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Sibunka, John ~ Oral History Interview

Michael Chiarappa

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

Interview with John Sibunka by Michael Chiarappa

Summary Sheet and Transcript

Interviewee

Sibunka, John

Interviewer

Chiarappa, Michael

Date

August 19, 2016

Place

Roanoke Island, NC

ID Number

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Use Restrictions

Biographical Note

John Sibunka was a long time employee at the Sandy Hook Lab. His career spanned from 1966 when he joined the ichthyoplankton department to 2006 when he retired. He graduated from South Maine Vocational Technical Institute and Rutgers University where he received his bachelor's degree. During his career, John served on the *R/V Delaware II, R/V Albatross IV,R/V NAUVOO* and the *R/V Henry Bigelow.* Over his 40 year career, he spent an average of 100 days at sea per year.

Scope and Content Note

Interview contains discussions of: his first cruise while at South Maine Vocational Technical Institute, destruction of the *R/V Delaware II* while being built, ichthyoplankton department, age and growth, groundfish surveys, details of change from Bureau of Commercial Fisheries to National Marine Fisheries Service, changes in technology for plankton surveys, foreign fleet fishing vessels as research platforms, life on Soviet vessels, MARMAP, GLOBEC program, fire at Sandy Hook Laboratory, research ship committee for newest class of vessels, innovative design of *R/V Henry Bigelow* and how that was achieved by personnel at Northeast Fisheries Science Center, collection of samples for other institutions, *R/V NAUVOO* and NOAA Corps.

In this interview, John Sibunka provides a rich description of his NOAA career and the changes he experienced. He provides a detailed explanation of the scientific operations of research vessels and the operation of the vessels, the various research programs, the impact of the fire at Sandy Hook Laboratory, and his work over this career.

Indexed Names

Byrne, Charles
Despres, Linda
Tessalon, Amy
Wiebe, Peter[1]

Transcript

Michael Chiarappa (MC): Okay John you're there. Today is August 19th, 2016 and this is Michael Chiarappa, an oral historian working for NOAA National Marine Fisheries Service. This is an interview that I'll be conducting with John Sibunka, a longtime fishery biologist with the National Marine Fisheries Service. We're going to talk about his career. This interview is being conducted for the project entitled Voices from the Science Center and we'll begin.

Well, John, again, as we've discussed prior to this recorded interview. Thank you for agreeing to do this and as I mentioned to you, I always like to start off and, as you mentioned, sort of in a chronological fashion. Let's start by just talking a little bit about your education, your preparation, how you made your way into this line of work.

John Sibunka (JS): Thank you, Michael. Good morning again and I'll begin. I began my career at the Sandy Hook Sport Fisheries Laboratory in June 20th, 1966 and was employed there until my retirement on September 1st, 2006 with 40 years of service. Prior to my employment, I completed one year of college as I was a math major. However, my interest was in the maritime field so I enrolled into a two year marine tech program at South Maine Vocational Technical Institute [SMVTI] in South Portland, Maine. Courses included marine biology, oceanography, marine navigation, diesel engines, engine room systems.

The program generally selected a second year student a senior, of good scholastic standing to sail aboard the new Woods Hole commercial fisheries research ship *R/V Albatross IV* as either a deck or engine cadet for a research cruise. *Albatross IV* was put into service in 1963. She was the first stern trawler built in the United States. I was selected in the spring of my first year, meaning 1965, at SMVTI to go as a deck cadet or junior navigator and ship handler on watch with the second mate, a nice honor for me. The watches on *AIV* [*R/V Albatross IV*]were six hours on and six hours off around the clock. I had the twelve to six watch.

The trip was a plankton hydrographic survey from Cape Hatteras, north to Long Island. Plankton survey, little did I know at that time. From there, we went to eastern Nantucket Shoals to do round the clock vertical distribution plankton study for several days. Plankton tows were conducted, I believe, every three hours around the deployed buoy anchored to the sea bed, a deployed buoy that *Albatross* had set. The weather was very foggy. The Soviet fishing fleet and attending vessels like ,for instance, oil tankers; cargo ships; refrigeration ship; repair ship; deep sea salvage tug to name a few. On our radar screen, we had close to 30 to 40 ships near us.

[1] During the era of the GLOBEC cruises, Dr. Peter Wiebe was the head of W.H.O.I.'s Biological Department.

One afternoon between plankton tows, we went over to watch the fishing operation. Now imagine watching three new large factory stern trawlers towing abreast, going from left to right. And another three of the same going from right to left and passing between each other. A clean sweep of catch of any fish there on the bottom. As an aside this coming to mind, I remember being on the bridge and we were watching this and a middle aged, older commercial fisherman was looking at that and he turned to me and he made this comment. He said, "You know John, there's enough fish to go around. It's good that they're doing this."Well, at the time I'm sure he believed it was right but history proves, well, there wasn't enough fish to go around actually.

The other aside on this, when we were, you know, amongst the fleet, there were several crew members all up on the bridge and I was there so there were witnesses for this and I was handed one of the binoculars by a crew member and he says, "Take a look over at that vessel and tell me what you see alongside." She might have been either repair a vessel or a supply vessel. And I looked and – I'm not making this up – this actually was there. You saw the sail…the conning tower of a partially submerged submarine.

Mc: wow.

JS: Right off our coast. Russian. I hope the U.S. Navy knew about that at the time. Well, then to continue.

MC: So you had out there you had a mix of Soviet fishing vessels, support vessels like repair vessels and also Soviet naval vessels all of the same area while you were [there]…

JS: Well, just that one submarine and don't forget, there was a three mile limit in force at that point.

MC: Right, right.

JS: So they were so they were legal, technically.

MC: Right.

JS: Later that spring school year, the following incident occurred. Next to the school, the South Portland Marine Engineering Facility had built the new commercial fisheries research gear testing, stern trawler *R/V Delaware II*. The completed ship was still in the steel shed and was to be launched the next day. She was really pretty. She was all set to go. After classes, a co-student and I were going into Portland, he had a car. When we were passing the shed with *DII*, I said to him, "There's a fire in that shed". I called the fire in at a near phone booth. The fire department arrived but the fire had spread so fast within that shed, it destroyed the shed…the ship. I mean it was so intense that many fire companies had come in to fight this thing but all they could do was hose down the surrounding area to prevent the fire from spreading. When the acetylene tanks went, if you can imagine it, it blew through the roof of the place and the I-beams came down and it actually broke the hull in several places.

South Portland Engineering built another *Delaware II* and it was launched in '68. These two ships *Albatross IV* and *Delaware II* were both to be a major part of my future career in

fisheries. *Delaware II* after her work at Gloucester Fish lab was transferred to Sandy Hook Lab in the early 1970s. And this was to replace the vessel we had, an offshore vessel we had at Sandy Hook, the *R/V Dolphin*.

Upon graduation at the SMVTI in June of '66, I began employment as a biology tech at the Sandy Hook Sports Fisheries laboratory in the ichthyoplankton department. That was the study of larval fish and later fish eggs. The study also included juvenile fish. The study entailed both identification, developmental stages and distribution of both early life of fish and the fish identification and development stages of fish eggs. But the fish eggs work pretty much came later on. That's mentioned later on in this report. I reported to the marine lab on a Monday in June and left on the lab's offshore research vessel, *Dolphin,* the next day on a plankton cruise. One of the many *Dolphin* cruises involved in the program. This program began in 1965 and it ran through 1966. Survey area was from Cape Hatteras, North Carolina to off Long Island, New York. Another series of the same type of plankton survey cruises began in 1968 to early and ran through early 1969, from Cape Hatteras to Florida. These are major baseline plankton cruises of which there's a lot of reference to that material still go ongoing today, is my understanding.

MC: John just for a second. When you were…you had graduated at this point from the school in Maine, I take it.

JS: Yes.

MC: And then you were immediately hired on to go work for the, it was the Bureau of --

JS: Sports Fisheries
MC: --Sports Fisheries and you were assignment was Sandy Hook again.

JS: Yes sir.

MC: Okay, and that's where you, okay, so at this point you're working as a fish tech on board the vessel

JS: I'm working at the what, sir?

MC: You're working as a fish, as a fish technician at this point.

JS: Yes. That was my title because I didn't have a bachelor's at that time.

MC: Okay

JS: When ashore, I was a plankton picker. That is sorting the collected samples for larval fish. The department had hired plankton pickers full time to do this. Also at this time ashore, I flew on infrared thermometer flights for another department at Sandy Hook. These fights were on Coast Guard Grumman albatross amphibious twin engine aircraft. They took place once a month for about a week duration involving several scientific teams from Sandy Hook. Flights were from Quonset, Rhode Island; Floyd Bennett [Field], New York; Elizabeth City, North Carolina; and Jacksonville Florida for about two days from each base. I flew out

of the first three at various times. Flights were on a predetermined track, no higher than 500' - actually, we flew a lot lower.

An infrared thermometer was pointed out to sea surface to measure the sea surface temperature which was in turn was recorded on a script chart recorder on the aircraft and monitored by one of the of the two scientists during the flight. Predetermined location surface drip bottles and bottom drifters were also deployed by scientists from the plane. Marine surface life was seen, noted on a script chart with a position location. After the weekly fights, the temperature data from script charts were displayed as temperature isolines on printed coastal charts depicting the continental shelf out to the one hundred fathom line. These charts were made available to both commercial sport fishery and anyone who was interested in this information, of course now satellite have taken over this. I went from plankton picker to identification of larval fish. Then to just identification and working with larval flatfish with the department head. Working on fish eggs came later during the MARMAP [Marine Resources Monitoring, Assessment and Prediction Program] cruises. At this time, on larval fish, I'm going to digress from my notes for a moment, a lot wasn't known about developmental stages on fish, spawning season, distribution. This was all, a lot of this was you know groundbreaking at Sandy Hook.

MC: Right. I was kind of curious because you were talking about being a plankton picker and in doing the, I was wondering what were some of…was this just exploratory research or were there particular objectives that the folks hoped to use and apply this information towards at this point, to your knowledge?

JS: Yes. Yes both to answer your questions. It was for both reasons. One was a general survey. The other one, it was primarily geared to summer flounder, fluke, the population was down. We were trying to find out the amount of recruitment on summer flounder. Like you know, after the spawning, they would go into in-shore estuarine area for a period of development to juveniles and come back out again. But that was what it was, that was that was one of the main focuses of these surveys north of Cape Hatteras anyway.

To be continued, ah, to continue. One of the aides of identification early age fish was called clearing and staining which a specimen was placed in a chemical solution that cleared the flesh and another chemical generally alizarin red was added to this to stain the vertebral and both the internal fish spines and external spine rays if these was developed. That would aid in the count and would aid in identification of what that larval was, what that particular larval flat fish was. To give that as an example, later an x-ray unit was the point on this but [coughs] excuse me.

In1970, NOAA agency was formed, as you know, in the Department of Commerce. Both the Bureau of Commercial Fisheries and the Bureau of Sports Fisheries were combined into National Marine Fisheries [Service] including in NOAA was the U.S. Weather Service and the National Geodetic Survey with the officer corps now NOAA Corps. Shortly thereafter, the NOAA Corp took over responsibility of all fishery research ships. They also incorporated bridge deck officers as needed. Fishery ships at this time had employed licensed, civilian deck officers. As these officers either retired or left, NOAA Corp officers took over. Fishery ships now under NOAA now had their hulls changed to white with a large set of ship numbers painted in black on the bow. *R/V Delaware II* was numbered 445, by chance this was my birth month and year, April 1945, some coincidence again with *DII* right?

MC: Yeah.

JS: When I started at sea, the scientific equipment can be looked at as the mechanical or pre-electronic age. This included mercury thermometers to measure water temperature, hand held line angle indicators to measure wire angles of a plankton tow along with a set of tables to determine tow depth. A mechanical bathythermograph which is a fifty dollar term for an instrument that would record…it would inscribe a trace on a gold slide.[2] They were either, they started out as being smoke glass and then you would, after the tow, you would remove the slide and put it into lacquer or later on when we used them, it was a gold plated slide. Later on, a mechanical time depth recorder called the bathychimograph was attached to the tow wire above the plankton net to record tow depth on a pressure sensitive tape. This was an after the fact tow so you know, you try it, we try to tow close to the seabed like within five meters to a maximum of two hundred meters. But these instruments would tell you how far down the tow actually went. It was used in the aid for standardizing a fish town with the flow meter within the aperture of the net, I'm kind of digressing but I have to explain this.

So you had tows of different time duration and different flow meter rates. And to standardize this to number…to whatever the fish larvae and eggs you caught in there, it's a number of ten meter square surface area, there was a formula that you had to run through and it incorporated tow depth and volume of water filtered and that's why this was very important so when you plotted, this on the chart as a figure, you could see density populations or density occurrences occur.

MC: Now is this research targeted towards particular species and or was this general research?

JS: No, it was general. At this point it was a general…to find out for larval fish say cod, haddock, silver hake, summer flounder to name a few to find out spawning time, spawning areas, densities, and try to answer those kinds of questions.

MC: So it's pretty wide ranging then in terms of really getting an inventory in that regard. So yeah that's, uh…and this equipment that you were using was, were there particular, you know, challenges using it? Was it was it was it antiquated or was it relatively cutting edge or how would you characterize it? It sounds like a lot of very sort of, you know, as you know a lot of people can't do this kind of work. They don't, they're different fields of endeavor that you have to have a certain patience in a certain ability to conduct that work regimen. Was it, were there particular challenges on a day to day level of doing this type of work?

JS: Yes, there was. You know, at the time, it was cutting edge. It was the best that we could…it was the best that we could do. One an interesting problem comes to mind. I don't know if this is going to try to answer your question, some of this got resolved later but on Georges Bank during a plankton tow in nice weather, you did a tow, the angle of the wire angle was supposed to be around forty-five degrees.

MC: Sure.

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[2] Narrator's Note: The slide was placed on a viewer for the bathythermograph and the scribe on the slide was read against the viewer graph for temperature and depth.

JS: And you go to a table which was somewhat adjusted but then you would do, you could, you would know how much about approximately how much wire to let out to get to where you wanted to go. You would tell the winch man to stop and haul back. Okay. Well, we'd be towing on Georges Bank and at times, we would hit bottom. Well, yes, hit bottom there so you'd have to do a re-tow, you know, so then the ship it'd turn around and tow on the other direction. And come to find out that the tow turned out to be somewhat shallow and this, you know, we couldn't figure out what was going on everything look. Well, later on in this interview, when I was in the GLOBEC [Global Ocean Ecosystems Dynamics] program in the 1990s involved Woods Hole Oceanographic being one of them. The oceanographers found out what they termed the sandstorms on Georges Bank. You had the strong, near bottom current shears, extremely turbulent. So that in fact what was going on was, they would straighten out that angle, the angle of the wire during the tow called a catenary. That's why we hit bottom. When you turn the other way, we would be somewhat shallow then what we were supposed to be but during that [first tow] we would wind up with some small amount of sand and we couldn't figure that out. That's because that shear current was picking up sand and just you know near the bottom and moving it at a great rate of speed. It was winding up in our sample.

MC: How interesting.

JS: I know it is. Yes to calibrate those machines Bendix time depth recorders. Sandy Hook, we had to calibrate these instruments frequently. And they had different [depth range springs]. They were a spring operated with the diaphragm to a clock and it, the pressure on that would cause a stylus attached to the clock to cause a trace on pressure sensitive paper. If you can imagine this and the units had to be calculated and we put…our department put together a pressure gauge, hydraulic operated pressure gauge that we hooked up and you did this at various pressures which would simulate sea depth on the chart and then from the chart, you would create a graph for that instrument and from the graph you would create a calibration, a horizontal calibration scale. It got involved and a lot of these things would accident… well, because of the diaphragm, they would flood at sea. So we'd have to have a lot of units and it got to the point that we had to take in whole apparatus out to sea. It took us about two days after flooding to put this whole thing back together again [and calibrate it]. But that was really working pretty quick and hard in between stations to do this but it was the best that we had and so that's what we used.

MC: Right, right.

JS: Okay on ground fish surveys, we use beam balance scales, dial scales, wooden measuring boards and paper logs. I mean if you brought that on board today, people would look at you.[laughs]

MC: I'm sure. [laughs]

JS: So gradually this changed to the electronic age with now XBT probes what that means Expendable Bathythermograph probes that would deploy from a ship from a launcher. It measured water temperature and transmitted this data up through a coated, thin wire spooled out during the probe descent and the data went to a script chart recorder on board the ship. Later it went to a real time computer. After the probe hit bottom or went to the maximum

depth, they were very thin, you could just break, could break it at ease and this went on for…We used these instruments, this instrument for a number of years it was - as an aside, it was developed by Sippican Cape Cod, Sippican Corporation, for use in the Navy to use in anti-submarine detection. It would determine what a thermocline was and if a submarine you know would generally try to hide underneath a thermocline because that was such a barrier, a temperature barrier, it would bounce back electronic waves, uh, trying to, like some sonar, trying to determine where a submarine was but it was also now used in science in scientific research. And you could do this under way, the ship didn't have to be stopped to do this so that was another added feature. If you want a temperature in between stations, you didn't have to stop the ship like you would with a mechanical bathythermograph to get that information.

MC: Was there any particular reason, I mean, anybody who works in fisheries knows that water temperature is obviously an important consideration, you know, whether you're catching fish or just trying to understand the biology or the relative state, their living state at any given time. Was there any reasons you were aware of why these temperature studies were so paramount in the work you were doing?

JS: Several reasons one we had an oceanographic, we have an oceanographic department at Woods Hole, and of course, they are interested, you know, both temperature and salinity what's is going on Georges Bank. Obviously with global warming, the temperature is documented as being increasing, a half a degree is a significant increase. Trust me, Michael you know.

MC: Sure

JS: And also if you had the spring thermocline, and again that would be temperature barrier. You would have generally warming water up towards, above it towards the surface, colder water below it and that was indeed a barrier. And if you had, meaning daily vertical migration of plankton which included, you know, it would transport at least the fish larvae up and down on the twenty-four hour cycle. Did they have to cross that barrier or did it, when they hit that, is that where they stayed there. Do you follow me? And then at night, they would rise up towards the surface again.

MC: Sure, sure.

JS: That was kind of, you know, we did get into vertical distribution cruises. Do you understand what I'm talking about? It would be--

MC: Mmhm

JS: Okay fine. That was one of the main gear apparatuses used during the GLOBEC program which I mention in the middle 19-, started off in the middle 1990s. Are you aware of the GLOBEC program just out of curiosity?

MC: No, I'm not.

JS: Okay but I'm glad I kind of put something in there about what it was about.

MC: Yeah.

JS: I think I left off at, um. A third wire system which is, the third wire system was used on a winch. This steel wire also had an electronic cable inside the steel cable. This could be plugged into a CTD. CTD is a term for an electronic conductivity temperature depth recorder unit. It was generally it was, it was the units. They were, it started out where you would attach to them and they would record data and it was kind of like the old bathykymograph time-depth recorder. It was an after effect. It would determine how much depth you had but it would also record throughout the water column but later on they developed a system that was real-time. So when you attach this to the tow wire above a plankton net, at this point it was the 61 centimeter bongo array. That's a rigid frame with two 61 centimeter circular apertures. So you had two nets on one array and that became the standard. It started in MARMAP, kind of jumping ahead.

But just to explain this. So you had real time. When you deployed that instrument on a bongo net or just use it for a vertical cast on station, you had a real time going to a computer on board the ship temperature and depth and you can actually monitor its' descent and ascent. It was recording depth and temperature and conductivity also continuously and you knew how deep the station was because you had a readout nearby the computer from the bridge. So you were able to do that tow really on a routine basis close to two like within five meters of the bottom so that was that was a big improvement…major improvement.

MC: Yeah.

JS: We also used electronic…oh yes…on the groundfish cruises I was talking about we also used electronic scales for weighing fish, electronic measuring boards. I have a little thing in brackets that says explain. On wooden boards, well, of course straight forward, you put a fish a fish on the board if it had a meter stick imbedded in the middle of the board and you measured the fish and the person next to you was recording it on paper. These electronic boards was such that they were of a synthetic material. They had the placed a meter stick embedded in the board when instead of my reading it and giving it to the person standing next to me to record it, I was holding an electronic ring. I could either put it on my finger or just hold it and you would just tap the board where the tail fin was to get the overall length. Tapping the board at that point with that ring would send an impulse and it go right into the computer and record the size of the fish. There was no writing, it went right in.

MC: So was that done so is that allowed you to survey more fish or simply do it more accurately? What were the benefits of that system?

JS: Well, you weren't recording it on paper and then when they got ashore, they would have to transfer all those paper logs onto a computer. You were going directly into a computer at the work station which went to a main computer. There was three workstation. There was always three workstations on our cruises and you had a team of two for each workstation. You had the primary dissector, the cutter, which that's what I turned out to do. And then you had the recorder and the computer that you used at your workstation, that data went to a central computer on board ship into the electronics room. So you were really speeding up this operation because not only were you…the weight being entered electronically and like the measurement but it, on the computer screen, would prompt like you know what is the sex of the fish? What is its maturity? You would have to do a stomach analysis of food habits right there and enter that. It would prompt you, okay we need fish scales for age and growth. Or

you would take from in the skull of the fish, you would have to cut open and remove the pair of otolith bones and what those bones were important for...if…those bones were also used in determining the age of a fish. If you took a cross-section slice of that bone, it had, well, for adult fish annual growth rings and it was like tree rings on a tree trunk. When you cut a tree down and you would count the rings, do you follow me?

MC: Yes, yes.

JS: Well, you would have that on the slice of the otolith so they would know pretty much the age of the fish for the size of the fish and the condition of the fish. Like is the fish getting enough food to eat and it's, you know, it's maturity particularly female, how its developing for eggs, et cetera.

MC: Right, yeah, well it's just to me, uh, and this is occurring? In what years are you doing this?

JS: Well, we're always doing that. We were doing it with, you know, during the so-called mechanical age but then when we went into the electronic age, it really streamlined this operation and made it faster.

MC: So you basically, this whole process was in play essentially the entire time during your career would you say?

JS: Yes, it's just that the technology on how you entered it and dealt with that data evolved.

MC: It allows you to do it more efficiently. I see.

JS: Yes, it did.

MC: Yes, I can imagine how labor intensive it could be unless, as you're saying, once you have the electronics to allow the data to seamlessly move into a computer base that's obviously I can imagine a real, a real blessing in terms of just managing the data. Yeah, that's interesting, too. And, you know, I think a lot of people you know in the general public they hear about fish surveys. Everybody's always, I think, a lot of folks don't really know in much depth what the National Marine Fisheries Service does. But I think the whole idea of surveying fish and seeing what their size and their ages that's something, I think, a lot of people can sort of relate to. I guess I'll offer that opinion but that's kind of interesting to me.

JS: Also, since I spent a lot of time with surveying on groundfish cruises. On ground fish cruises I not only worked on adult fish, I was there because we also did plankton tows. That was why I sailed on that [trip]. We had two people from plankton department on the ship, one for each watch, and very early on I became a dissector, a cutter. Spending a lot of time at sea, you know, working with not only on plankton cruises but their cruises, you could really see the change, for instance, in stock populations occurred just visually in catches--

MC: Oh yes.

JS: --you know, I'm kind of, well, diverging.

MC: No, go ahead. That's fine.

JS: As we're working up fish, species of fish, let's just take silver hake. If I was working up a catch of silver hake from this particular station, I would, you could see over time when you cut the fish and with determining its maturity and development, fish of the younger age maturing so you had this species of fish maturing sexually a lot earlier than it used to be. That's a definite sign of a stressed population. Also, and this is a fact, I mean fisheries will go along with this one and here it is. Let's switch to cod, for instance. A large female cod has a tremendous number of fish eggs. She's been…she's an older fish. Her eggs are very viable. Her spawning would be over a long period of time. She would spawn in batches over a period of time and not just in a restricted period of time. It would probably be in the same geographic area but spread out over that area. As the population becomes stressed and you get smaller female codfish developing, their eggs are not as viable. So they're not as hardy…meaning…and also her spawning time period is more restricted and what ideally if you could do this, you could have a restriction on large females so that they would be able to [reproduce]…their egg production would, of course, be better for the population.

You see this here in North Carolina coastal area for a long time with redfish. I mean, you are restricted on a very, you know, 18" to 27" fish. Anything larger than that, you have to put back in the ocean and that's for the benefit of the entire population so that during spawning you're getting females that a larger with more viable eggs as I just said a moment ago.

MC: Yeah and that issue of larger females and the viability of their eggs in terms of obviously perpetuating these particular stocks. Was that determination something you folks sort of know that you arrived at your work.

JS: Oh, no that was that was known.

MC: That was known.

JS: Yes, it was.

MC: I had a question about when you were mentioning the hake and the[m] maturing quicker and that that was a that was an indicator of a stressed population could you explain that a little bit or ah…?

JS: Yes. Well, if you're taking out, you know, if you're taking out all, a lot of the adult fish. Let's say your bottom, a bottom trawl commercial net, they have a mesh net size restriction, okay. It's supposed to allow smaller and juvenile fish to escape from the net but keep the marketable fish.

MC: Right.

JS: Okay, so if your stock is being overly fished, exploited, just biologically in nature, the stock wants to maintain itself so the fish are younger age are maturing to spawn.

MC: Oh, okay, I see. Oh, interesting. That's a good point. Well, go ahead. I didn't, we were talking, we were talking about you were doing. So just to clarify, it sounds like you were

doing surveys, these population studies of ground fish and you were also studying their dietary habits as well correct? Is that where the plankton surveys in the, came into play?

JS: Well, the plankton survey is what we're still, we were monitoring the spawning population, its' distribution and its' spawning season. Yes, it was an ongoing monitoring survey. So you could determine annual trends like, you know, such and such a year was a good spawning year, such and such a year was not a good spawning year for[a species of fish]…whatever environmental or biological factors came into play.

MC: Yes

JS: And then with that knowledge a few years later on that particular species of fish, you would see did you have recruitment of the adult population from that year or was it really poor?

MC: All right, I see

JS: Do you understand?

MC: I do, I do. I have a question and it has to do with - are you picking up that beep? Somebody is probably calling to me but I'm just going to let it go. But a lot of your work, it's to me, it's - how would I say this? And again you can, you might want to use you may already have this in mind terms of other comments you want to make but I mean I'm often very interested in scientists who go out into the field and they're basically field based scientists and you're going to talk about this, you know, the time you spent at sea. It sounds like you're already very early in your career spending a lot of time at sea. I was wondering can you, you mentioned some of our earlier conversations prior to this interview about, you go back to school at some point correct?

JS: Well, that's coming up.

MC: Hooky. Do you, do you want to talk about that now or do you want to, uh?

JS: No, I just would like to just continue in sequence otherwise I might miss some this. As another side of the topic we were talking about. A lot of commercial fishermen were saying well, we don't see any reduction in catching a fish. Well, okay guys. The population is contracting. You're fishing where those fish are. You're not seeing a reduction.

MC: Right.

JS: Where they used to be, we're seeing they're not there anymore. Well, why are you fishing there? Because it's just as important to know where the fish are not as to know where they are. That was hard for a lot of those people to understand, like you're wasting your time. No we're not.

MC: No, I don't know, that kind of gets you into that old sort of issue of, you know, which we see actually it gets talked a lot about today. But this increased fishing effort and new technologies that allow fishermen to exploit stocks that they previously, in areas and particular species and particular areas, where they previously couldn't do that and, of course,

that actually is an issue that goes back even further than a lot of people suspect but you're right. If an area once produced fish, the scientific community would want to know that, right?

JS: Fisheries, commercial, Bureau of Commercial Fisheries was established in what was it, the 1880s around the time period…

MC: No, you're absolutely correct. The U.S. Fish Commission was started very early, 1872 and uh --

JS: That was because the cod fish stocks had declined and it was, uh, they were looking into the decline and they were trying to rear, you know, hatch…catch adult fish, strip the male and female, rear eggs, raise them to a juvenile and then release them offshore to increase the population. That's sort of a take-off of say freshwater trout fish, trout fish hatchery.

MC: Right, right. Oh, absolutely.

JS: Of course, that really didn't work…but commercial fisheries…that's how it got its' start.

MC: Sure, no absolutely. But go ahead, John, you want, you were talking about plankton and groundfish surveys you were involved in and this is all, I mean a lot of this, of course, you are doing this in the late '60s into the 70s, correct?

JS: Yes. Well, I did this throughout my career.

MC: Oh okay.

JS: Right up to the very end which is ongoing. Actually as I say and as I say late near the end of this thing, we got the new ship. I got called after I retired here in North Carolina, I got a call back for a couple cruises to help out on the new ship. I'll talk more about that when--

MC: Sure, sure.

JS: --but anyway. Well, back to me. When NOAA was formed, I worked at the lab, oh yes, I worked at the lab and also went to night classes at Rutgers working towards a bachelors degree. Fishery budget constraints at this time resulted in a tie up of the *R/V Delaware II* for about a year. Sandy Hook Lab paid for me to attend day classes at Rutgers for about a year and a half. This and the fact that SMVTI, meaning South Maine Vocational Technical Institute, was now a two year community college accredited. So Rutgers accepted my marine biological and ocean oceanographic course credit. Also accepted my credits from my first, from my one year as a math major. Upon graduation from Rutgers with a bachelor's degree which was December--

MC: What did you get your degree in? Oh, I am sorry. Go ahead. What year did you get your degree in?

JS: Biology.

MC: Biologist.

JS: Yes, sir.

MC: What year did you get your degree?

JS: That I don't have. [chuckles] I'm sorry it was in the early, it was in the early 1970s.

MC: Ok, sure.

JS: I don't have that recorded on here and I don't have a recall on that. You know, my wife made a comment saying you know John you've been retired 10 years and you're going back with school 43 years. I'm going back 53 years on this thing, we knew each other for 53 years my wife but you know that. To Try to pull this together in a couple of days, I did the best I could.

I got a bachelor's degree and I went back full time at the lab. Now we had the *R/V Delaware II* back and research programs were starting up. I changed from the biological technician position to fishery biologist and also began going to sea as chief scientist or the watch chief. What a watch chief is, you had two watches on the ship. The watch chief would be like the opposite of a chief scientist. He's on the other watch. It would be like a president and a vice president is the best analogy I could give you or captain and his mate on board ship.

MC: So when you're the watch Chief want to research vessel, what does that mean? What do you, what do you do?

JS: You are in charge of the scientific activity and all personal and what the ship is doing for that time you were on watch.

MC: Oh okay.

JS: Certain departments, that's the way we ran the plankton department. I always wanted to work a watch. It didn't have to be the six to twelve watch, a lot of times I take the twelve to six watch just to break it up and for me to be on the watch and give the other person. It was done and there was one person later on that I sailed a lot with and without having to stick him with that watch all the time, we switched off. If you are doing a survey, particularly on fixed stations, after a period of time the scientific personnel, which are repeaters generally, you know, they're hired primarily by like a Chlorophyll Department, Nutrient Department, Oceanographic Department, that went along on plankton cruises during MARMAP which I will explain. They, um, you just know the routine and so does the ship, the crew on deck on the top, so it almost runs itself. You know, I'm there if something really comes up. There's a problem with an engine or something and should we stay out of go in. Well, my training in SMVTI in deck and engine, I could carry on an intelligent conversation with an engineer - what's wrong? what are our options? Why we have to go in?

MC: I see, I see.

JS: You know, instead of well, something broke. Well, like I could do a lot better than that.

MC: So you had an understanding of both, I mean, of the actual operation of the ship as well as the scientific activity that was going on the ship.

JS: Yes and not to pat myself on the back or, you know, saying I was a privileged character but on the *Delaware* and *Albatross*, the engineers knew my way around the engine room. I had access to the engine room. I was probably not the only scientist, one of the few scientists that could go down to that engine room. I could check in with whomever the engineer on watch and said I have a piece of gear I got to repair. I need you to need your tools, I need your drill press, you know, whatever and they'd say, you know, just go for it, John. So I'd be down there working, I might have to take somebody with me to assist me but I could, I had access to the engine room.

MC: Well, wow. That was, uh…

JS: That was, I thought that that was important. I was a privileged character. ,

MC: Well, that's it's like you say, it's rare that that particular individual has that kind of wide ranging knowledge to be able to move between those two forms of activity, between the actual laboratory or scientific work that's going on and the actual operation of the vessel, just to move the boat. The, um…well, that's an interesting issue which I'm very curious if I can for a second here take it little of the side and that's the issue of what's it like managing, I mean, these are two issues actually but what's it like managing both a scientific enterprise on a boat, like you say the ongoing sort of trawls and the survey work and the measuring of the fish and so forth and also the issue of just the mechanical operation of the boat. You know, it has to move from point A to Point B. I'm, personally, I'm fascinated by research labs on land and on and by the water and even on the water. Is that, can you talk a little bit about that particular sort of occupational arena of what it's like?

JS: Yes, I can. You know, I originally had that in my notes and then I figured uh, he might not want to hear this. Okay, yeah, great. Yes, I would like to pursue that. I did not, just to clarify, I went just as a deck scientist on trawl survey to collect plankton and I, of course, worked at a workstation on working on the fish catch. I was chief scientist and/or a watch chief on plankton cruises for our department and sometimes for another. We had more than one plankton department in the Northeast Fisheries Science Center. That involves Sandy Hook, Milford, Narragansett Rhode Island, and Woods Hole.

MC: Right. You're collecting plankton data for all those facilities.

JS: Well, that or those facilities had a sub plankton department. They, instead of doing broad scale type studies, they would doing, let's say they work…well, they were concentrating their efforts on a particular taxa of fish in a particular area in a more detailed manner. They would not only on larval fish, they would not only be trying to determine their range of spawning in this area but their condition like are they getting enough to eat. You could determine that on larval fish. Daily growth because the otolith which I had mentioned previously on adult fish for annual rings, on larval you're getting daily growth rings. So you could tell the condition of the larval fish to the size of the larval fish to its' size versus age of the larval fish.

MC: Wow, yes.

JS: So sometimes I'd sail with those groups because they needed a person to help out on the cruise so I would go with them. To get back to answer your question. What was it like to be a chief scientist is that what you're trying to--

MC: Well, yeah I mean what's it like, the kind of challenges, the demands of being, you know, working at sea and doing that type of work that you were involved in.

JS: Okay. All right, fine. My experience and the way I tried to handle chief scientist and I had to say to this to somebody on the bridge of a ship one time that made some comment saying you've arrived now, meaning it was - it was just he and I on the bridge, there was nobody else. And we were working a station. I had a marine radio call and I had to go up on a bridge and after that he turned to me and he said "well, you've arrived and you could take it easy" and I turned and in all seriousness and I said "well, what do you mean." And he says "well, you know your chief scientists. You can kind of lay back" and I said "no, no, no." I said "you know what? It's one thing to get there, sir. It's another thing to stay there." I mean I'm trying to treat every cruise like it was the first time I went out as a chief scientist not delegate responsibility that's mine to other people, etcetera, you know?

MC: Yeah, yeah.

JS: I know I'm trying to first and foremost do the programs requirement at sea. I'm trying to watch my personnel, my personnel and scientific personnel. I have to keep in tune to what the crew is feeling, you know. If we were running into bad weather, this is with fishery ships not so much of the ships that I was on but I could sometimes pull this one off on fishery ships. If ship has a mechanical problem or weather or for whatever reason we lost time and I wanted to you know get more time for survey, I'd call in and ask is the ship free of the designated time? Can I get more time? Well, some of the time they would say yes. That didn't fly too good with science and the crew, trust me. Like, you know, I might be going to be keeping the ship out that weekend, we are not getting in until the next week and they've got a one day turnaround now for another cruise but you know but they understood where I was coming from.

And as far as the navigation and everything goes, my training, for instance, early on navigation plus a dead reckoning position maintained on a chart on a cruise track, we used LORAN. Are you familiar with LORAN?

MC: Yes, I am.

JS: Yes? Ah, good. Well, then you understand the unit. Well, the early units, you had to superimpose the sine waves on the screen you had the master in wave. If you had interference you, you know, your accuracy for navigation was not great. And we'd be coming up to a station and saying atmosphere, we're getting a lot of skyways was the term on this thing. This is about the best I could do to get you to this station. Well, I would totally understand what he's talking about. So I would make an entry on my log sheets to that effect.

MC: Right, right. I understand

JS: You know, I would, a station plot like instead of walking on a ship with a list of coordinates about let's go, let's go there. I would hand them a set of actual navigation charts

which the stations - well, other survey units did this too with the stations plotted on there. One of the good points about working with that, they gave you a station you plotted it. This is right over a submerged wreck. We can't fish here so you would have to, you know, okay, we're going to move the station, guys. This isn't the place to fish. Or you have such a depth change from shallow to deep or deep to shallow like, you know this is going to be tricky area to deploy gear because during the process of a let's say, a plankton tow, if you're in deep water and you have to tow in the direction which it's getting away with shallower, you're going to slam that thing into the bottom, you follow me? So, you know, with that understanding that, all understanding came into play.

MC: Right. I can imagine where again, if you know the demands of operating a ship in various conditions whether they are in the ocean bottom or whether the storm conditions, that's going to go a long way in terms of coping with the science that you're trying to do because a lot of people don't know that. They know one but they don't know the other and so it's, in a sense, you can balance the variables a bit better than somebody who only has an understanding of one of the areas. That makes sense.

JS: You know, so something else like you develop a sea sense for bad weather. Like, for instance, during - I'm jumping way ahead now - for GLOBEC, we would, it was winter trips and we had a lot of gear, sensitive gear on deck or lashed to the rail where it had to be used and we're working in stormy weather. You know, where it's pretty rough and you're got to go from, you have to transit in a direction from one station to another and let's say the wind is blowing northeast. Well, our course would put where all that gear is deployed on the opposite side of the boat where we, of the boat, where we have to go. So I'd say well, just run her at three quarter. Let's try her at three quarters speed and see how she would. You don't want that gear damaged by waves coming on the boat. If we were going the other direction, where the wind and seas were on the other side where all the gear was, we would either, what we generally do is we'd have to unlash all that gear, take the time, would move it in the middle of the ship. Lash it down and then go to the next station. So, you know, to avoid that I knew that the weather would be on the opposite side of the ship so we didn't have to take the time to take it apart and put it back together again.

MC: Yes, yes. Your description of that scenario makes me think of, was it all - this is going to seem like an obvious question but was it often difficult managing crew? I mean, I'm sure that not all crew took or scientists took to sea that - I shouldn't say crew. I mean maybe your scientific staff or people. I mean going to sea maybe wasn't for everyone and did every, were there certain challenges you had to face? I mean, you alluded to the issue of we're going to stay out a little longer here to finish up our work and people may have not wanted to do that. Were there particular basic human endurance issues that were involved in this?

JS: Absolutely. And you know some people tried it. You know, they found out that they couldn't take the time at sea and the watch system and the rest of it. You're out there bouncing around in the wintertime, a ship trying to go in six directions at once, that's 24 hours a day with you trying to eat, sleep or work. The decks are awash particularly on Albatross or *Delaware.* In the old days, we were working on deck and working up fish catches on deck during trawl cruises. Yes, I had a, uh, yes that occurred. I would have to throughout my career, my people = well, the crew was trained. But are my people on deck, do they have enough experience to work in this kind of weather. I'm taking a chance, you follow me?

MC: I do, oh yeah.

JS: There were people like one particular instance, a person, it was October or something like that and they will bundle up on deck like it was February. [laughs] I'm going what are you going to do out here when it is January or February with ice all over the ship and it's really cold. Well, we got in and they realized this wasn't for them so they went someplace else. Yes, people were a little ticked off I'm keeping the ship out. Well, I got a flight and you're going to have to call in and change that flight. I'm keeping the ship out. That's it. The crew, hey, I wasn't popular but, in essence, down deep, I think most of them knew where I was going with this, you know.

MC: Right, right. No, that's…

JS: That's a hard call but that's what I'm there for, man. You know? A popularity contest come after trying to get this prize. It's not that I'm a company, it's a balancing act and it's a tough thing to do and like I said a couple of minutes ago, I try to treat every cruise like it was my first cruise. That's hard. The captain, too, is in that same position. He's got a crew, he's trying to maintain the boat work them, the weather is really rough. We're on the edge of working and not working

MC: Right.

JS: It's a dangerous occupation and accidents occur at the dock not only us but Woods Hole, well, other institutions. I mean shipboard is dangerous period. Yes, yes I was taking a chance. I'm not the only chief scientist that was taking a chance. You have to know when to say stop. That's the other thing, you have to know when to say we have to stop, shut the ship down until it get better. I know I'm on the top, you know, it's going through my mind, I know my time constraint, there's a cruise right after this. I'm not going to get extra time. It's just going to be take a loss and that's it, kid.

MC: Right. Was it difficult sometimes negotiating the relationships between the ship's crew that ran the vessel and your scientific crew?

JS: No, no. They all understood what was going on. It was not only the plankton department in a group or the groundfish which was called survey department. It was other, um, other departments and people, some of the crew would come and some of the crew would go over time but some of the crew didn't work out and, of course, they were either asked to leave or they decided to leave, same thing with science. You know human nature is human nature. You are going to run into all kind of people which is I think what you're alluding to.

MC: I'm thinking, I was thinking more in terms of folks who aren't scientists, they're basically there to run the boat. And you folks, they have their job to do and you have your job to do and I didn't, I was also wondering if there was sort of how things sort of reconcile between those two, that division of labor.

JS: I don't think really, I never, in all honesty, I cannot remember a situation where there was a real problem with that. I mean that's not only on our fisheries ships but on any of the research ships I sailed on.

MC: Right, right.

JS: You know they understood what was going on. I guess it was made clear to them before they signed on what was, what was expected of them and how this all worked.

MC: Right, absolutely. So well, go ahead. I mean this is kind of. I mean a lot of this, the big context, one of the things I'm fascinated and we've kind of already alluded to this is that it sounds like in your career you were consistently, you were consistently employed in this capacity of doing survey work whether it's plankton or whether it's ground fish is that correct. You were, you had, so you really had a consistency in a particular area of fishery science and management that's pretty remarkable to spend that much time doing that type of work. I mean I'm not going to make a legendary here but it sounds like you really had a lot of experience doing that particular type of work, it sounds like.

JS: Yes I would, I could safely say I have, that's because I did spend a lot of time at sea.

MC: Did you, in terms of the Northeast region, did you, did anyone have your amount of experience on board vessels doing this type of work?

JS: No, there were other people in survey unit, for instance, right now, the plankton unit at Narragansett that had about, I was prior….There were several of us that had a lot of sea time. I think at the time I retired from plankton, I definitely had the most. I think there's a person now I could safely say and might probably superseded me but you get a core group that are the seagoing type and the core group that rather work at the lab, which is fine, you need that mix.

MC: Right.

JS: You know when I first, just I should bring this out on the on this discussion. When I first went to sea, going to sea was men only, okay. Gradually both plankton and survey unit, at least, incorporated women going to sea, just rank and file scientists on board the ship, right.

MC: Yeah, right.

JS: Finally women who were becoming watch chief. I was, I was fortunate, I could say this. I was fortunate to be on *Albatross* on a groundfish survey with Northeast Fisheries Science Center, to the best of my knowledge this is what we all understood at the time, the first woman chief scientist for the Northeast Fisheries Science Center was from survey unit on a cruise. She was one of the best chief scientists that I ever had the pleasure throughout my career to work under, too. She retired now.

MC: Oh wow.

JS: It was good to see that transition.

MC: Right.

JS: And during GLOBEC, we had, I'm trying to think, particularly on we, GLOBEC we used Fisheries ships and we used Woods Hole Oceanographic ship and a sister ship to her that

belonged to University of Rhode Island. So there was like three ships involved that we would use within this program for what we did for.

MC: You keep using that phrase. Is it glow back?

JS: I will explain that. It is, it was GLOBEC, Georges Bank program. I will get into the acronym and explain that later on but is that okay?

MC: Sure.

JS: Or do you want it now?

MC: Well, just to the degree that it would kind of kind of sketch out the context because when you mentioned it a few times and I, uh…

JS: Okay, GLOBEC means - I'm looking at my notes here, hang on a second. [to himself] …that was when I was on the research community. Oh, GLOBEC means Georges Bank program was Global Ocean Ecosystem Dynamics Program 1995 to 1991 a detailed explanation of that could be found, I'm not trying to pawn this off but on the internet, but basically what it was, it was a study of zooplankton and, of course, cod and haddock and their distribution and was global warming being a real effect on, because cod and haddock stocks at that time, and still are, pretty low.[3] And it was like, uh, there was two parts to that. It was called broad scale study which was like a general plankton, like a general survey of the entire Georges Bank are which incorporated a lot of different instrumentation and what we did and then you had what was called process cruises that went out to a particular area and sampled that intensely for what was going on there

MC: Right. Yes, yes.

JS: Well, during broad scale on fishery ships, we had a crew so we didn't have to take as many scientists. But on the boats meaning Woods Hole, um, the *Oceanus* from Woods Hole and the *Endeavor* from University of Rhode Island. They were in the ships. They gave you winch operating, you handle your own gear on deck so we had more scientific personnel on deck. That was a five year program. It was mostly winter trips for the most part, once a month January through June so it went from winter to spring to June, I guess, you'd call early summer. But there was about two years there when most of the scientists on deck were women. That was great. You know, we had female boat drivers on the bridge. They were female engineers down in the engine room. So that was something I went from an all male job, you know, situation to now a mixed gender. And the and the women on board were real, I mean they were really good. It's not like they couldn't do the work that a man could. They were also, on GLOBEC, they were physically fit. They trained at gym. They always did, you know… etcetera, etcetera. It was a great team but, you know, but that transition, that difference was still going on, of course. And, of course, you know that too. Women in the military for instance.

MC: Sure, sure. Now I know it's so but as it has been your case as you describe you, you actually witnessed that transition.

[3] Narrator Correction: The dates for GLOBEC were 1995-1999.

JS: Yes, I did and I was fortunate to be on a ship for the first woman chief scientist in the Northeast Fisheries.

MC: And who was that Chief Scientist?

JS: Linda Despres, Survey Unit. She's retired.

MC: Linda Despres?

JS: Yeah, she's retired. She's retired on Cape Cod.

MC: You were based out of Sandy, Sandy Hook, New Jersey. Was that your main base?

JS: Yes, I worked at Sandy Hook and then after, and then I sailed out of…*Albatross IV* was in Woods Hole so I had to run that commute. The *Delaware II* was stationed - well, I'll get to this when I repeat it later just humor me. The *Delaware II* was stationed, it was our ship for a number of years but then the dock was in decline. We were at the Coast Guard facility and that portion of the dock had to be rebuilt. They didn't have the money to do that. So the *Delaware II* was transferred up to Woods Hole and that's where she remained for the remainder of her career until she was - both *Albatross* and *Delaware II* were sold out of service because of age.

MC: Oh, I see. While you're on that issue, was there a vessel that you preferred over the other?

JS: No they each had their - no, no. We adapted. No, I thought, the only thing I could say is *Delaware II* was a little closer to me for several reasons. She was on a ship at Sandy Hook and, you know, that little experience with the fire and the rest of it. But I think I spent more time on the *Delaware II* than I did *Albatross.* They were both good. *Albatross* kind of tended to roll more. I always felt the *Delaware II* was a better sea boat. She was, you had more room on *Albatross,* you had less room on *Delaware*. During MARMAP, we solved the problem. We had portable vans constructed and they were placed on board, back of the ship. They were used for the hydrographic crew for water sampling and the other one, it was heated for storage of supplies and also working up, uh, they were doing primary productivity with C14 [carbon-14] they were using, they would never get to use that today without special training to use C14. I mean that's a radioactive isotope but that was legal in the '70s, to use that. So he would work in that other labs that was both used for storage and he, to process his samples, he needed that space and that area to be able to do his work. On *Albatross*, we didn't take the vans. We had enough lab space where one of the laboratories could be, would be dedicated to his work and then chlorophyll and whomever. We could, there was more room on *Albatross. Albatross* could take more scientists, she could take up to 14. *Delaware* could take 12. *Delaware* was 155'.*Albatross* was 187'.

MC: Wow.

JS: You know, you'd be standing at the dock as a newcomer look at *Albatross,* a beautiful ship you would have, you could check her on the Internet. You would look at here. She was like a deep sea salvage tug, high up forward on the deck and then the deck could drop right

down to the stern trawl deck. The housing on mid-ship. You stand on and look at the height of that bow and I told you, yeah, well, you're all show. In the wintertime, she blew her nose right under the solid water. You would find it hard to believe. You would probably get the daylights scared out of you.

MC: Right, right. Yeah, yeah that's interesting. The histories of these research vessels in and of themselves are fascinating.

JS: To get back to *Albatross,* when I said she was the first stern trawler built in the U.S., she was the first stern trawler built in the U.S. either commercial or private. She was totally new and advanced. They took a big chance on this. I was talking to people at the port office later on and in a sense, this was all breaking ground to have a stern trawler, to be able to, the whole process of being able to set up, deploy, and retrieve trawl gear on a stern trawler safely.

MC: Yes, yes. You know it. This is a little bit of an aside but sort of, I'm kind of dying to ask the question though. As you know a couple of years ago, there was this controversy over the use of the - this obviously is, I think, after you retired - that there were these faulty trawl surveys that were supposedly done, is that true in New England? By NOAA and a federal judge had to intervene because somehow this, am I correct in this or is this…

JS: I'm giving a totally honest answer, I am not [just] saying this…I am not aware of this.

MC: No, okay. There was a couple of years ago, there was some type of controversy at least this is what I understood and it had to do with the commercial fishing community accusing the folks at National Marine Fisheries Service of not, not using - it wasn't that they- well, they weren't using the trawl equipment correctly so they were getting faulty…the word was they were getting faulty data because and that's what it came down but since that's something you're not familiar with we won't, we don't need…

JS: And I don't want to…and to be honest with you I don't want to speculate. Even if this wasn't true, I don't want to be because I don't know what's behind it and whether how true this was, how you know or whether it was just you know somebody's throwing a dart again at Fisheries.

MC: Right, right. So I'm kind of curious in your work. You're doing this work, you are at sea a lot, you're doing these surveys to provide data. And, again, I'm a little confused because you mention these each of these labs in the Northeast region. You had your different plankton groups or whatever. Did you have, did you, were you servicing all of those groups or was your principal responsibility for the group at Sandy Hook?

JS: No there was a, um, see when we developed them - that's my next paragraph - when we developed the MARMAP program, when the MARMAP program was developed in the early in the 1970s, it started in 1977 - I just gave you my opening sentence - There were personnel at Rhode Island that were part of this and personnel at Woods Hole that were also part of this. I mean we had to, our ships now were in Woods Hole, for the most part were in Woods Hole. So we had to have people there to set up, to help set up. Prior to a cruise, for breakdown of a cruise to make sure that the order, I would order supplies. They would have to be delivered to Woods Hole and there were people that lived in Narragansett, worked at the Narragansett lab

that also were part of this group but that's where they live so they were part of us under the umbrella. So this program had people at Sandy Hook, Narragansett, and Woods Hole. Does that make sense?

MC: Yes, yes, it does.

JS: All under the same department head. There was also, in addition, like I said another plankton group in Woods Hole but they were to use the term, a special plankton study group. They did, they didn't do broad scale surveys as such. They wanted more fine detail studies. Also incorporated some people from Narragansett actually.

MC: Right. So I'm kind of curious in terms of how all this works together. You're in this information gathering capacity whether it was plankton or whether it was groundfish. Did you, did any of this ever get you involved in actual policy or management related issues?

JS: No, you know, that went higher up in fisheries and that's like, no, we did the survey, analyzed the data, Department heads would present the data to higher ups in Fisheries. They would in turn be involved with the fish councils for policy making. So I was kind of at the, you could say that I was at the bottom of the ladder or the bottom of the pyramid.

MC: Right. So they never drew you into that at all. You didn't get entangled in…

JS: No, no. I was never into policy actual policy decision making or suggestions. I was data collecting then it went right on to the next level then to the next level and then the fish councils and fish commissions and policy making.

MC: I know one of the big issues that we're kind of exploring is what the impact was of the Magnuson Act on the work of various people who work in the science centers.

JS: Can we hold off on that one? That's on a page coming up. [laughs]

MC: Yeah, okay

JS: Just hold it. If I don't address it, come back to me on that.

MC: Okay. All right.

JS: But to continue(next paragraph) the MARMAP program which is an acronym for Marine Monitoring, Assessment and Prediction program was started in 1977 and went to 1987. This was a very large multi-disciplinary program which included plankton collections with the new 61 centimeter twin bongo plankton net, hydrography water samples for chlorophyll analysis, nutrient analysis, salinity, dissolved oxygen, other special type of sampling that was done. The survey area was from Cape Hatteras north through Georges Bank, Gulf of Maine into Scotian shelf waters. A cruise would, not consistently, but a cruise would take about a month of sea time. You might be out for 19 days, in for a week, and then out for 12 days or you have three 12 day legs. When we got into foreign ships like the Russian ships, I could, we could spend 30 days at sea at one clip, the whole thing. Don't forget those ships were big. They were, they had 90 or[so] Soviet personnel on there, that include the scientific complement, the Russian scientific complement, with a core group of Americans on there.

They were large stern trawlers and they were here for maybe three months or so, three or four months. So once, when you started a survey, you just stayed at sea and completed the survey or ran out of time and then came back in.

MC: Now, the name of the program again? Can you repeat that?

JS: Yes, I will. The MARMAP. It's an acronym for Marine Resources Monitoring, Assessment and Prediction program.

MC: Okay. And this program entailed U.S. personnel going on and working on board Russian or Soviet vessels.

JS: Yes, it was. Well, both we used the *Delaware, Albatross* and I will answer that in a moment that, too, will be answered in a moment. So if I may, I'd just like to proceed and you'll get your answer real quick. On March 1, 1977, the 200 mile fishery conservation zone, the Magnusson Act, went into effect. Because of this new 200 mile fish zone, foreign countries had to, they now had to apply for a license to catch fish species that were not exploited by U.S. vessels. An example of this would be Atlantic herring. A license to fish also requires that the country participate in joint fishery research along our coast. As a result during the MARMAP program, we used in addition to our ships, research chips from foreign nations. These were mostly, at the time, Soviet Union ships but they also included for us meaning there was other countries from other groups. But for us, for MARMAP, was Polish, East German. I sailed only on Soviet ships mostly as an American chief scientist. I learned that those of us that sailed on Soviet ships had to be cleared to do so by the FBI. I heard this from the port captain that was the scientific Port Captain at the time. From the FBI, CIA, Department of State, he had to submit our names to the Soviet Embassy in Washington. KGB has a file on us. This is during the Cold War. Think about it, you know, we were given missiles - well, there was the Cold War. I'll stop there.

MC: So that's, that's, no, go ahead. That's fascinating.

JS: Just as one aside. Russian ship, the people. I'm telling people are people across the board, across the world. They're all the same, just the political situation is different. But I'll tell you, we were picked out of one society, the Americans, and dropped into another. We weren't there was a tourist or businessman where you had your meeting and you went to a hotel that was all for Americans or something. We picked out of one culture, dropped in another one. We became in essence a Soviet at that time period on board ship, think about it.

MC: Oh, really.

JS: You know, what you don't realize - well, not you - but one does not realize the amount of freedom this country has, had and has. So it was taken for granted.

MC: And in what respect? Was that this is what you were experiencing on the vessel?

JS: Yes, because of their training, they had the com-, the political representative on there and they were really kept on a tight ring as far as their political beliefs. You know they were told what to do. There was this, they were discouraged from independent action or thought to some extent. Does that make sense?

MC: Oh yeah yeah you're talking about your--

JS: Ok, fishies. I'm going to say something but I don't think this is derogatory, it's just the way it was. If you were a bystander on a Soviet ship and the Soviets were working on deck and there was an American there working, too, and something went wrong, you, you or anybody as a bystander would pick out the American in a moment. Do you know why? Because the Soviets would stop. The American would take initiative. Let's try this or let's try that and tell them what to do. So I hope it's changing now, okay, now that they are longer under the communist umbrella. Because a lot of those people, there was one, I'm not going to mention names of what he did, but he was the most un-Soviet Soviet that I ever had the pleasure to meet. I'm telling you if he's alive today, he's running his own business. He's got a personal jet [laughs] he was so less than, I mean, it was it was a pleasure to meet him and you know. So it's there. It was just a matter of cutting those people loose.

MC: That's like you say. That cultural and political sort of differences that you were in contact with your work is fascinating. So did that make your work difficult when you were on board those vessels or was it…?

JS: No, actually it didn't. We all knew what to do. I don't, personally - okay, Fisheries, this is just a personal observation. I don't feel that they had the technology in their instrumentation that we had at that time period.

MC: Oh I see

JS: Yeah, probably the effort was all towards their military. I can understand to an extent that but I'll give you one small example. You know, calculators, no calculators and they had electronic, a large desk top type adding machine, you know, a machine to do arithmetic.

MC: Right.

JS: We walk on with a Hewlett Packard handheld little unit that was like a mini computer.

MC: Sure.

JS: It just blew them away, I mean, it's like wow, you know.

MC: Right, no. Exactly. I can imagine and that was that in the was that in the late '70s, early '80s or?

JS: Yes, it was in that ten year time period that we did this the MARMAP program as it was utilized those ships.

MC: Now there was never any conflict, was there the Soviets?

JS: No, we were never asked by and, you know, we're talking 90 Soviets on a ship, 80 or 90, mixed gender, mostly male but, you know, we had some female scientists. A lot of them were within the crew, like cleaning. There was one crew, I'll give you an example, there was this one cruise where there was this youngest woman who was maintenance like sweeping and

mopping the deck and maintaining cleanliness in staterooms and that sort of thing. She was a professional pharmacist. But you know, she wanted to see America and this was the only way that she could do that.

MC: Oh, I see.

JS: So there was that going on, too, within the scientific community, too. But we were never asked for political science. You know, we were advised what to do for this before we sailed, but it never occurred and somehow that got into a conversation on board ship with some of the scientists and they said, you know, everybody on the ship, Soviet, has a lot of family back in the old country. They are handpicked. Did that just answer your question, Michael?

MC: Yeah, yeah, interesting. Yeah. Well, yeah. Well, go ahead. That's great. So you're--

JS: But it was great working with them and if the wasn't for them, MARMAP program wouldn't have been what it turned out to be.

MC: Yeah, right.

JS: Yes, there was problems. We had very sophisticated electronic instrumentation for testing like a chlorophyll analysis, etcetera, and their electrical system on the boat left a lot to be desired. We had step down transformers and that was the difficulty, was trying to maintain our gear with their electrical system but it's just the way it was, I mean, we got past it for the most part but that was a difference. You know, it was what it was.

MC: Yes, I understand.

JS: But they were very helpful and it was easy to work with them and that's the best I can say about it.

MC: Sure, sure.

JS: But it was interesting because like I said you really got taken out of one culture and you so whatever they experienced, you experienced. You know, it's not like, oh I can go back to the hotel and that it's it. [dog barking] here my dog is, my cat was bugging me to the point where I had to go into a closed room and yeah, special effects in the background.

MC: I don't know why he's barking but hopefully he'll stop…

JS: I'm not sure where I left off. Oh yes, I do. Can I, is it okay to continue now?

MC: You go, go ahead. Hold on just a second. Hold, hold on a second. I'm going to try to do the pause. I am going to hit the pause and I'll be right back.

JS: Yes, go right ahead.

[recording started]

MC: Okay, John.

JS: Yes

MC: Yes, okay, I'm back.

JS: Yes, okay. We stopped on, we had to be cleared to go on Soviet ships that's basically where I stopped on my notes.

MC: Right. I can understand. So, so go ahead, continue. So you were doing the program. And that did that take you through the 1980s.

JS: Yes. Yes, to reiterate, it went from 1977 to 1987.

MC: Oh, okay, okay. And so and at that time, you were doing that work with the with the Soviets but you were also doing a lot of this the work that you had previously done as well. Right. It was…

JS: Yes, I was still going on groundfish cruises. I was still doing MARMAP cruises on our own ships and so I was a busy little scientist.

MC: And that MARMAP program was principally designed to be able to collect data through the fishing effort of those other countries, correct?

JS: Yes, they supplied the platform but it was the same kind of work, you know, everything plankton, nutrient, hydrographic, chlorophyll, primary productivity. You know, it was just a different platform.

MC: Right. I had understand. So after '87, you did it --

JS: Well, I'll get to that.

MC: Go ahead.

JS: All right. All right. I'm back to my notes. Plankton samples were now sent to Poland for, to a sorting laboratories at both Gdynia and Szczecin, and they also took over larval fish identification. Fish eggs were also sorted but now sent to Sandy Hook for identification, staging and other analysis. Poland did the sorting as a repayment for their World War II loans from the United States. As far as I understood, they're the only country that did try to pay back their World War II loan.

MC: So data that you collected was being processed by the Poles.

JS: Yes, they had these sorting centers to pick plankton and to work up not only zooplankton but also ichthyoplankton, the fish eggs -no, the fish larvae, they would be sorted and they would be identified, measured just as we were doing back at back in the U.S. Now it was being done foreign. We at Sandy Hook got into fish eggs, another coworker, actually he was the principal, I was his assistant. And so they would sort the fish eggs and they would come back to our lab at Sandy Hook and they would be worked up meaning identified and, you know, the stages of development. That was all groundbreaking work on a lot of this.

MC: Where the Poles processing the data from the MARMAP program or were they doing--

JS: Yes.

MC:--and but were they also doing other work that you were doing? So it was across the board?

JS: No, it was not only plankton work from us, it was plankton work. It was not groundfish work, was just plankton work. It was not only plankton work from Northeast Fisheries Science Center but throughout, it turned out in time, all the science centers in the United States, East Coast, West Coast.

MC: Oh, okay.

JS: So hence the two sorting centers.

MC: Right. I see.

JS: It was a, you know, it was a big undertaking. Some of their people would have to come to the U.S. for training either at our lab or at Narragansett for larval fish identification and what, we learned our techniques for doing that and how we handled this, that was part of the process. It was really neat to have the interaction. You know, they were still under the Soviet regime.

MC: Right. Yes.

JS: You know, so it was a neat experience.

MC: Sure. So at this point, what sort of, you know, um, this is where, you're still logging a lot of hours again and you are sort of standing as this person who spent so much time. Did that continue, the, uh, you're at-sea work?

JS: No, it was 100 days a year until the almost the end. I think the last couple years I dropped down to about 56 - 60 days, we are talking off-shore, I'm not talking about the in-shore boat at Sandy Hook. I'll get to that, too. [laughs] But this was, you know, you climb on the boat and you're on there for 12 days are better.

MC: Right, right.

JS: So it didn't change throughout my career.

MC: All right. So I guess now you're moving on this, these are still activities in the 1980s you want to talk about?

JS: Yeah, during the MARPMAP program from the what I say 1976 to 1987. So to continue this, at this time during the MARMAP program which I just gave the dates, I switch from working from, with fish larvae to fish eggs, as I just stated a moment ago. At the same point in the '80s, the *R/V Delaware* was transferred to Woods Hole fisheries I think I said that

earlier too. Now, I got to get into a topic that hurts. I'm sorry but it's painful and you'll understand in a moment. I don't know if you've heard about this or not. The Sandy Hook Marine Laboratory fire the 21st September 1985.

MC: Yes.
JS: This occurred, by an arsonist, on a Friday night/early Saturday morning. The laboratory burned to the ground period. The arsonist, later apprehended, also started other fires on Sandy Hook. I was at sea on *Delaware* as chief scientist for a plankton cruise. I was the only one from the Sandy Hook lab on board. Others were from the Narragansett, Rhode Island lab and the Woods Hole lab. I think I kind of explained since we had plankton personnel in both of those facilities. We returned to Woods Hole that Sunday so the lab burned down that Friday night/ Saturday morning, we came into port, I think I asked for cruise extension, too. We came in that Sunday.

Upon being told that the fire and the loss of the lab, I mean I was absolutely devastated. The loss was a lot of data. You're talking about records, samples, reference material, ongoing research experiments, lost. Understand the Sandy Hook Marine Lab was way more than just a job or career. It was who we were, what we were, it was also like a large family. We had about 80 people, including maintenance, at that time, could have been a little bit less, at that time in the facilities. We occupied not only the main building which was burned down but we also occupied part of another facility building nearby on Sandy Hook.

The fire was in the main building, my building. Talk was to move us to fish lab to the fisheries laboratory at Narragansett, Rhode Island or to build a facility at Lewes, Delaware near the University of Delaware. There was a lot of options, those seem to be the two of the principal ongoing ones. However, as it turns out, they kept us at Sandy Hook and they build another building, a new building. It was really kind of like…that's where fish tanks for experiments were and chemistry was and we also occupied another building across the street from the new building which we kind of took over and got refurbished. That's where I worked in. I could do my microscope [there].

We in the plankton department, the few people who hadn't retired. It was starting to gear down a little bit because of retirement and they weren't backfilling at that time. That's where we would do our microscope work. There was one person there department that was still working on fish larvae. But it was mostly on fish eggs and then, of course, it was the computer age, so we were entering data now on computers so a lot of people working on computers. When I started working there in the '60s, the big status symbol was a high end computer…high end microscope and that kind of went down and computers came into being the hot item. I always maintained a microscope to work with until the very end. So did my, so did the other couple coworkers that at that time were still working with microscopes up until that up until their retirement and they were still, we were still using microscope. But it wasn't to the extent that we had groups of people working with scopes in the '60s and the '70s.

MC: Right, right. Yes so this, so as you describe, there were some you know consideration of moving the lab to Lewes, Delaware and these other locations. So this was, as you've described, it was a big setback in for their work at Sandy Hook, I assume.

JS: Oh, tremendous. I'll give you one, just one example, one example. Ten years of MARMAP sampling, the nutrient data was recorded on paper logs. The next week they were

supposed to be entered into a computer dataset which was to be sent to Woods Hole. They didn't make it, they were lost. All our reference material in the plankton department, gone. Dolphin log sheets, MARMAP log sheets gone. I wouldn't wish that on anybody. I know, on-going fires right now in California. You know, people losing homes, there are a whole communities being, I can't imagine because what I lived through, I wouldn't want to wish on anybody.
MC: Yeah you know that's, uh…

JS: You know, I wasn't going to say this but I'll tell you straight up. When I was driving home after that on that Sunday, I got to stop at, I was at on the New York line from Connecticut and I had to pay a toll and the guy said "what's the matter" and I wouldn't answer him. He says "well, you don't look good, you ought to pull over" That's the way I was coming across.

MC: Yeah, yeah. No, I can understand.

JS: I couldn't imagine having to go back and face that and I had to. We all had to. We had to rummage through that rubble to find what we could, to salvage what we could.

MC: Right. Oh yeah, you know, I mean I can think of the stuff that I've cumulated which is just my work and I thought geez, if something, I mean, you say you can't go back and do it over. I mean…

JS: No, once it's gone, it's gone. I mean that whole time series is gone and you don't have a time machine to go back and get the that.

MC: No, absolutely. If it's something you can talk about, what was the nature, like why, this was an arsonist that did this.

JS: Is a very delicate area, I don't know how far it I can go with this.

MC: Yeah, yeah. That's all right.

JS: I'll go as far as I can. They had a investigators there, of course. I came in and they said, "Where were you" and I told them [laughs] and it's like, "Well, it couldn't have been you" and of course, it was none, what it was, it was an outside per-, it happened to be a park personnel person.

MC: Oh really.

JS: This is what this is I'm trying to tell you, I'm pretty sure this is in the newspaper. I don't want to start something since this is going to be recorded. Anyway, he was apprehended.

MC: Right. So they did find the person who did it?

JS: Oh yes, yes, they did. And I'd like to stop there and not continue this because I don't know how much I can say and how much I can't say.

MC: But it wasn't a scientist who did it or…

JS: No, it wasn't. It was an outsider. He started other fires at Sandy Hook. That's how they caught this particular person.

MC: Oh, I see. Sure.

JS: That's, you know, the person who had a psychological issue, I guess.

MC: Sure, absolutely, absolutely.

JS: They knew, the people that investigated that fire, knew exactly what room, it went through the window. It was my coworker's office on the ground floor and what was used. At that time period, I was really impressed that they knew that, they could figure that out.

MC: Yeah, no. I'm not that familiar with that except from the movies and where they have fired investigators do these sorts of…

JS: Sandy Hook was across from Sandy Hook Bay, that main building. There was a, there was the main there and it was known as Officer's Road because Sandy Hook was used to be the military base.

MC: Right, Fort Hancock, right?

JS: Yes. Well, we were the hospital at Fort Hancock and then you had Officers Road that went north of us along that road and if you were on that side of the facility, you would be across the road and the Bay is right there. Well, because there was a strong wind that night of the fire and it was a low tide because of the lunar effect, the fire engines that came in on the call on this, they didn't have water to do this. They just didn't have enough water to control it. So it just, this thing and the wind just fanned the fire.

MC: Yeah. Now you're kind of isolated out there and I know, I've been out there.

JS: There is a fire department out there but you know they had a call the one in from adjacent townships.

MC: Right. No, exactly.

JS: That's like the fire with *Delaware II.* That was not just south Portland fire department. They called in Portland and I don't know, a few others. Do you know how hot that fire was on the *Delaware II.* I am not, because I myself and my coworker, we saw this to the end, we never made it into town that night. Before that, when that roof went, like I explained, that got to be so hot that the fire hoses started to smoke, guys were really backing off. One of the fire engine tank started to blister when they were backing her out. That's how intense that heat was so I can imagine Sandy Hook.

MC: Right. Correct.

JS: I mean granted there wasn't acetylene tanks but, you know, there were chemicals, there was alcohol samples, for instance. The library had a lot of, you know, all reference material

on paper. The building was a lot of wood on the inside. She was built, I don't know, I'm guessing the late Victorian time period.

MC: Right. Now I know the, yeah, because I know, I know those buildings. I could see some of the, I mean, some of that has not been rebuilt either, it looks like.

JS: We had to maintain it.

MC: Yeah ,yeah. So did that event did that, how did, did that lead to any sort of impact on your work in terms of how things proceeded from there?

JS: No, it took a while to get back up to speed. You know, we were trying to salvage samples, reference material, re-enter data from chart paper as much as we could, you know. The edge of the paper might be burned or charred or discolored but the rest of it, you could get some data from it.

MC: Right.

JS: So that's where I'm going.

MC: How long did that effort to salvage information, did that go on for a while or was that?

JS: Yes, a long while. Depending, the library went on for quite a while to salvage that information. We were working in another facility across the street or nearby while they were building the new building. I was still going to sea. It was tough, very.

MC: Yes, sure.

JS: You know, every time you drive in, you drive out you see the remains of that, you're getting hit with a sledgehammer twice a day.

MC: Yeah, no. I understand that's, that's a, um. You know I can understand where that would that would be obviously…

JS: You know, we, everybody had, there was a lot of personal stuff in there, too. All my school reference books from South Maine Tech was in there mostly. Stuff from Rutgers was in there. That a lot of people had personal stuff like pictures but gone, gone.

MC: Sure, sure.

JS: Andwe really didn't get reimbursed for the loss of personal stuff.

MC: Correct.

JS: Some of it I could find on, books some of them you could, some of them we found on the used book market but notes and all that sort of stuff, gone. Just like a dwelling, just like a personal home.

MC: Oh, yes, yes. So when you moved on from there, how did things proceed?

JS: Well, maybe this'll answer your question. If not, jump back on me on it. After the MARMAP program in 1977 - correction, after the MARMAP program in 1987 was reduced, Sandy Hook plankton department was now involved in other plankton surveys, An example would be larval sand lance and larval Atlantic herring. For the sand lance or herring cruises. Now we're into GLOBEC, again GLOBEC being Georges Bank program. GLOBEC is an acronym for Global Ocean Ecosystem Dynamics. The program was 1995 to1999. It was multi disciplinary and not only involved fisheries, it was Woods Hole Oceanographic Institute., universities from the West Coast from Maine, Massachusetts, Connecticut to name a few. Rhode Island, of course, URI was involved and others. We also had some scientists come in from western Europe.

The GLOBEC/Georges Bank program was made up of two different principal cruises or programs. One was called a broad scale program and the second was the process program. I was involved with the broad scale program cruises. The study included the spawning distribution of cod, haddock, larvae and eggs. Also included the condition of larvae, the daily aging of these larvae of otolith, inner ear bones, analysis. Like I explained, the daily growth rings I don't have to get into that again. Diet was, diet that was also collected. Zooplankton was very big. Hydrographic data for temperature salinity was, a lot of it was done electronically. This was all done and now we're into a full blown electronic age. Where was I?

Oh, the larger pelagic organism. There was a department in California at the fisheries laboratory in La Jolla. A man there that was a proponent of this, large pelagic organism with a multiple closing, opening/closing. It was called the MOC10 sampler we used normally on stations was called the MOC one sampler was used. I think you said you know that it was for the general plankton collection on a station MOC is an acronym for multiple opening closing net. It was a rigid metal frame. Let's talk about the one meter and you just expanded to ten meter. Whereby you had, we had bars which were locked to attach to the bars was a net. So you had nine nets, you had all these nets locked to the top of the unit. And you had one net that was open so when you deployed the unit, it fished down with the open net from surface to the maximum depth that you wanted to tow to, again five meters off the bottom or to a maximum depth of 200 meters. And then as the net came up at a designated rate of speed. It wasn't very fast, I think 10 meters per minute or 20 meters per minute. Sorry guys but it escapes me, I'm having a senior moment. At various depth intervals through an impulse because this was electronic, a bar would drop which would close the net and open another net and then the flow meter would recycle so you would get the flow going through that net. Does this make sense to you?

MC: Umhmm.

JS: Oh good. So and for hydrographic work instead of doing a water bottle cast whereby we put on five literniskin bottles, are you familiar with those or heard of them?

MC: Niskin bottle?

JS: About a five liters water bottle, a PVC bottle. We use reversing thermometers which is, I think…that was rather elaborate. We had two survey tech-, we had two people that were retired from Woods Hole Oceanographic that served. One was a doctorate and one was just as

a scientist. They were retired but they wanted to keep their finger in and go to sea. So they were hired as survey techs and they did the water bottle casts per watch generally. So we had up to 14 bottles on the wire on which you dropped the messenger which would close a bottle at a depth interval and down the…etcetera. Well, now you had a result…rosette. Correction…whereby these bottles were placed, it was a circular metal apparatus where all these bottles where fixed in there. The whole rosette was deployed and then as it went down, you were monitoring depth on a computer screen. By pushing a button, you would activate it to close the water bottle at that depth to capture a water sample, you follow this?

So we are really going into the electronic, when we started with GLOBEC, we didn't have computers to operate the MOC10. It was a mechanical, electronic apparatus where you had to watch the numbers in the dials and you had to mechanically cycle a toggle switch to release and open and close the net. Shortly thereafter, this whole thing was computer driven with a mouse whereby you could click on the screen and cycle the whole unit. It was really pretty neat.

MC: Yes, yes.

JS: Anyway so to get back to this, the study included (reviews his notes). Yes, we also had a subsurface, they were pumping micro-zooplankton so we had a hose unit that we had a attach to a wire and submerge it to, I think, to a maximum of 90 meters and you would pump water on board ship through these fine mesh nets. You would also be passing through a flow meter monitoring system and it was for collection of micro-zooplankton and it was strictly centered around Georges Bank. Cruises were about I'd say 13 up to 16 days depending on the ship and the weather.

Oh yes, another instrument that we used, not all cruises, but the person in that ran the process - no, the person that ran the broad scale program part of GLOBEC was from, he was the head of biology department at Woods Hole Oceanographic. This instrument that he used was a prototype, it was called a BIOMAPER. What it was, it was a large, I'd say maybe four feet across, it was a combination, it was a weighted, say, a fiberglass fin that had all this instrumentation on it and it was towed subsurface, a couple, let's say, about a meter below the surface. The ship maximum speed was restricted to about, I think, seven and a half or eight knots and it was designed to record plankton layers below it as we would transiting, do you follow me.? That was called the BIOMAPER and that's Dr Peter Wiebe. Very good, Dr Peter Wiebe, I have to say this, good friend and he was a great scientist. And he was truly a wet deck scientist.

MC:A wetback?

JS: Wet deck scientist.

MC: Oh, wet deck.

JS: Yeah, a good wet deck meaning a good sea-going type. He was a pleasure to sail with and to sail under.

MC: Oh, sure. I like that phrase.

JS: And he, yes. It was a term that was applied to somebody whether it was Fisheries or WHOI [Woods Hole Oceanographic Institute] for that was good at what they did at sea, a good wet deck scientist.

MC: Yeah.

JS: I guess I wore that halo, too.

MC: Sure, I would imagine based on all your hours of, um, yeah. No, that's not, uh. But it's kind of interesting because you've really sketched out this you know this evolution or transformation of plankton acquiring apparatus that that over the course of your years that the changes that occurred in that equipment. So you really saw quite a shift, didn't you?

JS: Yes, we did. Yes You know, the MOC mesh unit, if I can just, I mean we spent a lot of time with this but this is going into it was like really interesting. It was more involved in a bongo plankton tow where you just try to maintain a 45 degree angle, monitor the computer screen, got to within 200 meters or five meters of the bottom, and told them to haul back at a certain rate of speed.

MC: Right.

JS: This unit, of course, it was descending and ascending at different rates of speed but not very fast but you were trying to really fly this thing. It had an angle indicator built into the system that you had a monitor on the screen. You had to tell the ship also had a readout whereby or you had to tell the ship. We were connected with an intercom system to the winch operator and to the bridge, like, you know, slow down/speed up or something like that. And you were truly flying this unit, flight is the best way I can describe it and the best person, she was a technician, worked for us at Woods Hole. Best person to fly that unit. It's almost borders on an art form. She had a private citizens, small plane, pilot's license. Hence she could really fly. She had a touch for that. She was really good.

MC: Do you recall her name?

JS: Amy Tessalon

MC: So that's, uh, and I, again I can imagine where that's that becomes pretty important, right? The efficient and competent operation of certain equipment in terms of accurate data collection.

JS: Absolutely. You know not that the tows were really off, you know. A lot of time, not a lot, there were times like weather systems were coming through and these tows took, particularly on the MOC 10, on a deep water tow would takes numerous hours. On a deep water GLOBEC station, where you had all these different parameters to have to have operate because the depth of water, it took so long, particularly on the MOC mesh tow. And watches, let's say the watches were six and six. Watches all the time varied six and six. I've also, on ships, stood eight and eight. That was horrible because your biology never got into a rhythm. You were always changing. Twelve and twelve which is what Fisheries is now, well, twelve and I always well I got used to the six and six. I guess it was a eight/seven/seven/eight like a, no, was it? No, five/seven/seven/five. Five hours on, seven off, seven on, five off. Certain out

of GLOBEC were eight on/eight off, eight/four/four/eight. Yes eight/four/four/eight so you were four on/eight off/eight on/four off, if I got that right. Different watch systems, you know, on the other boats, it's centered around the galley and the times that they were historically always having meals. So science tried to work around that on the other boats. We stayed, we kind of, *Albatross IV* kind of stayed six and six. But for a while there near the end, we tried to break up and change some watches, some people felt that they weren't getting enough sleep. I can understand that, you know. It's the six and six is a hard one to get used to. Over the time I did and it's a hard one to break when you get ashore.

MC: Oh, I'd imagine.

JS: The reason being is because you got the twelve to six watch a night, you come ashore, you want to take a nap in the afternoon [laughs]

MC: Right.

JS: You know or you are bright eyed and bushy tailed at midnight [laughs].

MC: Right, exactly, exactly.

JS: That's what people had to get used to and, like I said, you had to handle your own gear on deck on those [non] fisheries [ships]. Fisheries people, like fisheries people across the board and this isn't the, it's just the way it turned out. Fisheries people across the board saying not only did the GLOBEC cruises at that winter time period but they were on other cruises like, I mean, groundfish cruises or they would be on scallop cruises or whatever so they were used to going to sea. Plus that fact that you had a crew on deck that did most of the work, deploying and retrieving gear.

MC: Right.

JS: We did the sample collection of the instrument or recording whatever, that's what we were responsible for. But on the other ships, you had to have…you're setting and retrieving gear MOC1 MOC10. Big deal, rough weather, three o'clock in the morning,[inaudible] people, they are tired, it's rough. They're not feeling well and they are a little scared. I was scared too. So that's what it was. So for a while there, the first trip, the first year we started in December went through May and then after, that didn't work, that was and we changed it from January to June. Well, the January trip going out, for a while we didn't start with *Albatross IV* for a while then I said hey listen this is, a lot of these people haven't been to sea since last June. You know, it's to go out and you're out the in the wintertime. It's not nice. So let's use *Albatross IV* to start out with. Everybody saw the wisdom with that and, right, for safety reason, you understand?

MC: Because of the size of the vessel.

JS: No, because you had a trained crew on deck to handle the gear. Science didn't have to deal with it. They were trying to get back into the slot those that hadn't been to sea since last June were trying to get back into the routine and slot of being at sea in the wintertime and work in not nice weather.

MC: Oh, I see.

JS: They didn't have to handle the gear, manhandled to use the term, manhandled to get the gear, to set it and deploy it…rather dangerous, ok?

MC: Right. Yeah, as opposed to being on a commercial fishing boat where you have to do it yourself, correct?

JS: Well, it wasn't a commercial. They called it a unit. They were research ships – the *Endeavor* and *Oceanus* URI and WHOI is an acronym for the Woods Hole Oceanographic Institute, so when I come out with that, you'll know what it is. Like I said earlier they supply a winch operator and you handle your own gear on deck. They don't supply a full deck crew to handle your gear.

MC: As opposed, like on the NOAA boats.

JS: On the fishery ships. It's just the way that it was. But where I'm going with this is, so we started with January and then we switch to the boat and then come May or June, you would be back on *Albatross*. At this point, the scientific crew is used to handling gear on deck, of course, they are back in the slot. We worked in rough weather and all that. They are elbowing the crew aside, [laughs] the crew is taking this graciously but it's no, no, no, I'm telling the scientists, no, no, no, you've got to let the crew do this now. We are just here to take the samples. But they are so used to doing that for, it was just a reflex habit.

MC: I'm sure. I'm sure.

JS: Fortunately the crew understood that and took it as humor but that was, that's just an aside story which

MC: No, no. That's, it's very pertinent to the actual sort of day to day work activities and the…

JS: And like I said, for about two years there, most of the scientists that we had in GLOBEC on the boat were women and boy, they were good. Back, before I said, and I mean they were really, really good.

MC: Yes You know that's great.

JS: (consults notes) Cruises were for about 12 to 14 days each, one a month from like I said let's say January to June inclusive so six surveys a year. I was chief scientist on one cruise a year and watch chief on the others because these cruises were so intense and everything. They turn, Peter Wiebe might be chief scientist on the cruises, too. But they generally like to try to give it to another, actually a program head and I wasn't really a program head. But I had a lot of sea time and I had a lot of experiences at sea. I'm not tooting my horn, it's just the way it worked out. That's why I went chief scientist, I might have been one year I went twice but I always sailed as watch chief, the opposite of the chief scientist. I had the other watch but they would give it to somebody else to be chief scientist because there is a lot of responsibility both during and after the cruise to make sure that everybody got their part of the cruise report in which was rather extensive. It was almost like a mini, what's the word that

I want to use, a bio-, like a special scientific report and it was, it had graphs and plots and scientific [dates], the GLOBEC cruise report was actually a thick volume.

MC: Yes, yes. But, John, I guess if I can ask you to just repeat something --

JS: Yes, I can.

MC: --the difference between the chief scientist and watch scientist? What's the watch chief and the science chief? What's the difference between those two jobs?

JS: On some cruises, I have to back up and this was survey unit. You had a chief scientist on board the ship and he didn't have to work to watch. He would be around to watch both watches. He might be around to work on the six to twelve or the twelve to six. But he really wasn't, his duty to stand a watch. Plankton department, we always, chief scientists, always pick the watch worked it and you picked and you chose your watch chief who is, like you, he was responsible for everything, he was like a vice president or a mayor. He took control of that watch, everything that happened on that watch. The scientific collections if they had to shut the ship down because so rough weather. Any issues that come up with personnel or anything. It's amazing in that capacity, people would come to you for personal advice. I never expected that but that did occur. I guess the father image or something. So that's what he would do, so that's that was that the duty of the watch he feels like a mini chief scientist.

MC: Now I understand because one person's kind of oversees the whole operation but some but since the work is around the clock, somebody's got to always be there to see that the actual data collection is being done.

JS: As an aside and I did this very, very early as chief scientist in MARMAP, I had a suspicion. Since most of the same people are going to sea all the time because a lot of them, it's true that they had lab work when they were ashore, but they were assigned to handle samples, nutrient, chlorophyll, whatever we were doing off-shore, that's they were sea-going techs virtually. So you had the same crowd repeating and, of course, the watches was six and six and, ideally, you could say well, this group had twelve to six on the last trip so we'll give them the six to twelve this trip, you follow me, to mix it up. But within that, I found or I suspect it would, well, I was thinking to avoid if this was going to happen, not only would you rotate that group from one watch to another but some of them would have to maintain the old watch so I'm mixing up what was the six to twelve one watch. I would be mixing up personnel. So you get different people working with each other now.

MC: Right.

JS: Does this make sense that instead of having ABCD keep working with each other but it's one trip is day watch, the next trip is night watch. I'm going ABC and I'm mixing up with EFG. So you got the AF, do you follow me?

MC: Right, yes.

JS: You understand that. That's why a lot of times I took the twelve to six watch, too. Just because I didn't want my opposite to get stuck on the twelve to six all the time. We would, to be honest, I tossed a coin with him and I'm not making this up. As luck would have it, it

would hit that I would get the day watch. So after a while I said to the person, I said look I'm just taking the night watch, you take the day watch. Hey, if the ship needed me for anything, they knew where to find me.

MC: Right, right.

JS: The other thing I was worried about, to get back to why I was mixing up scientists so they would some of them had to repeat the same watch, I didn't want to have it develop into, I was facing two different cruises going on at the same time almost. You see where I'm going with that?

MC: Yeah

JS: Although the sampling was the same and everything, there might be might be a slight variation or difference and you didn't want, you mixed them up, you avoid that, I hope.

MC: Right. I understand.

JS: Yeah, and we would carry that over into GLOBEC too.

MC: Yes, yes. So this is, of course, this is all going on in 199-, you are in the 1990s now, correct?

JS: I'm in the mid-1990s, from 1995 to 1999.

MC: And where did things proceed after '99?

JS: Well, okay. When we get to that…(consults notes) Oh, yes. Here we are in the mid to late 1990s. I was a member of the new research ship committee. Our ships, both *Delaware II* and *Albatross VI*, were aging ships and NOAA, across the country, the research chips were old ships. West Coast, Gulf Coast, yeah, okay. So NOAA who had responsible if you recall as I said took over the responsibility of the fishery ships, were having a new class of fishery research ship to replace the existing aging fleet nationwide. All in the class were generally the same design with some modification for local use. The ships were about 200 feet and they were state of the art. They were, of course, stern trawlers. As part of the committee for a ship, we had ship number two which was the *R/V Henry Bigelow*, ship number one went to the West Coast, Alaska. We had ship number two, subsequent there's been several ships built of this class. We were to work out the laboratory configuration and site sampling deck layout, that would be like the deck for the plankton tows, the hydrographic cast. If we, if she had a to tow a MOC mesh unit that's where that sort of thing would be. Any pumping operation, bottom [grabs], that would be the side deck, that's what we were working out, with the winches and the visibility to the winch operators and how we would handle gear and moving on deck. Some of it was mechanically aided because it was very heavy.

The main trawl deck was already in [the] designs. So it was just the laboratory layout and the side deck. Well, the person at Fisheries, Woods Hole, that was part of the, he was the head of the committee, but he was also a port, scientific port captain at the time. He was smart enough to rent the warehouse in the Woods Hole, a warehouse, in the Woods Hole area. Maintenance, and have a mock up, full scale, two by fours and cardboard, of the entire

laboratory system that we would experience and the deck layout of trawl and the side deck layout. When you got in there with the whole group, you could see, well, wait a minute. This is no good here, we have to change this, change that, make it so the winch, the next deck up is extending over too far. It's restricting the visibility of the winch operator up there so he can't see what the heck with doing down here. That sort of thing. Where we wanted freezers. You get the idea.

Transgressing laboratories from aft to bow, from aft to forward or forward to aft. For instance, have all the watertight doors in the same line. You don't want to have to cut corners to go around because this door is to port or starboard of the other door, you understand what I'm saying? You want a straight run to run gear. You know, there was a lot of stuff that went on. It was good enough that the other ships in the future that would be built incorporated a lot of those suggestions and modifications that we came up with as a result of that.

MC: So basically this committee was given the charge of providing the naval architects with the information they needed to design a vessel that you folks could effectively use, correct?

JS: Yes, correct. Since I named some names, the person that was the proponent of the warehouse Chuck Byrne. I don't know if you know.

MC: Yes, who is it again?

JS: Chuck Byrne, Charles Byrne.

MC: Charles Byrne…and he was a Woods Hole employee?

JS: No, he was a civilian, scientific Port Captain. We had a port, you had a port captain, NOAA CORPS, for *Albatross* and *Delaware* to maintain and supply the ships and handle crew and fuel and food and all that. You had a scientific Port Captain to make sure that if we were gone, because of the 200 mile limit for instance, ship had to go into Canadian waters to transgress that line, you had to apply for a Canadian license to fish in there for per cruise, per dates, you follow me?

MC: Yes, Yes.

JS: All right so he had to see that that was out. He had to make sure the cruise because the cruise reports not only had to be done for the Northeast Fisheries Science Center but they had to be sent down to the State Department because if you transgressed into those waters, that had to be sent to Canada. That was part of the stipulation. So he had to make sure that that was going. Just the scientific end of it. Made sure that the ship was going to get all the coordinates that you are going to have and I'm sure there's a million things he had to face that I'm not aware of and he was very much involved on the principle, you could say he was above the committee on the new ship design.

You know, she not only was to be a stern trawler but they were going to have the entire work instead of being on deck like on the *Delaware* and *Albatross* where you worked up the catch on deck. So if you're working out there, you've got water sloshing across the deck, it's very cold, wind blowing, it's night, whatever. But that's what we did which - I've got a funny story about that in the moment - but now with a conveyor belt, when the trawl net came in and they

dumped out into let's say a fish box which was about let's hip height, maybe a little bit bigger, a conveyor system would pick all this, the crew would make sure the catch went on this conveyor belt and went inside the ship. And scientists were standing on either side of this conveyor belt, sorting the catch as it came through. So you weren't out on deck in the weather.

MC: Oh, yeah, yeah.

JS: Big change.

MC: Oh, yeah I think it kind of reminds me of fish tugs they use on the Great Lakes that are enclosed so they can--

JS: Yes, exactly.
MC: --pull the nets in without being coated in ice all the time. No I can imagine where there is, so that must be an interesting exercise, being on that ship committee.

JS: Yes, yes. It was I mean we had some intense disagreements among people. I'm telling you I can laugh about it but as a result, it all worked out. That's, it was a real committee at work, different and Chuck, he was a strong proponent of this conveyor belt system. He went overseas to at least one Scandinavian country I know to watch this in operation that they were using so he was a real big proponent like this right and some of us were skeptical, myself included. I will be totally honest with you on this. But I was wrong. I think all the workstations now were inside. So catch was sorted off the conveyor belt, all the measuring boards, the computers, and scales, and everything were now out of the weather. They were inside the ship.

MC: Yes, oh I can imagine.

JS: Think about this, at night you had adequate lighting above you so you could see what you were doing. That was an issue at times on our ships at night, adequate lighting.

MC: I can imagine.

JS: It really got good near the end but, at times, you just were, "What the heck am I looking at?" I'm trying to, somebody from, you know, survey unit has a big shop, we called that a shopping list. Not only did you have scientific samples taken for analysis by Fisheries but they had requests from biological institutes, medical research institutes, universities that were in the biology department but were doing special studies like one person was, for a certain area, was studying lobsters and he needed blood of lobsters from certain areas so you are doing that. Other institution needed a tissue cut from a particular fish. Somebody was asking for…it was a particular internal organ from a goose fish from certain areas. I mean, a gallbladder! That's what they wanted, the medical institute wanted a gall bladder from [a] goose fish. Let me think about, you're out there in the middle, bouncing around in five directions, this guy wants a gall bladder, you know…or a woman [referring to the individual requesting the sample], I don't remember which it is. Other blood samples from other fish, let's say cod fish. Some of the tissue culture was for seeing if there was different races of, population race differentiation of codfish up north like you had a Georges Bank stock on the east side. You had a Georges Bank stock on the West. Do they integrate?

MC: So yes, yes. Oh yeah yeah.

JS: So the shopping list was really pretty intense.

MC: And, no, trying to have a vessel that can accommodate all those different demands I can imagine would be.

JS: So to get back to the story. It's funny, I think it's funny. We were on the *Albatross.* We were, Linda was too actually, she was standing and we were on deck, it was really nasty. I mean with the, there's water on deck. It's cold, there are snow flurries, it's at night, it's freezing and somebody makes a comment saying "man, you wonder how those guys did it years ago on those big windjammers. They had to climb up that rigging in the middle on for all those sails or whatever."

MC: Yeah.

JS: And I turned around and said,"Hey, look what we're doing right now here, 50 years from now somebody is going to be saying how the heck did they work on deck like that."Think about what I just said. It's true, the same situation, different time period sort of.

MC: Right. So those design initiatives that were part of your work on the ship committee were they ultimately implemented in the design of new vessels?

JS: Yes for a lot within that class some of it was.

MC: Right. What were the names of those vessels that were built? Do you know?

JS: *Pisces* is one. It's a that's a scientific word for fish. I don't remember the others, sir.

MC: Sure, sure. And that was in the late 1990s, right, that you were doing that?

JS: That to the early 2000, the Bigelow was launched down south - having a senior moment on this, I'm sorry, Chuck. Was Pascagoula Mississippi or it was some place near there? She was, my wife and I were invited for the - well, you would think I would know this. We were down there with Chuck and Captain Jack and a few other people from Fisheries. That's when we, they launched *Bigelow* into the water. It was a side launch. Very good. It was the summer Katrina went through, you follow me.

MC: Oh yes.

JS: Hurricane Katrina. Well, a couple weeks after that there was a hurricane before Katrina and it went through and everybody's kind of worried about, you know, nothing. Katrina hit. Minor damage but I went down there in March when the shipyard before Fisheries took possession of the *Bigelow*. She had a shakedown cruise by the builder and this is in the Gulf of Mexico. And I was one of the ones on board. They had technicians and people from, I mean, it was really loaded, to check this, check that, to see how that performed. Is this right or wrong or whatever. But the amount of devastation in that area from that hurricane, I cannot

put into words. The pictures on the television does not do justice and I can't imagine what New Orleans looked like.

MC: Yes.

JS: Where was I going with this. Oh yeah. One of the things, the innovations on the new class of ship, very quiet. Well, the old ships, you had shipboard noise, diesels and shipboard so they were noisy, there's no question about it. We were kidding when you got off a 12 or 19 day cruise on one of those ships, you went home, you had to open up the window and tell your wife to start up the lawnmower so you could go to sleep. [laughs]

MC: Oh, my.

JS: That's it exactly but that's what you just kid with somebody new come on the ship and you put on. Well, the new ship was extremely quiet, extremely quiet.

MC: Yeah.

JS: I mean part of that was because of the marine mammals program. If they were doing their surveying and work, they didn't want a lot of noise to scare marine mammals like whales or something, they wanted something coming on quiet. So not only did you have a lot of insulation down the engine, she was diesel/electric which is a price - it's a very good propulsion system but pricey - but the whole thing was sealed to make it quiet. This is all U.S. Naval technology tech that got incorporated into her. Her propeller, her screw, was a design of a nuclear sub, that five bladed, the tips of the blades kind of point aft to minimize the cavitation, the making of bubbles, when it spins to minimize noise transgressing.

When we had a shakedown cruise night, I was on the star-, I was on deck and the person said what, why are we stopped? We're not stopped. What do you mean? I said take a look off the rail. We were transiting at full speed but the sensation was gone.

MC: Wow, that's fascinating.

JS: I'll tell you one more story and this is, I love this story. They sent this, they sent all the class of ships from what I understand down to around the Bahamas to, the sonar to do work up, they needed clear water, to do this, you understand? The U.S. Navy sent out a helicopter on all occasions to send a probe down from a wire to a nearby sub to record. I know she's quiet ship, but there is still noise. To record her signature, it was given to a nuclear sub so they knew what was above them. As quiet as the *Bigelow* is, there still noise on there. I forget whether it was, it was either *Bigelow* or the first ship, it doesn't matter. But I guess on day number two or three, they were doing it, and they get in the helicopter and they get a call on the marine radio. It's the helicopter. Right way, they said you have a problem with one your generators and your engines right now. They did she had a valve, I believe, there was a malfunction. There was a mechanical problem with one of the generators they picked that right up on their monitoring of our sound signature and they identified it. That tells you what kind of technology the U.S. Navy had and that was at that time period.

MC: Right and I assume that these new sort of measures to make the vessel quieter, one might say were for comfort for the crew but also for…

JS: Well, that was secondary. It was primary for marine mammals wanted that and this was across the board.

MC: Right. So for other research objectives as well.

JS: Yes, you know it was. Yes and, of course, it was for the crew and everything. If you flushed the head, you felt guilty because man, you can really hear that. [laughs] She was that quiet.

MC: Yes, yes. No, that's, that's interesting.

JS: Now the *Bigelow,* she's getting a little long in the tooth. I shouldn't say that, it's like we just put her in the water last week, didn't we. [laughs] That's not true. Time goes by so fast.

MC: Oh, no. Absolutely, absolutely. So this was all getting towards the end of your career with, wasn't it? And were there any particular projects they wanted you to work on as you were sort of, kind of--

JS: Winding down?

MC: Yeah winding down or?

JS: Yes, I was trying to wind up my contribution and responsibility to the GLOBEC broad scale program, I was still ongoing there. You know, actually I have to flip this back. Actually, I can say I worked until September 1st, 2006. That's not quite true. I mean officially that's when I left. But I was going back several days a week to really wrap up time. Why did I not keep that going? Because we were having a house built in North Carolina and you had one foot in New Jersey, one foot in North Carolina and it just got more and more involved with my obligation to wrap this up in GLOBEC and it was just the way it was so I just did that, in the sense, you could say I volunteer my time but that's what I did. And I think finally, it was January of that subsequent year when we actually drove down here and occupied the new house.

MC: Oh, I see.

JS: All right to continue for a bit and I am getting near the end. The Sandy Hook lab obtained a prototype of a new, in the late 1990s, a new class of Coast Guard 65'in-shore buoy tender for laboratory use. I got in here in brackets the Coast Guard went with the class design but the power plant diesels were different. Ours had GM diesels. Milford got one of the prototypes and we got [one], well, Woods Hole did and then it came down here. We got the second one which was named our research ship *NAUVOO.* Nauvoo being the name of Seabright way back during the late Victorian time period, that area wasn't called Seabright, it was called Nauvoo. Anyway, so she was a GM two cycle diesel which are very good diesels but they weren't meeting EPA [Environmental Protection Agency] standards so the Coast Guard went with Cummings diesels is the way the story was told to me. So if there's anything wrong on that, I'm sorry, folks but that's the story I got.

My SMVTI training in both deck and engineering came into use as I assisted the NOAA Corp captain of the *NAUVOO* in both deck configuration. We had to change stuff, have stuff changed on the deck and do some of the work ourselves and in the engine room as he didn't have an assistant for about a year and a half. Now you can't send a man, I don't care how experienced you are, down an engine room, trying to do electronic or engine work or anything by himself without somebody being in there by himself, accidents happens.

MC: Yes.

JS: You know and when I told the lab, I'd like to work with such and such person, and he and I are still [friends] though he is no longer in NOAA Corp, he is in private research, and he and I have still stayed friends to this day. We spoke a couple weeks ago but to get back to this. The lab understood that and I guess and that's probably some of the reason I postponed some of the GLOBEC obligations because I really got involved with this. So during that time of that I was with him, I also sailed this time as both mate and deck hand on day research trips when we got the *NAUVOO* up and running because he didn't have an assistant, then I was acting as deck hand and science from Sandy Hook was doing whatever project they were doing. Actually we had also some outside people from universities within the state in New Jersey that got time on the *NAUVOO.* Some of these people, actually one of these people I knew after retired from Fisheries was working for a university in the State of New Jersey and he came in with a scientific approach program but there were several in Sandy Hook that were ongoing and the *NAUVOO* was also affiliated with and, you know, you've heard of King's Point, the Maritime Academy in New York?

MC: Yes, yes.

JS: Well, that's where NOAA Corp, up and coming NOAA Corp officers that came on were being trained for navigation and seamanship.

MC: So when you refer to NOAA Corps, you're referring to the actual boat captains that run the boats?

JS: Yes, correct. The people in uniform.

MC: Oh, so they actually oh, okay.

JS: That's why they were taken over when the civilian captains retired. Some of the civilians went into NOAA Corp, the younger civilian officers. Some chose not to go into it and stay civilian and NOAA Corp honored that and retained them until they retired so pretty--

MC: So NOAA used to use civilian captains and then they shifted to this new approach where--

JS: Yeah, like the *Delaware* or *Albatross* had civilian captain and mates.

MC: Yes and now it's--

JS:…and right and then when NOAA Corps came in and let's say they took a leave for a trip or something you would get a temporary NOAA Corp officer to fill the slot on board the ship.

That that happened frequently on *Delaware II.* If somebody had the flu or whatever the reason, you would get to NOAA Corp… or [if] the captain had to go for meetings during this time period down at Atlantic Marine Center in Norfolk, where NOAA Corp was, the headquarters. And then the second officer would bump up the captain. Well, then they had three, the ship sailed with three officers at this time. They shifted quite early in the career and the engine room did this too. They shifted from a six and six watch to four and eight watch. So it was four hours on and eight hours off, not that they had eight hours to burn. There was paperwork to do and other stuff, ship requirement. So they were busy but actual ship operation, ship driver to use that term, it was eight hours a day. They had four hours on and eight hours off.

MC: Do you know what the reason was for shifting from the civilian captain arrangement to this new group sounds like it's not a military route but it's more--

JS: Quasi-military.

MC: Yeah, quasi-military. What was the rationale behind that?

JS: Well, you know. NOAA was incorporated in this and they took over responsibility of maintenance of the ships, their upkeep, their maintenance. They were paying for the fuel and the food and the rest of it. Fisheries laboratory was not. Now paying for fuel and food and crew wages and responsible for hiring crew, it was NOAA Corps. So and plus they had these officers. Of course, they had their own program with their own ships and their own research ship. They were involved with maps and marine bottom mapping, navigation, charts and everything which became state of the art and done electronically. But they had their own ships which were dedicated to their own research, marine research. It could be anything from GLOBEC, pollution, global warming. They had dedicated ships for this that was strictly staffed by NOAA Corp personnel. The deck personnel were government employees but they were civilian. The person on the bridge that was officers. When NOAA Corp officers, they were male and female by the way, so as our civilian personnel that were on the bridge retired or left or, like I said, they were taken over by NOAA Corp officers which the *Bigelow* was strictly NOAA Corp now at this point. I don't think there are, if any, civilian officers on any of our, on any of the ships. If there are, it's only got to be a handful. I'm guessing but I wouldn't doubt it. I mean the people that were there deck officers were a lot older than I was when I was sailing. So they have to have passed on. All the captains and everybody that I sailed with that was civilian they have long retired and, unfortunately, a lot of them passed on right.

MC: You know, as we kind of come to an end here, I was curious though. I want to return to a question I asked. I think you're probably going to maybe address it anyway. That was some of the larger policies such as the Magnuson Act and how did these, and do you have any opinions on how they influenced your work or the scope of your work and so forth?

JS: Well, you know, one thing that came out of that was the depletion of the foreign fleet effort on fishing in our area. So it resulted in the increase of American boats. You know, when I first started working and, let's just take New Bedford as an example. This is just an example. Our commercial fishing boats were, what, 70', 80' maybe, at best a 90' wooden side dragger, you know, the hull design was of a schooner type vessel with that wooden house back aft. She was a side trawler, a side dragger rather . They call them draggers, you know.

They weren't very big. The crew said - now I'm talking, I'm relating stuff I was told by the crew because they were commercial fishermen and they sailed on these and worked on these. They said, John, you know, those ships were wood. They weren't strongly powered. A lot of times when they were towing bottom nets, they had to go with the current because they didn't have enough power to go against the current. Their nets at starting out, they were cotton nets. They went from cotton nets to nylon nets. Nowadays, they are using polypropylene nets, bigger and lighter. You know, the trawl doors, the design, the trawl doors stopped or changed. Bigger instead of these wooden trawl doors that was surrounded by steel shoe. Went to steel trawl doors of a better design. The nets became bigger. The boats went from wood side trawlers to 90', as a general rule, steel stern trawlers, big power, right. I think you can appreciate that. Big power, in any direction years ago those nets, the way the bottom rolls on the net, they can only deal, they could generally only deal on smooth bottom. They would tear up on hard bottom. Do you follow this so far?

MC: Oh, yes, yes.

JS: Now the new nets have what they call rock hoppers. The bottom roller design is such that it allows the new gear to fish on bottom that they couldn't fish before.

MC: Right.

JS: So I think that's where part overfishing comes in, there's no place to hide.

MC: Right.
JS: You know, yeah I was going to get into this but this is probably the place to at least bring up this subject. When I was still working in the late 1990sor before I retired and at the turn of the century, I think it was University of Connecticut, I am almost positive of that. They had a group that were video recording bottom trawls on the bottom, you follow me, in use and, of course, we saw that stuff and those trawls are hard on the bottom. I know the Fisheries boats have to use a trawl net but this gets back to - I'm going to digress but this is very important. I forgot to mention this before. I think it's important.

You know, the outside world, outside of fisheries, kind of point a finger at us and say well, you're regulations, I mean how do you come up with this, you know? Well, you get an index of a particular species of fish. Well, what's an index? Well, it gives us a number to work with as to how large the stock is, etcetera, etcetera. Well, yeah, what good is that? Well, listen guys. It's not like a forest where the forest people can go out and count every single tree if they wanted to and not only that, they can identify the species of every single tree and, in addition, if they took a core boring of it, they could tell you how old it was so they could tell you what's out there, how old it is, etcetera. You can't drain the ocean and count fish.

MC: Right.

JS: How do you come up with in the member? This is it, guys. Actually those indexes are not that off, they really aren't. I'm not saying this because I'm going to get points or something or a promotion on this recording. I'm saying this because it's the truth. The rank and file of the people that work in Fisheries, at all the labs, I'm talking whether they work on-shore on the data or went to sea, extremely dedicated period. I'm not going to say any more adjectives on that, that says it all.

MC: Yeah, I know. I can appreciate that because most of the folks I've met over the years that there's no, uh, there's no, uh

JS: They are not in for this because, oh, all of marine bio-, scientists that they're trying to do what they're been hired on to do.

MC: Exactly, exactly.

JS: Sometimes they can come up with, you know, so certain stocks of fish it is hard to come up with the correct number. Take a pelagic fish like mackerel, you know, how do you know, that's a hard one and that's only one. How do you deal with grouper down south, reef fish. I'm just throwing this, I'll tell you something else. This was said to me by another marine scientist and I don't mean remember his name, it doesn't matter but, boy, did that ever hit home. You know cod and haddock populations decline, among other. Cod, haddock, and yellowtail, still in trouble. Probably silver hake is, too. Those at one time were big commercial fish populations for industry. We are talking about Georges Bank, not the Mid-Atlantic or Gulf of Maine, just Georges Bank. They are really in decline on Georges Bank. What they found, while I was working near the end, catches in the trawl catch, catches a lot of skate. Skate populations, different species of skate, have increased. Fisheries, and if I am wrong on this, I apologize. But this was the belief, at the time I was with, nature doesn't like avoid. So when you decrease certain stocks of fish, she's going to fill it. Bang. Now, you've got all these skates in there, how do you get rid of the skates? And then how do you make it such that if you do create a skate void that you're assured you're going to get the cod and haddock, silver hake and yellowtail back. I don't know if I'm wrong but it's fun to think about.

MC: Oh yeah. No, absolutely. Hasn't there been a rise in dog fish as well?

JS: Yes, correct. I think in Canada - I'm trying to pulling this out of my mental file cabinet. I think they were marketing them in Canada as rock salmon,

MC: [laughs]

JS: No, I serious, don't laugh. You know, in the fish and chips in England, Great Britain and Western Europe, that's dogfish. That's the fish and chips, the fish under it is dog fish.

MC: Oh really.

JS: That is what I was told. If I am wrong, Fisheries, I apologize again. [laughs] He's crazy from somebody in Fisheries or I'll get this phone call saying we're going to put a contract out on you. [laughs]

MC: No, no. This is…

JS: All right so let's see. (consults his notes) Oh, you know, we were talking about the *NAUVOO* in my time. So here we go. I'm going to end this and then any questions or clarifications after this, feel free. In my career from the '60s to retirement, I witnessed major fish stock declines due to habitat loss, overfishing, climate change and unknown factors. You can put that unknown factors in capital letters. I wish we know them. If I did, I'd be a very

popular person but I'm sure this out there. (I hope you're not hearing this beep on here. Somebody is trying to come in but I'll continue.) I was involved in the advancement of larval fish and development, spawning time, and area distribution for marine fisheries scientist. My sea time off shore averaged 100 days a year for 40 years. It's a lot of boat time. I enjoyed my career and yes, at times, I do miss it. Oh, I did go back after retirement to sail on new ship *R/V Henry Bigelow* as she was starting out on groundfish, plankton cruises and needed experienced scientist and also to see how the new ship performed. Ship did great. I missed this. It belongs up above. I also authored and coauthored numerous scientific publications. Why I was called back, one of the reasons I was called back when I sailed *Bigelow.* Each ship, *Albatross* and *Delaware*, with the gear that used, they had to be calibrated one ship against the other and the gear calibrated one ship against the other. They would be towing side by side at an area and then, after a while, they would switch the nets. The catches that they caught had to be worked up and this was all an analyzed at Fisheries and Woods Hole. So each boat had a calibration factor for its' catchability on groundfish. Does this make sense to you?

MC: Yeah.

JS: *Bigelow*, new ship. She had a new net, a new design net now. She's a different kind in of net, high tech polypropylene. It's a bigger net than *Albatross* or *Delaware* used. So they had to calibrate at this time, *Albatross IV* with the net she used against *Bigelow* with the net she used side by side. That's why they needed all these people to stand and to staff both ships at the same time.
MC: Yes, yes. You just mentioned, of the, uh, and this might be a difficult question to answer, but of the publications you were involved in, was there one of particular satisfaction that you were involved in that it sticks out?

JS: Well, no. They all were. Some of them I was senior author, a lot of them I was co-author. A lot of work went into it. They all advanced marine science, the publication data from MARMAP and well, MARMAP and GLOBEC. I can't give you one.

MC: Right.

JS: They all served a purpose. It was something I tried to the best of my ability whether I was senior author or co-author. And that's what I could say, I can't go beyond that. I am not trying to avoid the answer but that's an honest answer but put them on equal scale. If they weren't important, they wouldn't have been published. The only thing I could ,well…The early work on larval fish which I was at the time a technician and then working on larval flat fish and everything, we did a lot of ground breaking on that and my supervisor, I think I was on as a co-person on some of those or at least acknowledged in the acknowledgements, that was really groundbreaking work. Wasn't just flatfish, it was larval but that was significant for me because that touched me. Some of the stuff that was described as such and such species, we found was incorrect. At the time, that was to the best of their knowledge but now we know different. If you get different stages, what we were looking for was different stages of development from virtually egg hatch to a juvenile stage where you definitely knew what this species of flat or any fish were and all the stages between hatching and that point, you could see the progression and the development change. That's what we were looking for and that's how you knew this is such and such. Because you don't want to be saying well, we think it's this thing but no, you were way off base.

MC: Right, exactly. Well, John, I think that we've covered a lot of turf here and I guess we can sign off now. I just have one question. I'm going to need for you to sign a permission form that this recording will be placed at the NOAA archives and whenever you do an oral history to allow future researchers to use the information we will need a permission form. Can I send that to you as an electronic form and have you download it and sign it and send it back to me electronically or would you prefer me to mail that to you?

JS: Well, my question to you, how do I sign it electronically and send it back to you?

MC: Well, what you could do if I send it as a PDF form as they say, you can download it. You can print it out, if you have a printer, sign it and then you have to if you have a scanner, you could rescan it and send it back.

JS: No, I can't do that. I would have to go and send it back on a fax from somebody I can do it.

[discussion about release form]

MC: Well, John this is been a real pleasure. And I'll I'm going to send you an email with an attachment and if you can send it back to me that way or that would be great but I'll send you a hard copy to this address as well and you can send that back to me and that'll work as well. Thank you, John.
[further recording regarding release form]