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Calabrese, Anthony ~ Oral History Interview

Fred Calabretta

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

Interview with Anthony Calabrese by Fred Calabretta
Summary Sheet and Transcript

Interviewee
Anthony Calabrese

Interviewer
Fred Calabretta

Date
July 11, 2016

Place
Mystic, Connecticut

ID Number
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Use Restrictions

Biographical Note
Anthony Calabrese was born in Providence, RI on February 25, 1937. Growing up, he was interested in fishing and the ocean. Dr. Calabrese earned his masters at Auburn University in Alabama, and later earned his Ph.D. in Zoology/Ecology from the University of Connecticut. He began his career at the Milford Laboratory in 1963. His early research focused on the effects of pollution on shellfish and he brought his expertise to EPA committees he served on. He published over 70 reports and publications and founded the Flatfish Biology Conference in 1986. He was a researcher for 20 years and served as Director for 20 years.

Scope and Content Note
Interview contains discussions of: laboratory work on shellfish (oysters and clams) and pollutants, Flatfish Biology Conference, collaboration with interns, lobster mortality and disease, climate change. Aquaculture, impact of storms and sediment on shellfish

Anthony Calabrese discusses his 41 year career at the Milford Lab, how he became involved in marine research and discusses his research with other scientists in pollution oriented work.

Indexed Names
Balcom, Nancy
Davis, Harry
Hanks, Dr. James
Loosanoff, Dr. Victor
Mercaldo-Allen, Rene
Vernberg, F. John

Fred Calabretta: This is an oral history interview being conducted as part of the Voices from the Science Centers project funded by the Northeast Fisheries Science Center. It is also part of the Voices from the Fisheries project that is supported by NMFS Office of Science and Technology. The narrator is Anthony Calabrese. The interviewer is Fred Calabretta. We're located in Mystic, Connecticut, and the date is July 11, 2016. Just to begin, if you could start with your full name and date and place of birth.

Anthony Calabrese: Anthony Calabrese, Providence, RI, February 25th, 1937

FC: And did you grow up in the Providence area then?

AC: Providence and then Cranston.

FC: And what were your, sort of, earliest memories of or connections to the water?

AC: Well, I was sort of interested in fishing, so I got interested in the ocean, and freshwater basically. I did most of my training in freshwater fisheries.

FC: And you, that leads to the questions, your earliest interest in marine science and your education in that field?

AC: Basically what had happened is I got a Master's degree in fishery biology from Auburn University in Alabama and I had applied for a job with the Fish and Wildlife Service and before I got out of the service, I got an inquiry from a Dr. Victor Loosanoff, who was at the Marine Laboratory in Milford, Connecticut offering me a position, and I accepted the position and went to work in Milford, Connecticut, having trained in fresh water fisheries management, and this was a marine laboratory and I stayed there for 41 plus years and I enjoyed it very much.

FC: And what year was that, that you began your..?

AC: It started in 1963

FC: And can you describe the Milford Lab at that time? The key staff and facilities a little bit?

AC: Well, the laboratory was, the person who hired me was a Dr. Victor Loosanoff, very famous in shellfish biology. When I got to the laboratory, he was no longer there. He had retired and Dr. Hanks was the laboratory director, Jim Hanks. And after a period of time, he suggested perhaps - I was married, no children - he suggested if I wanted to go for a Ph.D., this was the best time to do it. So, he gave me the time to, I went to the University of

Connecticut, and ended up getting my Ph.D. from there, from them in Zoology/Ecology. But it was a rather, not difficult situation, I don't mean that at all, it was uprooting myself and my wife, going back to Rhode Island. We lived with her parents while I commuted to school at UConn from Cranston, Rhode Island to the University of Connecticut at Storrs. But it was a worthwhile effort. I enjoyed it very much.

FC: And were you, so you were not affiliated with a lab at that time, you were basically pursuing your degree full time?

AC: Basically in school, yeah, full time. Then when I went back to the laboratory, I was able to do my research project at the lab, and it was regarding shellfish. So I had started working at the laboratory in marine shellfish, with a fellow by a man of the name Harry Davis, who would sort of train me and so forth in doing things and culturing animals, so forth, and I got involved with the effects of various metals and toxic chemicals and so forth on the effects on eggs and larvae of shellfish. And that was my prime interest, so I converted that into a Ph.D. research project into a project, dwarf surf clam basically. And I applied all of the techniques I had learned in developing my dissertation at the laboratory. I was given time to work on that project as well as working on other projects with Harry Davis, so it was a very good experience for me.

FC: And you co-authored some publications with him at that time, is that right?

AC: Yes, and my publication list over the years was approximately 70 publications and reports in published press.

FC: So, then you started full time at the Milford Lab after you..?

AC: In '63, '64 I went back to the laboratory full time and I stayed there until 2004, in January I retired.

FC: And your initial research focus was on shellfish…surf clams

AC: On shellfish primarily, yes, it was oysters and clams, yeah mostly oysters and clams.

FC: And can you say a little bit more especially about some of your initial projects and what you were doing, and how much time were you spending in the field, how much in the lab?

AC: Well most of it, at the time, laboratory studies, exposing eggs and larvae to a variety of different metals and detergents and so forth and measuring then determining their mortality and the percentages of mortality at the various concentrations, so basically it was pollution oriented work which I later turned into some other stuff further down the road, but primarily it was that.

FC: And that seems as though that's is an interesting time too, in terms of interest on the environment including the marine environment. It's before the EPA when you started, so you were involved through that sort of shift where there is maybe more emphasis on taking a close look on the environment.

AC: Well, I got involved in a number of committees for EPA that were sort of …what's the word I want to use … developing criteria for exposures and so forth, and that lead to other stuff and so forth which we can discuss.

FC: And could you speak a little bit about the state of the science at that time? Marine science? And sort of the maybe dominant models or paradigms that were guiding research at that time?

AC: On the state of science, being new to that area, it was very good, and Dr. Loosanoff, who had established a laboratory, was a pioneer in that particular field. It was basically, the laboratories developed to assist the oyster industry here in Connecticut and from there, it extended to throughout the world really. And Dr. Loosanoff and subsequent individuals developed the criteria for culturing animals in the laboratory, and that's basically where it all happened at the Milford Laboratory, where techniques were developed for establishing shellfish hatcheries, which are now prevalent in a number of states, and going from there, basically supplying shellfish for the field.

FC: So, at that time, I know that the Milford Lab has also been involved in fin fish research, but at that time, was the focus on shellfish?

AC: Primarily shellfish, yeah. Fin fish wasn't thought about at that time and somewhere along the way during my reign, we started working with black fish, trying to develop some culture techniques. And one other species, which I can't remember, but it wasn't as successful, as industry has developed techniques on their own for salmon and other species of fish, flounders and so forth, but we didn't do that much to aid the industry, put it that way, as far as techniques were concerned. We developed some techniques, but primarily it was in the shellfish field.

FC: And then, you know, as your career progressed, could you talk a little bit about, maybe some individual projects and then also some, I know they're all collaborative to some degree...

AC: Yeah, well, I did my Ph.D. work on, I can't remember the name of the species, but a small a dwarf surf clam. Just a very small shell fish. And using the technology we had available to us and the techniques I had learned, I applied all of those to my Ph.D. dissertation, but a lot of the work that was done at the Milford Laboratory was primarily with oysters and clams, more so with oysters than anything else, ‘cause the industry was quite extensive at that time, and it began to fail for a variety of reasons, but anyway.

FC: And, I asked you a little bit about the science, but were there any specific theories that were kind of guiding the work at that time?

AC: I don't think so, just basically developing the proper techniques for culture of shellfish, and of course, other things were of interest to us, such as the effects of pollution on marine organisms, and we got more involved with pollution studies, personally got involved with pollution studies, and we ended up going from there basically, you know there are a number of techniques that we developed to look at the effects of pollutants on fin fish and we have a joint paper with a variety of topics that were involved with that, anyway.

FC: And in terms of the aquaculture and especially the oyster industry, how much did the or to what extent did the historical record inform your work? Was that something that contributed in any way?

AC: Well, I'm not too sure, because a lot of this happened before my time and the shellfish industry was very extensive at that time, and we tried to aid them as best we could, it didn't always work, obviously, but we used to have annual seminars to bring the industry in to discuss the things with them, make formal presentations, and that's still continuing on today. It's been going on for a number of years.

FC: And did you have any direct involvement with the fisheries management process? The shellfish industry?

AC: Not really, that was controlled by the State of Connecticut, and they were located right next door to us at the Milford Lab, and they did all of the management of the fisheries itself. We were just developing culture techniques for the industry to apply, and that went further along.

FC: Did you spend most of your time at the lab, or in the lab, doing research rather than, I guess we've talked about that a little earlier, sounds as though the majority of your time was spent…

AC: Well, the first 20 years I was a researcher; the last 20 years I was the Director of the laboratory. My former boss, Dr. James Hanks, decided to retire when he had the opportunity and left me acting in charge of the laboratory. And I was formally appointed to do so. That's when I basically got out of the research part of it. I didn't get my hands wet, so to speak, but oversaw the entire operation.

FC: And could you talk a little more about that and your key responsibilities and what sorts of issues and things you'd be dealing with in a typical week if there was a typical week?

AC: Actually, things ran pretty smoothly. People knew what they had to do. The various, we had 2 or 3 investigations at the time, and the investigation chiefs knew what their responsibilities were, so things went fairly smoothly. Things are changing at the moment, but

I'm not privy to some of that information. And then we got involved with the fin fish culture, we tried to develop some culturing techniques. And that was part of the program for a while, I'm not sure whether it is today, but things are changing again, and I've been gone for 12 years so, I'm not quite sure, and in fact, I'm going to meet the new director tomorrow, although, I've met him. I'm going to have lunch with him, see what's going on.

FC: And do you, you said you retired in 2004, and I noticed that you're on the steering committee on the annual Flatfish Biology Conference, so you continued to…

AC: Well, basically, I had started that conference in 1986, and we had it maybe every three years, then it went on a two-year cycle, and when I retired, I turned it over to Rene Mercaldo-Allen whom I knew would do a good job with it. And she still continues it. But it is on winter flounder, totally different from what we did at the laboratory, but we had an interest in fish and I was probably coerced into it. Somebody probably said, "No, we should get a flatfish conference", some people from here in Connecticut and Rhode Island had indicated that, so I started that in '86 and it still continues and this would be the 30th year, being held in December.

FC: So you really have, over your career, covered quite a bit of different ground with an emphasis on shellfish, and then later on involvement in finfish, but then I also read you had done research on lobster mortality and disease.

AC: Yeah, I forgot about that part. Well, I got pulled into that, we had a lobster mortality in '99, I believe it was, and it was very significant, and the industry was grasping at what the causes were, and they still have the idea that maybe it was pesticides that did, mosquito control pesticides, that did the damage. There was some disease involved. I got involved with that with Sea Grant at the University of Connecticut at Avery Point. Then I ended up co-editing a symposium volume with Nancy Balcom, who's a Sea Grant advisor here at the University, so she and I co-edited a number of, a volume. My voice is changing; I don't know why to be honest. I don't know whether it's sleep apnea that I have that's caused me my problem, but I can't seem to speak very well at times. But I was also involved with a number of international meetings, where either I was invited or participated in and so forth, and I got involved with the ICES, which is the International Council for Exploration of the Sea, before I had retired, then I became Chair of their Mariculture Committee, so there were various meetings in Copenhagen and other parts of Europe that I had attended the meetings at. So, my contribution there, I feel, is important, but maybe no one else believed that, but I did. The job, it did provide me the opportunity to do some, much foreign travel, being invited to meetings and so forth and being involved with this ICES group and so forth. And I was invited to Bahia in Brazil to set up a system for them to do some bioassay testing. We were doing bioassays when I first started, bioassays on pollutant effects. So, I spent the months plus there in Brazil to get them started. We operated out of a shrimp hatchery, I was working there. So they did fairly well. I also got involved with co-editing some journals with the Vernbergs.. both Winona and John Vernberg were colleagues of mine at the laboratory, on the physiological effects of pollutants on marine animals, and we co-edited three or four

volumes, I think it is, on pollutant effects, and that, Vernberg was retired and meetings sort of died away 'cause other things were taking place, other than major meetings were taking place and so forth.

FC: Do you have a couple of, sort of favorite projects, or projects that you're most proud of or that were most rewarding during your long career?

AC: Well, I think my Ph.D. dissertation project was rewarding in a sense that I did a number of different ecological things with the culturing of these organisms and that was quite interesting to me, but most of my work was quite interesting, to be honest.

FC: And what do you see as your major contributions in the field?

AC: The effects of pollutants on marine organisms. Basically, and that's how I got involved with the Vernbergs 'cause they were aware of my work, and I became involved and we did quite a bit of work on the effects of pollutants. And we also had a program called Ocean Pulse out of our laboratory that tried to study the physiological effects of pollution on marine animals so we went to sea. I participated in four different cruises and we went to sea, collected animals and then did some exposures on them and did various tests with them, and that was a major effort for the so called center, center of laboratories. You may not be aware of the organization itself but one time we were all individual laboratories throughout the United States and then we became centers, and we were part of the New Jersey Center at the time. Then we did collaborations with them as well as this Ocean Pulse activity. And then the two centers in the Northeast here got together. There's one center in Woods Hole, Mass, so basically there's going be one big organization, the next step. So, that led to different issues and so forth, and that's why we expanded our programs to include other type studies.

FC: What were your greatest challenges as an administrator and as the person who was in charge?

AC: Well, trying to keep the individuals in dollars to do research, 'cause usually that's pretty tight, and it should be, you know. I had no real problems, I mean times have changed since I first started, and now there seem to be more problems than there used to be. I mean everyone went to work and did their jobs and so forth, so it wasn't, wasn't really an issue that I had to deal with, little picayune kinds of things but nothing that was significant, I'll put it that way, in the way of an issue.

FC: And the staff worked well together...

AC: Yeah, they did and personalities were always different obviously and so forth, but.. and we had different personalities but they all worked well together.

FC: Now, thinking about your pollution related research. How would you compare the state of Long Island Sound when you first entered the field comparing it to the present?

AC: Well, they claim it's been getting cleaned up, but I keep hearing more and more that's maybe not getting cleaned up, because of the sewage treatment plants and activities taking place in some of these rivers and streams, or pollutants being emitted from the various manufacturing processes. I'm not involved with that and I don't really know, to be honest, whether the Sound is getting cleaner or not. Based on what I hear, yeah, the regulations are in place, whether they're following up on the regulations, I don't really know.

FC: It's interesting because even locally, I'll read the local newspaper, the New London Day, and it seems as though after almost every major rain storm, there's a notice that the shellfish beds are closed and I don't really understand, is it just more pollutants washing in, temporarily?

AC: Yeah, well, that's what happened. I just read something locally this weekend, I think, where some of the beds were closed and off to the Housatonic River, because there are treatment plants in the River, and they're emitting all these pollutants and so forth, and if it doesn't get enough flushing and going over beds that are in shore rather than beds off shore, where they can take certain animals, say young animals, and move them to a different location off shore, and they hadn't been doing that properly.

FC: So there's still problems despite all the efforts.

AC: There are still problems and people are people, and they're going to make problems and not doing the right thing, put it that way. People know that they're supposed to take shellfish from a certain area and take it out to a clean area to be cleansed, but sometimes they just go into market, and that's just not the thing to do, so the State of Connecticut just closed them down recently, but they'll be opened up again, you know, once they get things squared away.

FC: Could you comment on the role of technology and how it revolutionized research and marine science?

AC: Well, I'm not a tech person myself. I can't even operate a phone, but technology. We purchased some equipment that is really high tech and being used now, I'm not sure what the results are. It certainly can look into the various aspects of it, the operation or the life of an organism, put it that way and a lot of that is going on in marine science. More so than I'm aware of obviously, but…

FC: I guess there's always the point that the information that you get from a computer is only as good as the good as the information that went in, so it still comes down to that…

AC: Right, well, they can operate, you know, by testing an instrument to test a certain blood of a certain organism and so forth, and they do a lot of that now. I'm not sure how much is being done at the Milford Lab, but I know they have some new equipment, quite expensive, you know, probably quite expensive to maintain, but...

FC: So, did you miss the work after you retired?

AC: Yeah, I do, I still go in fairly frequently and check with my colleagues who are still there, but now I have more time for myself.

FC: Have you, having such close professional connections to the water, have you, has the ocean or the inland waters ever been something you've enjoyed for recreation? Well, you mentioned fishing early on?

AC: Yeah, I used to do some marine salt water fishing, but my neighbor moved with his boat so I don't do that anymore. I go up to Maine twice a year to go fishing up in Maine. I enjoy fishing. I'm on a pond in my backyard but I haven't fished down there. Even though there are some smaller fish in there, but it's just a small pond. But I enjoy fishing.

FC: How did the, a couple of different things here. What would you say have been some of the key events or trends in the field since your earliest involvement?

AC: Maybe the sophistication of the techniques being used to determine the health of an organism.

FC: So the analysis part of it?

AC: The analysis part of it, yeah, and the instrumentation being used to do the analysis because some of that was not available when I was working, but it is now, you know.

FC: And things like fluctuations and fish populations, I mean that seems to be a key issue, I mean you mentioned lobster as an example,

AC: Well, I think, there's probably a problem with overfishing even though some of the fishermen don't want to admit that. But you can't just keep taking fish out of the environment and expect them to be there when you want to catch more, and diseases, of course, are part of the problem. There was a major disease in oysters in Chesapeake Bay primarily it wiped out the fishery. We had that disease here in Connecticut not too long ago, and that decimated the population and that's the reason why the hatcheries were beginning to become more and more involved in producing shellfish in the hatchery to put out in the environment. So, it's a combination of factors between the fishermen overfishing and diseases and so forth, so I guess even with finfish, they have diseases as well, not just shellfish.

FC: What about things like climate change and temperature, water temperature change?

AC: Well, climate change, apparently the lobsters are moving north from what I can gather. The temperatures are getting a little bit too warm here on Long Island Sound. And either they've moved away or they were killed for whatever reasons, but the Maine fishery is doing

quite well, so the trends seem to be moving north, and I think climate change is a big factor even though some people don't believe in climate change at all. It is an issue, no question about that.

FC: What effects, speaking of climate, what effect does a storm like Storm Sandy have on aquaculture in the Sound and coastal areas?

AC: Significant effect. Some of those storms completely covered over the beds of oysters and so forth. You know they need to breathe, they need to exist somehow. I mean a burrowing, like a clam that digs a hole in the soil, is one thing, but oysters are on top of the surface and they had quite an effect, I am sure Storm Sandy had quite an effect, and just the disturbance of the bottom causes quite an effect. Sediment causes problems with animals and just pumping water through their system and too much sediment going through their system, probably can't be too good for them. One of the things we did at the laboratory was when I first started, was various concentrations of sediment and how it might affect eggs and larvae of shellfish.

FC: In terms of aquaculture in general, what do you see as the state of it now in the Northeast and the future, looking ahead?

AC: There are two sides of the story, apparently. I think aquaculture is a good thing, for finfish as well as shellfish. They're raising in Norway or somewhere in that area, flounder species as well as salmon, but people feel some of the foods that they're feeding to these animals are not good for human consumption and kinda of, creates an impact on the aquaculture industry. I think that they're beginning to get their act together and trying to develop a more human based food product, but I'm not sure what's going on these days. But I know my wife doesn't want to eat farm raised salmon, wild salmon ok but farm raised no, and she's a good example. [chuckles]

FC: Sure.

AC: And other people have the same opinion: farm raised, no, it's not good for you, but like I say they try to develop better foods for these various organisms that are in culture, and I think they're doing a pretty good job, and a lot of studies going on in the U.S. with these various food items for raising fish in the hatchery.

FC: And you were talking earlier about foreign travel and international conferences and… are most of the fishery's related issues that we're most familiar with here in Connecticut, global issues? I mean, are other nations dealing with very, very similar concerns?

AC: I would think so, I mean diseases or impacts of the environment on organisms in the environment, I think the problems are probably similar all over. Overfishing is certainly a problem in other parts of the world, you know, but yeah, I think the problems are quite similar throughout the world.

FC: Have you ever had conversations with commercial fishermen or shellfish men who don't agree with your findings and believe in natural cycles?

AC: Well, the lobster as an example. The results indicated that the concentration of pesticides in the environment were so miniscule but the lobstermen all thought that pesticides were causing the mortality of the lobsters, and I don't know whether that's true or not to be honest, but I think based on the results that I saw, the results, the levels were so low, they couldn't cause an effect. But when lobstermen got onto that band wagon, and I just saw an article in the paper the other day, and this happened in 1999, and this was the other day, and a guy, the same lobster man said the same thing, that pesticides are doing it. And there are very few lobstermen in Connecticut now, there are, I think, maybe five or six.

FC: Yeah, we worked on… I actually did an oral history project focusing on the Stonington fishing fleet and that was in the early '90s, 1993, 1994, and there were a number of lobstermen, some with fairly large operations, and I think they're all done at this point, I mean, just…

AC: Yeah, I think the one I saw just recently, there are five or six commercial fishermen that are licensed here in Connecticut and that is not the way it used to be, and so the mortality that took place really impacted the fishermen, no question about that.

FC: You know, I'm in a situation where we think about science to some degree, but we focus on history and social sciences and do those two disciplines intersect in your work at all? I'm not sure how they would, but were you really, you have a close association with a certain fishing community or something like that, you really would not, is that right?

AC: I think, you know, in the case of our laboratory, we had many shellfish fishermen that go to the meetings, the annual meetings, and sometimes they present papers that indicate what they are doing and so forth, but we have a good rapport with the industry, at least from the shellfish perspective, and there are other organizations that do the same thing you know. The National Shellfish Association as an example.

FC: And they realized that you're doing work that has the potential to benefit them.

AC: Yeah, right, that's the reason why we're there in the first place, to benefit them, although, you know, people don't always see it that way, but differences of opinions.

FC: Is the Milford lab the only facility in the Northeast with a focus on the shell fishery?

AC: Well, we had a laboratory in Maryland that did shellfish diseases and they became part of my branch at one time so I was responsible for that group in Maryland for about 10 years. So they were doing disease studies, how the impact was on the population, primarily of

oysters, 'cause in the Chesapeake, that's where the laboratory was, that was a big issue, so we worked with the industry on that problem as well, you know.

FC: What do you see as, sort of in the future for the marine science field and especially shellfish research?

AC: I don't really know where it's going, to be honest.

FC: Or what would you like to see in terms of maybe research trends?

AC: I'd like to see more of it with the proper funding. These laboratories are all shrinking, at least in my agency, and there's no one there to do the work anymore, so it's going to have a big impact on the fishery itself, eventually, but I don't know.

FC: During the years that you served as director, were there ups and downs in terms of federal funding and depending on the administration and what was going on, or was it fairly constant?

AC: It was fairly constant for me anyway. Now I understand things have just totally changed. We always had a fairly limited budget. We were able to pay salaries, do some travel, and pay the operation and the facilities, but ah… and then again I wasn't involved in that part, as far as the operation and the facility, 'cause that was done by a central organization. But the population of scientific staff is shrinking, only because fewer jobs are available these days, and that's not a good sign.

FC: Were there, actually I found a photo of you from very early in your career with a young high school intern or student. Were there a lot of those types of partnerships over the years, where high school or college students would serve internships?

AC: Yeah, we have, as a matter of fact at the laboratory right now from what I've heard, there's quite a few interns at the lab. We always had some sort of a program for interns, the cheap help, to put it that way. But they learn, they learn things and a lot of these kids have gotten into marine science because of the exposure they had with fisheries laboratories and so forth, so I think it's a good thing. Right now there are several at the lab which surprised me the other day when I went there. All these new faces, young kids, but apparently there are a bunch of interns, I don't know how many summer hires there are...

FC: But that's a good opportunity for them, give them an introduction to the field.

AC: Yeah, and we've had, well, we had an internship program with Northeastern University at one time, and I forgot how it all worked, but they would come for either six months or three months and work at the laboratory, and a number of those people were hired in the organization once they graduated from college. We had four or five at the Milford Lab and I

don't think it's being done anymore, this co-op deal with Northeastern, 'cause some of them are now retired, so they started in the '70s --

FC: It was a gateway to a…

AC: --they'd come to the lab, and then they were hired as permanent employees, and they stuck it out as a career. At least two of them retired, three that I'm aware of. It's happened at all of our laboratories in the Northeast. We have labs at Sandy Hook, New Jersey, Woods Hole, Mass. We used to have one at Booth Bay Harbor, Maine, and Milford, Connecticut. We used to have a lab in Oxford, Maryland, and then further south, that's a different center, there are other laboratories as well, but they're all either shrinking or disappearing from the table of organization so to speak. But the co-op deal was a pretty good deal. Kids would get paid a salary while they were working and go back and apply it to college expenditures and so forth, and like I said probably at least a dozen within the center who were hired out of Northeastern.

FC: If you were working with an intern right now, college student, who asked you for guidance on establishing a successful career in shellfish research, what advice would you give them?

AC: I'm not sure, to be honest, these days. I've been away from it for 12 years and I really don't know what's going on in the shellfish field, other than visiting the lab, but I don't get that kind of input anymore. But I think the stick-to-itiveness should work out.

FC: And when you, during the years that you were the chief administrator of that branch, aquaculture branch, what did you look for most, or what was most important to you in maybe a potential higher?

AC: Knowledge of the marine environment basically. I don't know if I did any hiring, to be honest, it was rather limited. I don't know, I don't really know.

FC: But maybe just then the background knowledge.

AC: The background knowledge of the environment basically.

FC: It seems that collaborations are really important in your field, that you may, it seemed as though you may be working on a, focused on a specific research project, but it's useful at the same time to have input from others and it seems like that collaboration is very important.

AC: There is, there's a lot of collaboration amongst various laboratories. I mean my lab, the Milford Lab, is doing something now with the industry because there's a disease that might happen at that particular hatchery, so we're trying to work with them and getting them over that hump where they don't have that problem anymore. But, you know a lot of collaboration should take place.

FC: It seems like so many of the papers are co-authored.

AC: Yeah some, maybe, the last author on the list probably shouldn't be there.

FC: Politics [chuckles]

AC: Politics [chuckles], especially if he's the division chief or the investigation chief, I should say. But I have a copy of my vitae here if you want to look at it, 'cause like I said I probably forgot some things that I was involved with.

FC: No, this is really helpful. Well, is there anything you'd like to add or anything that we didn't cover that we should have? Or that you'd like to put on the record here?

AC: No, I just think my experience with the laboratory was quite beneficial to me personally and meeting some of the people that were at the lab, who I had a long term relationship with, and so forth, has been extremely worthwhile, but beyond that, I'm not really sure.

FC: You had more than, you said, 40 years at Milford? Or about 40 years?

AC: 41 plus, plus a month or so. And a lot of the people there, like I say these co-op students, they're in their 30 year range now, and we did a lot of hiring in the '70s. Where the boss was told he can make hires of these Northeastern kids. I think he converted five positions right then and there. So it was a good opportunity for them and that happened throughout the Northeast Fisheries Center.

FC: Does there, it seems like there are a number of employees at Milford or some who have retired, but people have had very lengthy careers there, lot of longevity. Is that something people enjoy doing and they stay with it?

AC: Yeah, most people, maybe not their first job, in my case it was my first job, and a lot of people have their first job and only job! And they just enjoy doing what they are doing, and the laboratories worked out well for them, put it that way, but I don't know, maybe it's the salaries. Whether it's the salaries keeping them going.

FC: Interesting. Well, is there anything else?

AC: I don't have anything.

FC: Well, I think this is really helpful.