seems like there's a number of good initiatives that have occurred, the international agreement that was just signed, that kind of thing. So some positive things but we need to-- I read a lot as a scientist I mean, I'm constantly reading even though I'm retired, and... there are a lot of obstacles to overcome and we've got a long way to go so, and that feeds back on our natural resources and fisheries in particular and that sort of thing so. I think we've got a rough road ahead of us and, if we make some good decisions we might be able to mitigate a bit in terms of where we're headed and if we don't, it's going to get worse.

MHA: Alright, I think I've asked you everything that I had planned to ask and if you can think of anything else that I should have asked you.

Both: [laughing]

WO: I was able to bring up a couple of the these that are issues or you know that were things that popped up during my history at NOAA Fisheries and some of the things that I was particularly interested in or that went well, some that didn't so, I think we've kind of covered it.

MHA: I am fascinated by your time on the foreign boats, I think that is really--

WO: A lot of the folks in Woods Hole now don't have that perspective so they weren't able to ride those boats. As I mentioned the first time I went to sea here, I was seasick but I after a while got acclimated to either being seasick for a few days and then recovering while I was out there or not having it happen at all so I became a lot more comfortable going out to sea, so I wound up spending probably three years total of my career at sea when you add up all the days and all the cruises and things that went on so. I think that was a really good experience. I think it was helpful to get out there and see what was going on right on the water and be on the surveys, be on commercial boats, be those foreign boats, that's for sure.

MHA: And was it all in this region?

WO: Yeah, I-- my whole career has been from northern Maine down to Cape Hatteras. I did get a chance to travel somewhat extensively to scientific meetings because of my involvement with modeling or stock assessment work and that sort of thing-- particular in Europe and Canada and a few other locations. Almost made it to Angola and Japan too but I never did get there.

Both: [laughing]

MHA: Well, thank you Bill, this has really been great, it's been fascinating.

WO: Yeah, it's been kind of interesting to recall a few.