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## Fritz, Raymond ~ Oral History Interview

Joshua Wrigley

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

# **Interview with Raymond Fritz by Joshua Wrigley**

## *Summary Sheet and Transcript*

### **Interviewee**

Fritz, Raymond

### **Interviewer**

Wrigley, Joshua

### **Date**

August 31, 2016

### **Place**

Northeast Fisheries Science Center  
Social Sciences Branch  
15 Carlson Lane  
Falmouth, MA

### **ID Number**

VFF\_WH\_RF\_001

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### **Biographical Note**

Born in 1926, Ray Fritz grew up in Detroit, Michigan and attended Michigan State College. He graduated in 1953 with a Bachelors in Biology and Zoology. He began his career with the Bureau of Commercial Fisheries as a biologist at the Woods Hole Lab in 1956. During his time in Woods Hole, he spent time at-sea on the *R/V Albatross III* and *R/V Albatross IV*. He served as Chief Scientist on both vessels. In the late 1960s, he moved to Headquarters in Washington where he worked with the Federal Aid Program and served as Chief of Law Enforcement for National Marine Fisheries Service. Mr. Fritz moved to the National Fish and Wildlife Service and was the Outer Continental Coordinator for Oil and Gas Development before his retirement.

### **Scope and Content Note**

Interview contains discussion of: Early methods of surveying groundfish populations, Saltonstall-Kennedy Bill, initial international cooperation on fisheries management, *R/V Albatross III*, ICNAF, evolution of trawl surveys, early computers in fishery management, effect of technology on fisheries management, *R/V Albatross IV*, Hague Line, Fishery Conservation and Management Act, Woods Hole Oceanographic Institution, measuring fish escapement, researching silver hake feeding habits.

Ray Fritz's interview contains a detailed description of his work at the Woods Hole lab in the 1950s and 1960s. He goes into particular detail about his involvement and experiences on

research cruises aboard the *Albatross III* and *Albatross IV*, as well as the effect of technology and computers on fisheries research.

### **Indexed Names**

Barker, Al  
Beatteay, Captain Walter  
Clark, Jack  
Crossen, Jim  
Edwards, Robert  
Grosslein, Marvin  
Hennemuth, Dick  
Jensen, Al  
McKernan, Donald  
Tait, Howard  
Taylor, Clyde

### **Transcript – RF\_001**

**Joshua Wrigley (JW):** This interview is being conducted as part of the Voices from the Science Centers Project funded by the Northeast Fisheries Science Center. It's also a part of the Voices from the Fisheries Project that is supported by the National Marine Fisheries Service Office of Science and Technology. I am Josh Wrigley, Project Manager of Voices from the Fisheries, and today I'm speaking with Ray Fritz at 15 Carlson Lane, which is where the Social Sciences Branch of the Northeast Fisheries Science Center is located. The time is shortly after 2:00 on, uh, what is today, August 31, 2016. Um, and we can leap in here. Uh, Ray, when, when were you born?

**Raymond Fritz (RF):** I was born in 1926 in Detroit, Michigan, and spent most of my early childhood there in Detroit and Dearborn, Michigan. I went to, went to Michigan State College to get my degree in, in science.

**JW:** What did your parents do for a living?

**RF:** My, my parents do?

**JW:** Yeah.

**RF:** Okay. My, my mother was a housewife and, and my father was a factory worker at Ford Motor Company. Both of my parents were deaf mutes and, so, that, that particular hardship was in my early childhood. And they were very well, they both lived to late old age and I had a good childhood.

**JW:** Did you have any siblings?

**RF:** I have one brother, I had one brother. He was about nine years older than I was and passed on just a couple of years ago. But, um, that's the only sibling we had, yeah.

**JW:** And where, where did you wind up going to college?

**RF:** At Michigan State.

**JW:** Oh, at Michigan State, right.

**RF:** Went up to East Lansing and attended Michigan State College, under the GI Bill after being, serving some time...

**JW:** After you got out of the service?

**RF:** After I got out of the service, took the GI Bill, went to, I went to work for a fish hatchery in Michigan and then there I met some people who were going to Michigan State and they, uh, convinced me to go ahead and try to get in there, that, that I should, and I should get a degree in, in fisheries, and so I looked, I looked at the possibilities of that and applied to Michigan State and graduated in 1953.

**JW:** With, uh, with what degree?

**RF:** A degree in biology and zoology.

**JW:** Was it a master's, or...

**RF:** No, just a bachelor's.

**JW:** A bachelor's.

**RF:** Yeah. I had a wife and two children at that time and so I couldn't go much further in, in college than that. I had to get out and get a job.

**JW:** And when you were studying at Michigan State, um, who was your advisor at that time?

**RF:** I, I think, I don't know my advisor, I think Dr. Ball was a, who was an entomologist, no he wasn't an entomologist, he was a limnologist at the school, and he was, he was one of my principle advisors in, in the coursework.

**JW:** And, uh, when you chose your course of study, what were the factors that pushed you in that direction?

**RF:** Um, I had an idea in fisheries of, a very vague idea, I had no idea no real idea of the total magnitude of the, of the schooling, but it was mainly just scientific courses that were relative and related to marine - well, it wasn't even marine biology, it was just fisheries. And uh, I chose those subjects that would benefit me most in, in the pursuit of my position.

**JW:** And were you primarily interested in working in freshwater fisheries, or, uh, had you already cultivated an interest in saltwater?

**RF:** No, I was primarily a freshwater fisherman. I was raised in Michigan; I did all my fishing in Michigan.

**JW:** Pretty landlocked, you know?

**RF:** Yeah, and, uh, I worked for the summers at, at the, an, an Institute of Fishery Science at the University of Michigan. They, uh, they were under contract with the state to, uh, survey all the lakes in Michigan and find out how many fish, not how many but what kinds of fish were in various lakes and what kind of vegetation was in there for the fish to survive on, and, and just a general, uh, health of the lakes. We would do that. We were assigned probably around ten or twelve or fifteen lakes depending on size, and we would go in there and conduct a survey of fish and the vegetation and the depth and the contours. And we'd do that for each one of the states, uh, each one of the lakes that we were assigned. And that gave me a lot of good idea of what, all inland lakes was, was all about. But I was never prepared to, uh, to touch saltwater.

**JW:** So had those surveys been done using electro-shocking and seining and methods like that?

**RF:** Uh, just primary seining, seining, not shocking.

**JW:** Okay.

**RF:** We were, we were, that I think that was in pretty primitive time at that time. So, and I didn't think, I think it was at that, they didn't feel that we needed to go into shocking, just set nets and let the fish get caught, check them over, measure some of them, and, and, uh, and then record it all to report it all back to the state later on.

**JW:** And this was during the late 1940s, I guess--

**RF:** Yes.

**JW:** --when, uh, when you were, you were at Michigan State.

**RF:** Yeah, and during Michigan State, right. I did that every summer, yeah, I was at school. It paid a little bit of money and, uh, gave me some experience in that area.

**JW:** So upon, upon graduating then, how did you make the transition then from Michigan State to, uh, to Woods Hole here?

**RF:** Yeah. One of, one of my friends at Michigan State was getting his doctorate degree and, and, uh, we were at a, well, we were well-acquainted with each other, what he was doing, at school, and he knew who I was and what I did, and then he graduated and got his doctorate degree and left the school and then, and then I went, when I finished school I had, I had to work at, I worked at Oldsmobile just to, you know, to get by for awhile until I could send applications and whatnot, and apply for fisheries jobs. And one I sent to him, down in, at Woods Hole, Massachusetts. And, uh, unbeknownst, just a few days later I got a call from him saying, "Ray, you want a job? Come on down and we'll hire you right here." Well, I said, " yeah, I want a job." Because I was having some difficulty at that time. What happened was that Eisenhower had just, came in to be President and he put a freeze on a lot of federal spending and federal hiring, so it was very difficult at that period to, until, until they could get the budget straight in Washington. So it was rather difficult to move into a federal position. But he offered it so I, and there was a reason for that one, but so I agreed right away, that I'll be glad to come and work in fisheries, and, and he said "okay, we're down at Woods Hole and we want to see you." And I said, "okay." And he says, "I need you here in

two weeks." And I said, "okay, we'll get there." My, uh, my kids, we didn't carry much luggage, so we were able to pack up and make that deadline. But, uh, it, come, well, where shall I stop, here? So that's how I got connected with the, with the saltwater, uh, fisheries, as a, by going to Woods Hole.

**JW:** What was the transition like when you, uh, when you, when you first arrived out here? In terms of change in culture and, had you, had you been familiar before with the Woods Hole area, or was this a completely new place for you?

**RF:** After I got the phone call saying yes, and I agreed, I'll be there, I want the job, I called my wife up immediately and said, "start packing, we're moving to Woods Hole." And she said, "where the hell is Woods Hole?" And I said, "I don't know, but we better get a map and find out." So I got a map and we, we had the damndest time trying to find Woods Hole. Come to find out where it was, it's this little dot in, on Cape Cod, but, uh, and, and we, we knew nothing more than that, that it was a dot on Cape Cod and that's where it was. And they're offering me a position, so we'd better go. And it was very difficult to find out about Woods Hole at that time, especially in the Midwest, they didn't, it wasn't a very, very well known place at all. But it was one of the, the most important science centers, marine science centers in the United States.

**JW:** Were there any other people from Michigan State who had come out to work as well?

**RF:** Well yeah...

**JW:** Prior to your arrival?

**RF:** Uh, one, one man, he was, he got his master's, and he came here and he also called me and encouraged me to apply for a job there. And I knew him when he was getting his master's degree at Michigan State, so I figured, you know, between the one guy who just grad-, got his doctorate degree and this fellow got his master's there, that it must be, you know, a fairly legitimate area to be in, and, and they need people like that, so, that's what encouraged me to come out here. But little did I know, because, not, I wasn't tied into that kind of activity, is that the government had just passed a Saltonstall-Kennedy Bill, which taxed the imports of fishery products in the United States. And that tariff was sent to all of the states that had marine science centers, which meant that Woods Hole, the Oceanographic that was there, Oceanographic Institution, and Fish and Wildlife, or the Fisheries Department, would be getting some funds, you know, to...

**JW:** A little extra revenue there?

**RF:** Yeah, from the tariff. And so, so they saw that money, apparently, and a director there had felt that it was the opportunity to increase his staff, and so that's why. Howard Tait got hired and the other people, and myself. He was trying to beef up his staff while he had the money coming in from that bill. So that, that worked out, certainly in my favor.

**JW:** So that gave way to a sort of, a little hiring boom there?

**RF:** Right, expansion, uh, and hiring, right, because he hired other people for other departments in, at the Woods Hole office.

**JW:** So what was the first position that you were offered here?

**RF:** Just, just a biologist to do work on projects, and I worked, fortunately, under Howard Tait, and we, I was, uh, working on a, we were, the organization of the laboratory at that time was species-oriented. We had people who were doing work on haddock, people doing work on cod, flounders, silver hake, which was another commercially important fish. And, uh, lobsters were handled at another, up in Maine, at a laboratory up in Maine.

**JW:** Up in Boothbay?

**RF:** Boothbay Harbor, right. And, uh, and herring up that way too. So we were doing mostly the groundfish, or so-called ground fish, the species in the Mid-Atlantic, adjacent to the Cape.

**JW:** And what were the, what were the, um, I guess I should say, what was the interest at that time in the, uh, Bureau of Commercial Fisheries? Was it just understanding basic biology; what, what--

**RF:** Okay, well...

**JW:** --types of knowledge were they looking for?

**RF:** Again, um, there was an international, uh, organization at that time between many of the northern countries, and, and the United States, some of the companies they had, or countries, they were largely concerned with tuna and that species that are right off their coast. And these are the fish that were off our coast, like Canada, Norway, Sweden, Soviet Union, England. Those are the haddock and the cod and the flounders; they were all close to their shores as well as ours, and so they were working on trying to develop regulation so that everybody would do the same thing and they would be able to get a better understanding of what the whole total population was, and it was generally, as I just mentioned, population studies, just how, how many fish are out there, how big is it, and can it hold up everybody, and can everybody catch as all they want, catch all they want? And so that was where the main direction and force was put. So this created the cruises, the vessel cruises that go out there and take samples and check on how the populations are doing, and that's what I did a lot earlier. And, uh...

**JW:** So this is ICNAF [International Commission for Northwest Atlantic Fisheries] we're talking about now.

**RF:** ICNAF, exactly, right.

**JW:** Okay.

**RF:** Yup, ICNAF.

**JW:** So as a biologist then, uh, working here, um, for the Bureau for Commercial Fisheries, in what year did you arrive, did you say before it was 1956?

**RF:** Something like that, yeah.

**JW:** Okay.

**RF:** Because I graduated in '53 and I had a couple of years to work outside and then I--

**JW:** Okay.

**RF:** --I got this job offer.

**JW:** Can you remember who some of the other people were in your cohort who were hired around the same time, or who were already working here?

**RF:** Um, there's this one fellow I told you about, there was Howard Tait, of course, was higher. And Al Barker, his name is, he's since moved on. But he was hired and they encouraged me to get in here. And then there were any number of other people from around the country, not too many from the south, I don't think they took a, took a liking, or didn't understand that Woods Hole, about Woods Hole at all, like I, had, you know, didn't even know where it was located. And, um, we had a few people from the West Coast, was a favorite place for them to come. The, the Director of the lab, Mr. McKernan, he came from the West Coast so he brought his biases of salmon and cold fish and all that to the East Coast.

**JW:** What effect do you think that had?

**RF:** Not, only in, only in hiring certain people that he wanted with him over here. Other than that, uh, I don't think very much. One of my professors said that you won't get a job there because you're not from the West Coast, indicating that he's, he's putting more emphasis on West Coast people than--

**JW:** Quite a preference there.

**RF:** --East Coast. Yeah. So, but, but they hired me anyhow.

**JW:** So his, um, his knowledge of Pacific sardine and salmon fisheries, that didn't color his, um, uh, perspectives on New England groundfish?

**RF:** No, no I don't think so. I think once, once Mr. McKernan got more acquainted with the situation on the East Coast and the conflicts that were constant with other countries and adjacent to us here, then I think he changed his mind somewhat and I think we picked up more people than that were native more to the East Coast that have a better working knowledge of the fisheries in this area.

**JW:** So with your work, um, that you were doing when you first arrived, did that mostly take place at sea then, or the *Albatross III*, or were you primarily working in the, in the lab?

**RF:** No I, it, it was directed mainly to going to sea on the *Albatross*. The *Albatross III* and then *IV*. But, yeah, there's *IV*, isn't there?

**JW:** Yup.

**RF:** *III*, yeah, *IV*, okay, I'm sorry. Yeah, *Albatross III*, which really was really a tough ship to be on because it was an old banana, South American banana boat or something like that. Very narrow, long, and tough to live on. But, uh...



**JW:** Jim Crossen, I think, think said that in foul weather it would, uh, lay over sometimes--

**RF:** Lay over.

**JW:** --and not right itself.

**RF:** Right, yeah. Yeah. We had a lot of that trouble. Especially if you were trying to sleep. Not many people, we all tried to sleep. But, uh, yeah, that was, uh, that was where most of our efforts were directed toward; collecting data on our side of the Atlantic on, on the, those important commercial species so that we can, we could, uh, gather enough to start talking about what the impact is of fishing on our, on our stocks on this side. And, which was, which is interesting because they were, the foreign countries, like Canada and, and England and, and, um, and the Scandinavian countries were really hitting that stuff, those stocks hard, because they were important to them, very important. So that we had to find out what the relationship between the stocks were, that they wouldn't decrease the entire population to a point, and that had happened, much later though.

**JW:** What was the thinking at the time, as to the impact of distant water fleets on, uh, these stocks of groundfish?

**RF:** Um, I think just, just the numbers, that they have to travel so far, and if they don't get a certain quota, uh, and bring, bring enough fish home, it really doesn't pay for itself to travel that far, and they begin to get and to have an economic push then on land over there, and so they were concerned about the, the number of ships and the quotas that every country had and how soon was this disaster going to occur in, in populations with this constant catching.

**JW:** Do you recall how data was collected aboard the *Albatross III*?

**RF:** Uh, well, it...

**JW:** And can you describe the, uh, conditions aboard ship and what the, the layout of the ship was?

**RF:** Yeah, *Albatross III* was, like I say, was, it was really a tough ship to live on because of the, uh, the movement of the vessel was not conducive to comfort. But, um, the fishing methods, that was the important thing. What we had to do was to maintain a similar or identical fishing collection method from one country to another. We all, all had to do, we all, they all agreed to do the same kind of fishing; it would be trawling on the bottom, and they used a certain size net and they would go at a certain speed, and those kinds of criteria, all of them would have in order to maintain some continuity of the data that was collected. So that if you, if you read that the British one or the Russian one or anybody else, you had, you'd know what it was because you were doing the same thing. So it made that kind of, uh, a continuity very important to assess what the value and the numbers were. Um, I think what, I don't want to get too far ahead, for what I'm doing, you had...

**JW:** It's all right, we can always go back.

**RF:** Yeah. The comfort on the ship was, you know, highly questionable. But we weren't going, we weren't out there to have a good time or anything, so, um, we had to put up with a lot of, uh, a lot of problems and I, only with the behavior with the ship, you know, the rolling

back and forth and, and the storms that would come up in the wintertime, it would, would delay us and we had to lay to and wait till the storm went by and then start up again. Uh, yeah, problems to that effect, that would slow us down in doing our work in a timely manner. Because we only had two or three weeks to get this, that was the other one of the criteria, we should do it at the same time every year, see, so all of the variables of, of collecting had to be very, very similar. And, uh, so, but, and then of course any of the storms or something like that would delay it one way or the other, but there was always, there was always, um, uh, we could extend the cruise one way or the other, and there, everybody had that the same problem, and so it was a United States problem at all. But, uh, it wasn't a problem until the vessels began to get larger and larger, and they built them bigger and they could catch more fish and stay out longer; and those kinds of variables were just shooting the catching all day long.

**JW:** Are these the vessels that were doing the trawl surveys from different nations?

**RF:** Yeah, no, they, they were trying to maintain it; it was the commercial fleet.

**JW:** Okay.

**RF:** The commercial fleet.

**JW:** The actual fishing vessels.

**RF:** Yeah, yeah.

**JW:** Yeah.

**RF:** Yeah, you know, we tried to maintain our own amongst the state, the countries to similar kinds of activities. Then, of course, the commercial, I think one country found there was a lot of fishing, uh, fishing over there they would send all their ships over there and start scraping the bottom and getting, catching as much as they could in order to provide the necessary protein for their country, so.

**JW:** How many other countries were conducting bottom trawl surveys in the late 1950s?

**RF:** Well, you know, I, I don't, I can't remember them all, but, you know, Portugal and Spain and, uh, I think that's as far south as it ever went, and I think they, they liked the cod fish and salt cod and dried cod or dried fish, so that they would go up that, go up to the north part and, and get, and catch those particular species. And then of course, there's the, and then the people that, the countries that are in the northern branch, uh, of the Atlantic, uh, like, like, - well, there was, Russians are not, but they, they can travel far enough to, to get to the fish. And, uh, then of course we have England and France and, um, Iceland and Canada, ourselves, um, and there might be another one here or there, but that's about it.

**JW:** And, in terms of their trawl surveys, did they find, uh, roughly similar results with, was everyone, were the member countries of ICNAF sort of in, on the same page when it came to, um, control mechanisms and--

**RF:** Yeah.

**JW:** --you know, the state of the fishery?

**RF:** Pretty much so. Um, you, you can't really be sure on each and every boat, but we had sent observers on their boats and they sent observers on our boat to, uh, to record what, how we did it, what we did and make sure, not, I can't say make sure, but I mean, then compare it with, with their procedures and methods so that there would be some continuity between the countries that, that, to complete the thing in a worthwhile way so that the, the numbers had really finally come out at an annual meet or something had, had some meaning.

**JW:** Did those occasions when observers would travel on foreign ships, did those provide for, um, adequate exchanges of knowledge, opportunities like that?

**RF:** No, not really. The people on, the observers on the ships were not, were not total scientists at all. They were just people hired to go on the ships and record numbers.

**JW:** I see.

**RF:** And, uh, they weren't prepared to discuss the integral parts of fish management.

**JW:** So in, in what ways then did, did the trawl survey change as, as Marv Grosslein's methodology came into play--

**RF:** Yeah.

**JW:** --in 1963, was it?

**RF:** Yeah.

**JW:** When he developed the, uh, modern trawl survey that we use today?

**RF:** Right, right. When he came in, we, we were doing, we were doing, uh, prior to Marv, uh, Jack Clark, who had been running that particular, the, the haddock surveys, and we called them all haddock but it really was all fish.

**JW:** All groundfish?

**RF:** All groundfish surveying. You can't sort them out like that, so, and, uh, but of course some of them, it really didn't matter. But, uh, we had, we had other people that were, we had people like Clyde Taylor or, or, uh, population people, extra, experts in that, early in the game, just when I got there, he was there but he, uh, he stayed there, I don't know, I don't know how many years now, but, uh, and then he finally passed away, he retired and passed away. But I think that's when Dick Hennemuth, another guy that came in later and Marv Grosslein came in with new ideas and new techniques, and, uh, the biggest, the biggest thing that has, I know I ran up across when I started working, doing more mathematical work on the silver hake, um, the computer. When we had the card, you know, the card thing...

**JW:** Punch cards for the computers?

**RF:** Punch cards, yeah, and, you know, it took ages to punch the cards and run them through the sorter and then to figure out the programs; Dick Hennemuth was the program people like that, to do the work on the computers.

**JW:** What was the capacity of the computer to compute problems and...

**RF:** Terribly slow, yeah.

**JW:** How much time would it take if uh...

**RF:** I can't remember, but, uh, it, it was slow. But to us, you know, it was fantastic. But it was terribly slow. You didn't, it didn't move very fast because you had so many variables, I guess, that had to be punched in and punched out and I know, I don't even know, I don't even think about that anymore, because nobody knows what you're talking about.

**JW:** How large was the machinery of the early computers--

**RF:** Huge, huge.

**JW:** --that you used?

**RF:** Huge, huge yeah. Very big, very big.

**JW:** As in, filling an entire room, or?

**RF:** Yeah, half, yeah, partly, sometimes--

**JW:** Okay.

**RF:** --depending on the size of a particular model.

**JW:** I'm just trying to get a sense of what the--

**RF:** Yeah.

**JW:** --the actual mass of this thing was.

**RF:** Yeah, it's terrible.

**JW:** And it used punch cards?

**RF:** You had to, you had to go to someplace to have it done, you don't do it in your own office. Because you can't afford the machinery and the space. Then, of course, it's got to be sealed and airproof and waterproof and all that kind of requirement and...

**JW:** Where was the computer located?

**RF:** Up in Boston, I think.

**JW:** Oh, really, okay, so would you have to send the cards then up to Boston?

**RF:** Yeah, well we drove it up there. You would drive it up and take, and the guy like Hennemuth, he would put the stuff in the boxes and drive it up, maybe spend a couple days there working on it and the computer. It was, uh, and so when they moved into the modern era that we have now - well, not quite what we have now - and improvement to, in this direction, it, it really opened the doors up and it was a matter of, well, I mean, hours, that you could get your answer. And now you get it in minutes.

**JW:** What was the first improvement from the early punch card computer that you recall?

**RF:** Well, I don't think it was anything, anything to do with, it didn't have anything to do with the, the fisheries collection of data. We still had to collect the same things the same way, because you had to, you used to use the nets and catch the fish and measure them, you know, and this has changed now, I can tell you about that after. And, so, but, the biggest change was in the, in the analysis type. You didn't have to wait weeks to get a number out. And, uh, so I think that's where the biggest change came, is the speed in which data was processed. It kept getting faster and faster and faster, uh, through the years. But at the early years it just took a long time.

**JW:** Do you remember during what years computer technology began to change?

**RF:** No, not really. Not really. I wasn't in that area, see, I was in largely the collection area.

**JW:** Okay.

**RF:** I was not in the analytical part of it then, so I didn't have the same feeling. I wanted data, but, I wanted results, but I couldn't get it until, for a certain length of time, which [unintelligible] you couldn't do anything about that, until progress.

**JW:** Now when, when the research vessels changed and, uh, the *Albatross IV* was brought up from Louisiana in, was it 1962 or '63, around--

**RF:** Yeah.

**JW:** --around that time? Um, what were the advantages that it afforded, um, scientific research over the *Albatross III*, its' predecessor?

**RF:** Well, the, the biggest, uh, I was one of the first scientists, Chief Scientists, on the *Albatross IV*, uh, it certainly was the comfort of the vessel, okay? You had a different feeling when you're on the vessel, you know, you're not, you don't feel like you're going to be thrown all over the ocean and, and so you had a certain level of comfort that made you feel better.

**JW:** So it was constructed, the hull was constructed differently?

**RF:** Oh yeah, yeah, and the, and it was larger, wider, and, and long, well, longer a little bit too, but mainly wider, gave it more stability, you had more stability and that, that helped the morale of the crew, for one thing, you know. It didn't have the stigma of going out on that cigarette boat, we called it, because it was very narrow and it would roll over, it almost rolled over anytime it wanted to, but it didn't. But it rolled way over to the side. But yeah, the

Albatross IV was a lot more stable. And there was more room to work. We had, uh, we didn't have to work out on deck as much as we could have a sheltered area to be in, which, again, it leads to the comfort of, of being able to work out there. And, uh...

**JW:** So on the *Albatross III* the work areas had been completely exposed on deck?

**RF:** Oh, yeah, it was right on the deck.

**JW:** Okay.

**RF:** They just dumped the fish out on the deck and you get on your hands and knees and start sorting, and uh, working there. And if you had a big water wash come over, you'd start all over again, you know, in it. It, it was, uh...

**JW:** Those are difficult conditions.

**RF:** Very unstable. It was a very unstable fish-, not turn over, not dangerous, but unstable. And, uh, it made life uncomfortable.

**JW:** Were there any changes in how you recorded data, transitioning to the *Albatross IV*?

**RF:** No, not much, no.

**JW:** So still using the same scales...

**RF:** Yeah, and a punch and measurements, and you know, everything's by hand. Yeah. It just that, the area is bigger, cleaner, more comfortable so you don't, you don't feel the stigma, but you're doing the same thing but it really is a backward way of doing it compared to what's going on now.

**JW:** When everything's computerized, and...

**RF:** Yeah. And automatic and it's run on, just, I can't get over the new ship, you know. I have not had the chance to be on it, but, uh, from what I see in pictures and all that, it blows my mind that they can do, they do these things now, and they say that sometimes they don't even hardly touch the fish, and we, we handled the fish constantly. And so that, that, uh, I saw them last night, I was over at the aquarium and saw some of the movies of the, of the new ship. Those guys don't do anything, you know. You know, they don't do anything, everything's automatically, you know. And, uh, it's kind of interesting to see, these guys just standing by, watching something or other and, and still collecting valuable data that we wanted and we needed before.

**JW:** Were there special procedures for handling different types of species, uh, aboard the *Albatross III* or *IV*?

**RF:** No, no, no. We, um, the only one is that, or the one that we were, of course, we were interested in haddock because that was the international fish, and so we would, uh, put them in a bushel basket and treat them separately because that's what we wanted to work on and get the data. Dogfish and skates and those other trash fish that we called it, we'd no, no interest at all, were not important at all to us, or to anybody.

**JW:** So at that time you weren't collecting that much data on dogfish and skates?

**RF:** No, no, nobody, nobody wanted it. It was of no value at all, it still isn't. No, that's, but isn't. Of course it's getting, there were more and more of those because we keep throwing them back in instead of taking them out, but, uh, but with the haddock and cod fish and some of the flounders, uh...

**JW:** Pollock?

**RF:** Uh, no, not too much pollock.

**JW:** Hake?

**RF:** Hake, silver hake was mine and I did some work on that. That didn't have the economic importance as haddock or cod. It was generally considered a trash fish, although there is...

**JW:** You mean the silver hake?

**RF:** Yeah, silver hake. There's a market for it, and it's still a good food fish, it just doesn't have the, have the value that the other species do, and so the, the need for any more precise data is of no value at all; it's not necessary. So that's where my work kind of tapered off on that particular species. And I began to direct most of my activities toward all of the fish instead of just, just species oriented.

**JW:** In what year did you become Chief Scientist?

**RF:** Oh I don't know.

**JW:** Aboard the *Albatross IV*?

**RF:** Yeah, I was on, I was Chief on the *Albatross III* as well.

**JW:** And *III*?

**RF:** Yeah. Yeah I took, Jack Clark, who was running most of the ships, um, put me on and I gathered experience and skills and whatever the necessary things are.

**JW:** So I guess that must have been in the late 1950s?

**RF:** Yeah.

**JW:** Around there?

**RF:** Probably, yeah, because that's - '53, yeah - I think so. Early '60s, yeah.

**JW:** And what were, what were your duties as Chief Scientist?

**RF:** Main, mainly just to, um, run the ship at sea. Uh, on land, uh, everybody had their own other interest, see, because at that time, um, at that time the crew, my crew, the scientific crew, came from different people, different, uh, different species. We had, we had a guy

from, uh, a flounder group that would some and say, yeah, I have to go ask him, you want to go to sea? I've got to go to sea next week, you know, will you come along? Had to almost go around and beg people to come on to go to sea. And, but we got them, a lot of them liked to go. Some of them don't, but, um...

**JW:** What was the average duration of a, um, of a survey cruise in the late '50s?

**RF:** Oh, let's see now, two weeks, that's, uh, probably around twenty days. Yeah.

**JW:** What were the furthest, uh, points of, um, I guess what were the furthest southern extremities of those routes?

**RF:** Uh, we broke it up into two sections, a northern, a northern cruise and a southern cruise so they could change the crews if they didn't want to go anymore. But we went down to, uh, supposedly Cape Hatteras, but we never went down that far really. There's too many southern species that would get in there and start screwing things up, so we, we didn't, we went down, maybe southern New Jersey or something like that. That's where the, this northern species would stop, their range would stop down where the water got too warm. They couldn't take the water and they had to go back. So, uh, it was southern New Jersey, and then we could go north and west, or north and east, I mean, north and east past Canada, but then you're encroaching again on Canada's territorial waters, but we have an agreement, we had an agreement with Canada that we could do that, because we were only going in there to get a, get a sample, you know, make one tow here, and one pull here, one pull there, one tow here, you know, spread it out and then see what we had. Where a commercial trawler would just go in there and keep catching and catching and catching, you know, we wouldn't do that.

**JW:** Was this after the, um, the establishment of the Hague Line?

**RF:** Yeah.

**JW:** Okay.

**RF:** The Hague Line is to what, the 200 mile limit?

**JW:** That was the, um--

**RF:** Or twelve?

**JW:** --the, uh, dividing line between the United States and Canada's territorial waters after--

**RF:** Okay.

**JW:** --after the Fishery Conservation and Management Act.

**RF:** Yeah, see, I--

**JW:** In, uh, '76.

**RF:** -- I was gone by then.

**JW:** So that was passed by, um, 1984.



**RF:** Yeah.

**JW:** The Hague Line.

**RF:** Yeah, I wasn't, I had no idea what that, that had nothing to do with--

**JW:** Okay.

**RF:** --that, we never knew about that.

**JW:** So this is, this is too late now, then.

**RF:** Yeah. That's a way away from it, yeah.

**JW:** Okay.

**RF:** Assuming we had trouble with Canada. Yeah. That's, well, that's another story. Um, so we went over into Canada's waters, Canadian waters, and they didn't mind, they were, of course, welcome in our waters as well, so, we didn't have, we didn't have any conflict with Canada.

**JW:** What was the crew size, um, aboard the *Albatross III*? As both the crew and, uh, and the scientific staff who were--

**RF:** Yeah.

**JW:** --aboard?

**RF:** Scientific staff helped pretty good. We, I would take about... six people including myself, and, uh, and then we'd, they'd split up into six on and six off watches. So there would be three people and myself and then on the second watch, there would be three people and an assistant. And, uh, when I was sleeping, he would, he would, uh, make, you know, run the ship, run the catching of the fishing ship. The captain always ran the ship. We had nothing to do with what he did, except when it would conflict with us and we would have to talk about it.

**JW:** Who was the captain on the *Albatross III*?

**RF:** Well, there were many of the, we had many of them, yeah. One, well no, see now Beatteay was on IV I think. Gosh, I can't remember those guys anymore. Been a long time. I don't know. One of the ones that I can remember, he was basically on the floor, um, Beatteay, Captain Beatteay. He was very cooperative and we got along fine, but now it's under NOAA and, uh, I have no idea what, what they do. We had no uniform people on our ship, as they have now.

**JW:** When, um, when you were back on shore then, where was your office located?

**RF:** In the, in the, in the, uh, fisheries building that, well...

**JW:** Right where the main lab is now?

**RF:** Yeah. Right there, yup. There was another lab, another building behind that, the, the brick building that they have now, and I was in there for awhile until the reconstruction came along. I'm sure the Kennedy Act again provided the money for the building. And they just wiped, because a lot of the other old stuff was destroyed or damaged from the hurricane.

**JW:** Which hurricane was that?

**RF:** I don't know, it was a bad one though, it tore the buildings right up. And washed water, washed the land from underneath the docks and, uh, knocked over the water tower. Have you seen a picture of the old lab at all?

**JW:** I probably have at one point or another.

**RF:** Okay.

**JW:** Yeah.

**RF:** Because you can, it's easy to get, they're not hard to get. Uh, they'll give you, that could give you an idea of what the laboratory looked like before.

**JW:** Yeah.

**RF:** And then, uh, the, the new building was built, this, this box building in, uh, in, most of everybody's office was in that, in that particular building.

**JW:** What was the community of Woods Hole like during the 1950s when you arrived?

**RF:** Marine Biological Laboratory and the Oceanographic brought in a lot of people, summer people. Um, and, uh, that...

**JW:** You mean summer students, and uh--

**RF:** Summer students.

**JW:** --and employees who would actually--

**RF:** Yeah.

**JW:** --be working there?

**RF:** Yeah. Yeah. So they filled the area pretty well. We didn't have the money or the inclination I guess, to get too many summer people. We might have had one or two or three, I don't know. I don't know why. I don't know the reason why we didn't get more, but, we didn't have any place to keep them, where the Oceanographic and the Marine Biological had, uh, a dormitory kind of thing that people would stay in, the students.

**JW:** And they had buildings nearby?

**RF:** Yeah. The students could stay in, so I think that probably hurt, because you can't, you can't come to Woods Hole without any money to try and stay anywhere because everybody's renting rooms out and, you know, making the money that they can during the summer. But, uh, it was very busy. Woods Hole still maintained its' mystery of, uh, of undersea things and, uh, that and, of course, they had the Alvin at the Oceanographic, uh, Oceanographic Institution, and that was a big draw. Cousteau used to come, stop in there every now and then and park and visit, I guess, people at the Oceanographic. And I know I, my son was lucky enough to be able to get in the boat, get in Cousteau's boat and go down, oh no...

**JW:** Oh, on his research vessel?

**RF:** The Alvin, the Alvin, he went in the Alvin. He crawled down in the Alvin and looked around, and. But, uh, there was a lot of, uh, a lot of people still coming down to the Woods Hole, looked around, and that, that's after we, the aquarium, the original aquarium was destroyed and the new one hadn't been built yet.

**JW:** Where was the original aquarium located?

**RF:** Pretty much right where it is now.

**JW:** Oh, okay.

**RF:** Yeah.

**JW:** Okay.

**RF:** Yeah.

**JW:** Was that also destroyed in the hurricane?

**RF:** Yeah, yeah. It's old.

**JW:** Was that the hurricane of 1955? Or was that a different, uh--

**RF:** Well it had to be.

**JW:** --storm, you think?

**RF:** It couldn't be that early, uh, that late. '55, oh, '55.

**JW:** Because that was the storm, I think, that, uh, Jim Crossen referenced in relation to an incident with, um, the *Albatross III*, when it had almost gone over and not come back up.

**RF:** Yeah, I think that probably was that one, because it really hurt, it really hit Woods Hole pretty hard.

**JW:** Okay. Okay.

**RF:** Yeah. It did a lot of damage. And I came in the next February, see, and...

**JW:** Okay. So that, uh...

**RF:** Everything was...

**JW:** In February of 1956, then?

**RF:** Yeah.

**JW:** Yeah.

**RF:** Yeah. And everything was destroyed, and, uh, had to clean it up and started over again. Um, there was one thing I was going to say to you, and I can't remember.

**JW:** And I guess there must have been a, uh, quite a sizable summer tourist population coming through Woods Hole as well even during that time.

**RF:** Oh, oh yeah, it's very popular in the East. I, of course, being in the Midwest, never hear of it, you know, and, we had no interest in what the hell went on over there, you know. Because we had all our inland lakes to consider and enjoy rather than go way over there, but a lot of these people are New York City, uh, or New York area and Pennsylvania, and, of course, the New England area. So, uh, and has, and Oceanographic and, mainly the Oceanographic, has, has a world-wide reputation now, so it's pretty good.

**JW:** So when, when you and your family first moved to Woods Hole, where did, did you wind up living in Woods Hole itself, or in Falmouth?

**RF:** No, we had, we, we, uh, we stayed at Woods Hole our self. There was one building that was standing there that used to be the, it used to be the, uh, the home of, of the Biological Laboratory visitors; people would stay there. We'd have the Secretary of Interior stays there, and some of the bigger up and ups. Mainly the, the supervisors from Washington would go to Woods Hole and live in that building and enjoy Woods Hole and the area. And so there were some rooms available there and, uh, grim as they were, yeah, that's where they put me up. We stayed there until I could get a, a house up in town, and get one rented.

**JW:** Up in town, up in Falmouth?

**RF:** Yeah.

**JW:** Okay.

**RF:** Yeah, and, uh, and go home, go back home and move my family. I had to do it in two phases. I dashed over here because the, the boss said, "you know, I need you in here in two weeks", and I said, "okay", you know. So there was a deadline. And, of course, we couldn't be ready to move all our equipment, our furniture and all that, so I had to go back. I'd come back here and I went to sea right away, which was an awakening. I was so sick. And, uh...

**JW:** Jack Clark sent you to sea?

**RF:** Yeah. Right away, he says, you're going to sea next week.

**JW:** Jim said it was sort of something he would do to people who he just brought on--

**RF:** Right.

**JW:** --send you to sea immediately, is that sort of a test there--

**RF:** Yup, a test...

**JW:** --to get your sea legs?

**RF:** Oh my god, I was so sick. Because it's, that was the worst part of the year, you know, wintertime and snowing and wind.

**JW:** So after, when you got back then, did you have to go back out to Michigan--

**RF:** I had to go back to Michigan--

**JW:** --and get your, your furniture--

**RF:** --get my fam-

**JW:** --and then drive it back here to Woods Hole.

**RF:** --and then get back here to Woods Hole and get, get a place, and then we settled in, and yeah. You know, and then, of course, the sun came along, summer came along, that's nice, you know.

**JW:** Forget how bad the winter was.

**RF:** Yeah, right. Very quickly.

**JW:** Do you remember what the average rent was for a room, in 1956?

**RF:** No, I don't remember. I can't remember anything.

**JW:** So I guess the, the first building that, um, that you occupied there in the MBL, um, housing, that must've survived the hurricane then.

**RF:** No, it was a Fish and Wildlife building.

**JW:** Oh, Fish and Wildlife, okay.

**RF:** I mean, not Fish and Wildlife, but the fisheries people, you know, the fisheries office, yeah.

**JW:** That made it through.

**RF:** They, it was their building, not the Marine Biological Laboratory.

**JW:** Okay.

**RF:** It had damage, underneath the building, but there were rooms that you could, you could live in, yeah.

**JW:** That were still habitable--

**RF:** Yeah.

**JW:** --when you arrived in February.

**RF:** Yeah, yeah. So I, we were able to live in there for a few days, uh, probably a week or so. Just to get oriented. And we were, of course, we were waiting for the ship to come back, because that's where the guy that hired me was coming back on, you know.

**JW:** There must have been some anticipation there, I guess.

**RF:** Yeah.

**JW:** Some anxiety waiting for that to happen.

**RF:** Yeah. I knew no one else. I didn't know anybody else, so it was kind of very strange.

**JW:** Was it a very, uh, closed community--

**RF:** Uh...

**JW:** --at that time? Or were people more sort of opening and, uh, and outgoing?

**RF:** Yeah, I think they were, they were really outgoing, they were really, everybody said hi, you know, and welcome here, and uh, hope you like it, and uh, of course they were laughing at me, too, for being near, at that time of the year, the worst, and then going to sea was a real shocker, but, uh, I wasn't the only, I know, I think Jim told me yesterday, I had lunch with him, and he said, yeah, he and I came around the same time. There was, there was another example of hiring somebody to do that. Jim played a big role at the office, in the, in the, uh, at the service here. Bigger role.

**JW:** Yeah, he was telling me about his research with the, uh, underwater camera--

**RF:** Yeah.

**JW:** --and how Clark had secured--

**RF:** Right.

**JW:** --some good, uh, funding for that.

**RF:** Yeah, yeah. Yeah.

**JW:** Was that a project that you had worked on as well?

**RF:** Yeah. I helped, I helped there.

**JW:** I was amazed at, uh, the footage you took. It was really quite astounding to see, um, the definition, um, you know, of that footage from the 1950s.

**RF:** Yeah, we were studying the escape of the little fish from the nets.

**JW:** Oh, going through the cod end of the mesh?

**RF:** Yeah, netting, go into another net that would hold, see we had the measure on what the escapement was, so we, we could see them going through, and then we had a finer mesh on the outside that they couldn't get through, see.

**JW:** Okay.

**RF:** So they got caught between that fine mesh and the mesh they'd just left, so.

**JW:** Interesting.

**RF:** And the pull of the vessel pushes them back so they can't come back and go back out again. So, uh, so that's, and then we just, we opened the set and, the net, and then we could see the ones that were supposed to be in there or could be in there are in there, not escaping. So that you figured that the value of that mesh, in escaping, so that we don't catch and keep those and kill them. They get out.

**JW:** Now were the, were the results from that study brought to ICNAF eventually?

**RF:** Oh, yeah, very, very much so, yeah. Because this is one of the big questions they're always having, we said you had to put a cover over the cod end so that you could measure the escapement, because you don't really know how many of those go through their net, if any.

**JW:** That must've generated quite a lot of interest.

**RF:** Oh, gosh, we were, oh, we were pleased to see those fish getting on, you see them wiggling right on through, you know, as you saw them. And we said, there they go, there they go, see, by god, they found their way out. It was a real big plus for us to have it done like that. And, uh, and then I, uh, one of the studies I did was, I was working on the silver hake and I had a big aquarium made, a big box made, like, I don't know, it was about twelve feet long by six feet wide, and all covered with glass except for the bottom, and the silver hake would congregate in the wintertime in Woods Hole, they would, go where they...

**JW:** Right out here by the stone pier?

**RF:** Yeah.

**JW:** Really?

**RF:** Where they were migrating, you know, through this area out, down to the south, the southern area of the, of the ocean, or what.

**JW:** When would they usually arrive?

**RF:** Around Christmastime, you know.

**JW:** Okay. And would they stay long?

**RF:** No. They wouldn't stay very, so that's why, it would sound to me and to us that they were just migrating through, and that there were enough, and apparently there were enough small fish, you know, minnows or little fish, to eat, so that they were just swallowing their food source right on down. So Al Jensen and I, a friend of mine here, and, he was, he worked on the cod, on the, uh, haddock with Jack Clark. He, he and I would come out here and, oh, right on the pier, he would come out at the, we'd meet at the pier there and with hook and line we'd catch the silver hake and put them in a bucket and put them in my tank, because I wanted to see what they did during...

**JW:** So you could just quickly walk them right up to the office, I guess.

**RF:** Yeah, yeah, that was it, see, we'd get--

**JW:** Not, not far to walk...

**RF:** --half a dozen of them and run them in here--

**JW:** Yeah.

**RF:** --keep them fresh and just drop them right in the water.

**JW:** Interesting.

**RF:** Yeah.

**JW:** How big were the hake, on average?

**RF:** Yeah, yeah, about like that, yeah. So, uh, and I would feed them, I got minnows, the same ones that they were eating, you know, and I saved those...

**JW:** Were they like, Atlantic silversides, mostly?

**RF:** Yeah, something like that, I don't know what species they were, but, so, uh, I would then, uh, I'd then just drop some minnows in there and watch their feeding habits, and what they do, especially I wanted to see them moving up and down, because out at sea, during the daylight they're up here, and during the night they're down at the bottom. And, uh, we wanted to see if they maintained that same habit with the lights on in, in the shop.

**JW:** What did you find?

**RF:** Yeah, they did the same thing, you know, when the lights went out, the fish came back, came up, you know, and start feeding around there. And then when I turned the lights on, they'd go back down again. So, uh, it was kind of, kind of interesting to see that. Then I was testing them on what kind of minnows, you know, how many minnows they'd eat. I'd count the number of minnows I put in there and then see how much, and their, their, they stopped eating. I don't know what, what happened to them. They, they didn't eat very much and then



they finally, I finally let them go after, I don't know, a couple of months I had them, playing with them. But they weren't putting, they weren't putting out any kind of data at all, I couldn't use it. But it was interesting, I tried that.

**JW:** That's, that's fascinating, the, uh, the reflex that they, uh, had with the, the change in light.

**RF:** The light, light factor, yeah. And when I was out at sea one time, Bob Edwards wanted me to do the same thing. So Jim Crossen put the depth sounder on so that, you know, depth sounder goes down to the bottom and bounces off. And we were going to have the ellipse, and I would be out, I was out at sea at that time. So he said "turn the, turn your machines on before the ellipse and after, and keep it running all the way through", and just couldn't believe the, when that ellipse was at its' top, the area with the top level was just loaded with shrimp and fish; anything that was light-sensitive and reacting to the lights. And then as the ellipse opened up, the fish would then just gradually move on down to the bottom. And it was just unbelievably good. Yeah. I, I don't know what Bob did with that, with the data, I don't think he did anything with it. We just, uh, wanted to see what it would look like. And this is out, you know, fairly deep water.

**JW:** So were the, uh, silver hake very prevalent in those years, in the late 1950s and--

**RF:** Pretty good, yeah.

**JW:** --early '60s.

**RF:** Pretty good. They were very prolific, they had, uh, good hatches. Unfortunately, there was no restrictions on size, so that the people at Point Judith, for one, and Gloucester, another one, they would go out there and get these industrial fish that they could sell to somebody that grinds it all up and in some kind of food, maybe it's a dog food or cat food. But, uh, you go in there and sample their, their catches, you stick a bucket down in there and pull it up and then spread it out, see what sizes I had and I measured them all. And, you know, they're like that.

**JW:** Juvenile fish.

**RF:** Yeah, all juvenile, a lot of juvenile fish, and they use the small mesh. Because they want all of the stuff, see, for what their purpose was. Yeah.

**JW:** So, to sample those, would you have to go down to Point Judith and, uh, up to Gloucester?

**RF:** I'd usually go to Gloucester, yeah.

**JW:** Go to Gloucester?

**RF:** Yeah, yeah. That was a bigger port than Point Judith was. So I'd spend a couple, two, three days up there, measuring fish.

**JW:** Did you have contacts within the fishing industry that you'd already, sort of, pre-arranged visit...

**RF:** Yeah, or I, they were used to us up there because we have agents up there in Gloucester.

**JW:** Okay. Oh, the port agents?

**RF:** Yeah, port agents that would go aboard the boat and measure their fish and talk to them, and where'd you fish. All this stuff was confidential in the government. We can't, we couldn't release any, where this guy was fishing at, that would be a violation of, and so these guys would go and ask them where they fished and he would, they would write, you know, tell them where they fished and what they caught. And, and then, um, and we would sample their catches. We never said where they caught these fish or anything.

I, um, one of my experiences here at Falmouth there, I knew a fellow who had a, uh, a charter boat. He was one of my neighbors in Falmouth Heights, so he said, "uh, you know, you want to be a captain? I'd like to have you run one of my boats, my charter boats." I said, "yeah, I could do that." I just had to go to school a little while and then I could, I could do it. And, uh, so, but I had to call up the Regional Office to find out about it, and they said "no, you can't do it." Because...

**JW:** You couldn't get your 6-pack license?

**RF:** No, they wouldn't let me do it, they wouldn't let me fish, wouldn't let me captain a boat.

**JW:** Really?

**RF:** Because, because, uh, I knew some of the, well, I would have access to the, to the fishermen's data that's confidential. See, they gave it to our people as, in confidential of where they fished. So we have some idea of where the fish were. And he said, you can't, uh...

**JW:** Valuable information.

**RF:** Yeah, I, I would, uh, I would give you, you know, I'd use that data, that information, to go help my passengers, and you know, you can't do that. It's a conflict of interest.

**JW:** Interesting.

**RF:** Yeah. So.

**JW:** So were you able to, um, get the license at least, or--

**RF:** No, no, I stopped.

**JW:** --it just stopped right there.

**RF:** Right there. I never, in fact, I don't even know if they would let me get the license.

**JW:** Now as a charter vessel was your friend, uh, what, what type of fishing was he doing? Was he going for striped bass and blue fish, or--

**RF:** Probably that...

**JW:** --or tuna?

**RF:** No, not tuna. No, not here. No, they'd be mainly for striped bass and perch and scup and...

**JW:** Wire line trolling and jigs...

**RF:** Yeah, line, and jigs, yeah. Rockfish. I do that where I am now, Chesapeake Bay.

**JW:** Where they're called raw fish.

**RF:** What kind of...

**JW:** So in, in what year did you finally retire?

**RF:** I think... I had about forty years in.

**JW:** Because you took a position down at headquarters then, as well.

**RF:** Yeah, that's right.

**JW:** I remember when you were talking with me on the phone awhile back--

**RF:** Yes, right, I left, I left Woods Hole...

**JW:** Right, right.

**RF:** --and, uh, about fifteen, I was up here about thirteen, fourteen, twelve or thirteen years, I think I worked here. And then I went down to Washington and worked in several programs there. And then retired after awhile.

**JW:** And which programs in Washington?

**RF:** Well... Okay. Uh, I went down there first as, in a Federal Aid Program, I transferred into the federal aid program, um, I was giving money to the states to do fisheries research and that, and I did that for a few years. I can't give you numbers or the years that, with all of this. And then, uh, and then I, I left the Federal Aid Program and went to a fisheries program. They wanted, they had to reduce people, apparently on a Presidential election again. They play this game in Washington all the time. So, uh, I was transferred to a fisheries program and I stayed there, uh, maybe, maybe six, eight months. And the Director called me in and said, I'd like to have you Chief of Law Enforcement Office. And, uh, we don't have one and regions want to have one, and so will you take it for awhile? And I said, sure. So I was Chief of Law Enforcement in, for the National - well, by that time we were switched to the National Marine Fisheries Service, and, uh, under Commerce. I stayed there for awhile, then I moved over, oh, then I moved back to the Fish and Wildlife Service after awhile, because I didn't fit in that other thing, I never did. I was doing the Director a favor by, by doing it. And, uh, I moved over to the Fish and Wildlife Service and became the, uh, Outer Continental Coordinator for Oil and Gas Development, so I reviewed all the oil and gas proposals and see what kind of impact they're going to have on fish and wildlife and birds and that, and marine

mammals and all that. And, uh, then I did that and then I retired out of that. Because new Directors came in and they made changes and all that.

**JW:** Yeah.

**RF:** And they didn't want me in there and so I, I got out. But I had a, I had a good time in Washington. I liked it. It was better, well, it was good. So all my experiences in fisheries have been very, very profitable and, um, helpful and enjoyable. Really liked it.

**JW:** Have any, um, final thoughts about your time up here in Woods Hole that you'd like to share, or particular memories, um...

**RF:** No, as I said, I, I enjoyed my life up here. It was brand new for me, uh, a tremendous experience, working on the outer continental shelf. You know, at the inland lakes I did it, I worked for the state and, of course, I used to do my own, my dad and I go fishing and all that kind of stuff, you can throw a stone to the shore on the other side. You go out there, and there is no other side. But you learn that there is one, because it's the continental shelf. And 90% of the fish are on the continental shelf and then it drops off to god knows where, way down. That's the, that's the other side, see, because there is nothing over there that's worth anything, other than the pelagic fish, the tunas and swordfishes and that. All the big populations fish are inside of 100 fathoms. So, that happened to be, happened to be the other side. You learn, you learn, you know, there's the other side, right out there, where that 100 fathom line is. There's nobody on the other side. It was interesting to have that concept of, you look out...

**JW:** That boundary?

**RF:** Yeah, you look out there and say, Jesus, there is no other side, but there is, there is the other side. And, uh, it's, it's not the shore, it's the depth. It's, it was very encouraging, and I enjoyed it, I really did. I had good people, good people here work, work with. The changes now that are going on with the, with NOAA and that are foreign to me, and I can't quite accept them, and I probably wouldn't have. So, uh, but a lot of people have survived, they always do, those people do. But the guys you're talking to, right now about the past history, the NOAA is, uh, is a foreigner.

**JW:** Well, thanks very much, Ray, for sharing your memories of Woods Hole and, uh, your arrival here and all the work that you did. I appreciate it.

**RF:** You're welcome.