

Joseph Smith: Joe Smith here at the NOAA [National Oceanic and Atmospheric Administration] Beaufort Lab, in the library, preparing to interview Drs. Jud Kenworthy and Gordon Thayer on the seagrass program at the lab. The main interviewer will be former director Dr. [Ford] Bud Cross. Also in attendance: Drs Doug Vaughan and Doug Wolfe. I'll turn it over to bud at this point for the interview.

Ford Cross: Well, thank you, Joe. This session today, which is July 13, 2017, will focus on the history of the seagrass program at the Beaufort Laboratory. What we want to do is cover its complete effort from the beginning, which was in the early 1970s, up to the present time, and illustrate how a fundamental research program started pretty much from scratch by scientists and worked its way up to where it was an integral part of seagrass protection and management and sanctuaries and state lands. At this point, I want to ask Jud and Gordon to give a quick summary of how they got to Beaufort, why they came here, and then we'll go from there. Gordon?

Gordon Thayer: I was a graduate student at the University of Delaware and wasn't entirely happy with the situation and went to a scientific meeting. Lo and behold, who was there? Dick Williams. We invited him up to the room one evening with the rest of the graduate students, and in his inimitable way, he ate us out of house and home and drank most of our booze. Anyway, he suggested – why don't I think about coming to NC [North Carolina] State and making some sort of an arrangement with the laboratory. We came down. The chair of the department offered me a scholarship and suggested that I look at the Aurora facility, which was the state facility before I came here. Kathy and I drove to Aurora, looked at the facility, and said, basically, “No way.” The fellow that showed us around had lost his thumb from a snake bite. That didn't impress Kathy. So we came here, driving down the causeway, and what did we run into but the smell of money [menhaden smell]? Yellow sky, [inaudible] along the side of the canal. Kathy said, “Did we make a mistake?” I said, “I don't think so.” We came over here and talked with Dick [Williams] and Ted [Rice] and decided, yeah, this was the place for me to finish doing my dissertation work.

FC: How long were you there? How long did you work here?

GT: As a student or as an employee?

FC: Both.

GT: I was a student here for about a year and a half, two years, and then worked from and [have] been employed in '68, I believe, and retired in '04.

FC: In '04, okay.

GT: So it's thirty-six years.

FC: Thirty-six years. Jud?

Judson Kenworthy: Well, the way I ended up in Beaufort was I was a student at the University of Rhode Island, finishing up my bachelor's degree. I'd gotten interested in working with

seagrasses and started to do a little bit of research, and I came across a number of names that were involved in a newly blooming program in the National Science Foundation [NSF], which Gordon was a part of. It was called the Seagrass Ecosystem Study. It managed to scam a bunch of money away from the program, at the time, from the upwelling program. I remember that was a big joke. But anyhow, I was looking for a graduate school, and that's how I came across Gordon's name. I either called them or wrote a letter, and I applied to school at NC State, Virginia, Dalhousie [University] in Nova Scotia, and I got into all three schools, got funded at Dalhousie, got funded at Virginia, and Gordon had suggested coming down here to visit. So I jumped on a bus in Kingston, Rhode Island and, bussed it down to Raleigh, ended up on the campus at NC State with some of the faculty there. I got on another bus, came down here to the lab, carried my suitcase across the bridge – remember that? – met Gordon, and we hit it off. It turned out that when I went back to [NC] State on that visit, I was sitting in the office of the chairman of the department. The person who I was going to work with on-campus was Ernie Seneca, who I couldn't find that day. He was mysteriously avoiding me. But while I was sitting in the office, my wife called, actually called the office, and told me that I [had] gotten into the University of Virginia [UVA]. So I ended up going to UVA but doing my research here. That's what brought me here, into Gordon's program and eventually to a series of temporary jobs, and then finally a permanent position working with Gordon,

FC: What timespan are you talking about here?

JK: Well, '75 was the first time I came down. I think my official start date is sometime in 1979, when you include all the –

FC: '79?

JK: – '79, '80, when you include all the – so I was here for about thirty-three years.

FC: What prompted the effort to begin seagrass research at the laboratory of all things? We were a radiobiological laboratory. That's pretty much what was being done here. Then, as the radiobiological effort played out, mainly through the effort of Dick Williams, the lab began to transition into more ecological work. The reason for that being that the nuclear power plants were going to be floating along the coast, and they had to know coastal processes to predict the effects. So our funding system, the AEC [Atomic Energy Commission], began to fund ecological work, and that opened the door for Dick and Gordon and others. Among the habitats and the studies, why seagrasses, Gordon?

GT: I had done my master's degree with phytoplankton work, and that's pretty much one I was hooked up with Dick, to begin with. But as things moved along, I really didn't want to continue on with the phytoplankton work, not that it had gone its way, but it had with me. I was talking with Joe Angelovic. I said, "You know, Joe, there's a couple of habitats that I'm really interested in working in, and that's the coastal salt marshes and seagrasses. I'm looking for potentially a really nice site." Joe said, "Let's go across the way to Pivers Island. I don't think I've been there, and let's take a look." So we motored over and got –

JK: You mean Phillips Island.

GT: Phillips Island, excuse me. What did I say?

JK: Pivers. You went from Pivers to Phillips.

GT: We motored over to Phillips Island. I told you I was having a memory problem. We anchored there and – lo and behold – there's a large seagrass bed in there. There were some scallops and fish all over the place, and I ran my fingers up the leaves, and what dropped into my hand were hundreds of little black snails – *Bittium varium*.

FC: *Bittium varium*.

GT: Yes, *Bittium varium*. So I said, “This is a nice, localized community, easy enough to get to. Why not start with this?” So, we started – the program actually started right there with a wide variety of ecologically-oriented projects with graduate students [and] myself, and not into the areas that it evolved to eventually, but it was basic fisheries research. What fishers are utilizing it? Why are they utilizing it? What are they eating in there? How rapidly does the grass grow? Because there was some scalloping going on there, which was tearing up some of the bed. It was a progression of things. I ended up with an extremely talented technician, Mike LaCroix, and Mike would do anything for anybody at any time. He was great. So we did everything from sediment deposition out there to faunal composition to fisheries composition and utilization.

FC: How did the research then expand to –? What pathway did it take to expand to the full-fledged program that it turned out to be in the '80s and '90s?

GT: Well, when Jud came down and Mark –

FC: Mark?

GT: Mark Fonseca.

FC: Fonseca.

GT: They opened up another avenue that I had not done any work in, and that's the avenue of restoration and the development of techniques to restore this temperate species, *Zostera marina*. So it was really their coming down that provided an impetus to redirect some of the aspects of the program. The program really ended up being – I won't call it a three-headed monster, but it was three areas: ecological fisheries utilization, restoration, and the area – impacts of pollutants or pollution on the community. Those three branches allowed us to get involved with the Seagrass Ecosystem [Study] group that Judd mentioned earlier, which was, I guess, composed of about ten universities or university people, from Alaska to Hawaii to inland to UVA. I had the opportunity to get to work with his mentor at UVA, Jay Zieman, several times. I work with (Pat Parker?) at the University of Texas, I believe – yes, the University of Texas.

Doug Wolfe: What was his first name?

GT: I think it's Pat.

JK: Pat.

GT: Pat Parker – was doing some isotopic work. Also, I got to work with a group called – I got to look at this – it's called RPI, Research –

JK: Planning, Incorporated.

GT: – Planning, Incorporated. They were involved in oil impacts. With that, we were able to get into the field of some of the impact [of] the oil spill in the Gulf. I was looking at nothing with seagrasses but with sediment transport or transport of oil through the beach areas during the Kuwait Gulf War spill.

FC: Over what time period? Rome wasn't built in a day. You're talking pretty close to – as might move on through here – three decades of work to build a program.

GT: We're looking at '73 to roughly '92, or '90-plus. Because of the faunal orientation, we also were able to get into working in Florida Bay. I think Jud did a lot more work, but we were working down there on fishery utilization of the seagrass habitats.

FC: Jud, why don't you talk a little bit about the focus of your work and geographically where this work took place? Did it all take place in Newport River? Or, as Gordon mentioned, was it other areas?

DW: Could I ask a question before Jud starts?

FC: Oh, absolutely.

DW: Gordon, what was the name of that inter-university consortium?

GT: Seagrass Ecosystems, SES.

JK: Seagrass Ecosystems Study.

GT: Study. That started in –

JK: '72.

GT: – 72.

JK: Peter McRoy at the University of Alaska.

FC: Oh, wow.

DW: Thank you.

JK: I think one of the important things about history here, more than anything else, is – and I remember it so vividly when I came here. What I was struck by was this laboratory was more like an academic institution than a government lab. When I came here on my first visit, Gordon's lab was full of graduate students; Randy's lab was full of graduate students. I think there were twelve graduates. The amount of diversity of work that was going on and the glow that was emanating from all these students – that's what really captured my attention in terms of –

FC: Well, you were one of them.

JK: Yes, I was deciding whether to be one of them.

FC: You came down here to work on your master's degree.

JK: It was a great group of students. I think it's important that – historically, I think, Gordon and other senior staff at the lab, you included, were fostering the idea that graduate students are really important to this whole process.

GT: Yeah, I want to add something to that augment it. I think a lot of it was a function of the directors, and I use directors – Ted, Bud, Don, this guy up here –

FC: Doug.

GT: You guys fostered it. You guys let us do it. Granted, we had to go out occasionally and look for money.

FC: Ted actually started that.

GT: That was good. That was right. That made this a different type of institution than a government lab.

JK: I feel as though I jumped on a wave, and the wave was this massive growth and interest in seagrass that was fostered by the Seagrass Ecosystem Study that brought together all these disciplines: ecologists, isotope chemists, microbiologists, oceanographers. It was the beginning of a huge wave. The Beaufort laboratory, thanks to Gordon, became part of that wave. The growth of my career was just constant; opportunities fell from the sky. At times, I wondered how we could do all the things we were doing, but it was that wave, and it took us. Then SES became an international program when the Australians and a few of the Europeans stepped in. We had research cruises in the Caribbean, Cruises in Australia, cruises in Alaska. That program was highly oriented towards graduate students. That was one of the fundamental things that NSF wanted was to educate students, and it produced the next generation of seagrass biologists, [of] which I became part. I think we're in the fifth generation now. I'm working with a student that I mentored from VIMS [Virginia Institute of Marine Science] now, who's at UNC-W [University of North Carolina Wilmington]. So the student part, the academic part, allowed us to branch out into all kinds of disciplines. That's what allowed us to get into restoration, detrital food

utilization, isotope chemistry, oil spill damage assessment. I think, thanks to leadership here, the agency recognized that and allowed the program to grow. It was almost limitless.

FC: Your focus was primarily on fish utilization of beds, or a major part?

GT: Mine was.

FC: Yours was, okay.

GT: Mine was. I didn't get into the restoration aspect, except through these guys, through Jud and Mark.

FC: Talk a little bit about where a lot of your research took place, other than Phillips Island and probably out here, part of the Estuarine Research Reserve.

GT: South Florida.

JK: South Florida, the Caribbean.

GT: Chesapeake.

JK: Chesapeake Bay, New England, California.

FC: But you weren't going around doing surveys on the importance of these? You guys were studying functions? So I think it's good to explain how tough – we had a very tough time selling that to the agency, that working on functions – we had to learn how seagrass operated. It didn't matter where we were; they were the same functionally. That became very difficult. I think that's an important part of the program that was built here – it was its function, not survey-oriented. Who funded the Florida Bay work? What were your objectives down there?

JK: I think you can look at almost any project we've done – there were multiple funding sources. The Corps of Engineers was a big funding source.

GT: Fish and Wildlife Service.

JK: Fish and Wildlife Service. That took us into the realm of working with manatees. The agency was a generous funder, not just our side of it but other parts of it. That was one of the reasons our program grew so well was that we became integrated with other parts of NOAA. So a lot of our funding came from NOS [National Ocean Service] when we were NMFS [National Marine Fisheries Service]. So eventually, that carried us through our periods when we had –

GT: Lean times.

FC: Wasn't AOML [Atlantic Oceanographic and Meteorological Laboratory] trying to get involved in the Florida Bay studies?

JK: I think they might have – Peter, what's his name? I forget.

FC: it doesn't look like they ever got really big.

JK: We brought in a lot of outside money, too. We also teamed up with academics and other federal partners to combine our resources. That was really important.

FC: That was a very unique part of a number of programs at the lab that you guys weren't funded – or we weren't funded like other NOAA laboratories; we really survived on soft money as a federal laboratory. That was an important aspect because you had to – as people in DC said, the lab had to sing for its dinner. The only way I could get dinner was to do good quality research and peer-reviewed in the literature. Without that, you couldn't bring in the outside money. Well, there was another point that was a tremendous advantage to us on seagrass and other work, and that is that other agencies had to have work done [that] they didn't have the expertise to do. They could put it out on bid, or they could do an interagency transfer and come to us and not go through all that, and a lot of them did that. As a result, it was an easy source of funds for us to use because they knew they could come here and get just as good or better product than if they went out and went on bid with all the headaches it has. So that was a real advantage to the program.

GT: We got quite a bit of funding through the Corps of Engineers.

FC: Corps of Engineers.

GT: How far-reaching some of this stuff, Bud, was that I remember two things. We had a guy from the University of Hawaii that came through the lab, and he was part of the SES program. He pulled me aside afterward, and he says, “Gordon, I'm so impressed with what's going on here, not just from the seagrass thing, but from everything else, because everybody here seems to know everybody else and be familiar and relaxed with it.” Then at another point, I was up on the East Coast; I was up in the VIMS area. This was well after we'd gotten in – this was back in the late '80s. He said, “Gordon, the Beaufort laboratory is the prime laboratory for seagrass research on the entire East Coast,” which sort of surprised me because there was a lot of work up and down the East Coast. When somebody comes up to you and just out of the blue says that – and the other – how far-reaching it is. I was out mowing the lawn one day, and this was back at the end of the Gulf War. I got a phone call. (Kathy?) says, “Come here. They've got somebody from DC that wants to talk to you.” I said, “Okay.” I can't remember who it was. But he said, “We'd like you to come over and look at the impact of the oil spill on some of the seagrass and other habitats there.” I said, “They're still shooting, aren't they?” He said, “Yes.” I said, “I'll give you the names of a number of people who might be willing to go.” But he came to us to ask us to participate. We did, after everything, calm down a little bit.

FC: Two points on that. Number one, you were the only seagrass program in the federal government, probably. Number two, he was smart enough to know that. A lot of people up there don't know that. You went from very strong ecological functional research and then what prompted the transfer or the movement into restoration work. What was the impetus for that? How is it managed?

GT: I'll give that to Jud.

JK: Well, actually, Mark and I brought the idea of restoration here when we came as students.

GT: That's right.

JK: In fact, I don't know if Gordon will agree with this or not, but my calling card in graduate school was a publication that Mark and I wrote and published in 1975. So every graduate school that I went to visit, I pulled out of my pocket this – it was published in a special issue of *Aquaculture* in 1975, and it was a restoration paper. It was the first paper we published. So I think restoration, the idea of doing restoration work, was seeded right in the very beginning with the whole group of students that were working together because the first actual funded project we did here was with Pete Peterson – Gordon, Pete, Mark, myself, and Yuri (Honziac?) got funded by Sea Grant to do restoration out in Middle Marsh. It was 1976, I believe, the first year we were here at a scallop site where heavy scalloped dredging had impacted the grass bed, and we went in. So I think it was already on the radar.

FC: That early?

JK: It grew large because all over the world, there was a recognition for the need to address restoration as part of the conservation thinking. But the thing that really ramped up our program was NOAA's Damage Assessment and Restoration Program that we collaborated with.

FC: But that came along a lot later, didn't it?

GT: The Restoration Center, per se, was established as a program in '91.

JK: We were perfectly suited because we already had over a decade of experience doing restoration work here, all over the world. So it was a natural marriage of the Beaufort Laboratory's expertise with NOAA's program.

FC: Was the restoration work done as research experiments, not in terms of application to real damage that had to be restored until after the Restoration Center came along and you began to work with –? Is that right?

JK: It was primarily a research program – develop methods, look at utilization, develop monitoring tools.

GT: Looking at recovery rates.

JK: Building models of recovery rates.

FC: How many other facilities were involved in work like that at the time? Were there many?

GT: The University of Miami, I believe, had one related to Turkey Point Nuclear Power Plant.



JK: VIMS with Bob Orth was running parallel with us.

FC: In restoration?

JK: Yes.

DW: Was the Restoration Center here?

GT: No.

DW: Nominally? It was in Silver Spring.

GT: Silver Spring.

DW: Who was nominally in charge?

GT: He got rid of me for about two years or more.

DW: You set it up?

JK: I needed the money.

GT: Nancy Foster took him out, took me out, wined and dined us, and I went up there for a full year and then every other week or every two weeks for about four years to establish – and I couldn't have done it without a NOAA Corps officer named Ted Lillestolen and Terry McTigue in the office

DW: Did you do that in 1991?

GT: '90.

DW: '90?

GT: He kicked me out of here in '90.

FC: Like I said, we got reimbursed for his salary, so he was fair game?

DW: Did we ever run into you in Silver Spring in 1990 or '91?

GT: I don't think you looked for me. [laughter]

DW: I don't think I knew you were there.

GT: Probably not.

FC: You guys were working close to each other.

JK: It was all those stove parts.

DW: For at least a year, we were a block apart.

GT: You were in Silver Spring?

DW: I was in Building Four.

FC: You were probably in Three.

DW: You were in Building One, right?

GT: Yes. Right.

FC: Building One then. Okay.

GT: Sorry about that. [laughter]

JK: The Restoration Center got started, and then the Damage Assessment Program cranked up, and then they linked into the sanctuary program. That's what really grew us another step forward. That's when we got connected with doing the experimental work and actually dealing with the cases.

GT: I brought this along. Bud said don't bother to bring anything. But this is "Science-based Restoration Monitoring of Coastal Habitats by the Coastal Ocean Program and the Restoration Center. It wasn't just seagrass; it was marine systems. This is really a grow-out from the work that we started here. I should really say that was Jud and Mark that started here. But this has become a major program now. I happened to get on the web the other day, and they've done, supported, encouraged, whatever, almost three thousand restoration projects around the US and in some foreign countries. That's a very impressive map that they have on the website. That's a grow-out from this program.

DW: A lot of those early studies were summarized in your symposium volume, right?

GT: Correct.

FC: When you got involved with the Restoration Center, Jud, then it came where you were pulled into real damage assessment, particularly in the Florida Keys National Marine Sanctuary, as I remember. Could you quickly lead us through the interactions you had in terms of what it entailed to be involved in that in terms of testimony or recovery plans, monitoring those plans, etc.? Because I think that was probably the first time in this country that those kinds of environmental protections and restorations were put into place for seagrasses?

JK: Yes, a lot of the injury issues were occurring in both coral and seagrass. The first case we got involved in was the one with Mel Fisher, where he started excavating a wreck at a place called Coffins Patch [Sanctuary Preservation Area] on the ocean side of Marathon. That turned out to be a full-fledged case. What was really remarkable about that work was that we were able to roll research into the assessment program. So the assessment program became very comfortable with funding research necessary to do these assessments. I don't know how much we got in the end. But starting with Coffins Patch, that was the first – the first work we did there was looking at what it takes to replant seagrass on a tropical back reef environment. Because [if] you put seagrass out into a back reef environment, you transplant it, and it gets eaten overnight. So we had to develop a technique to cage the plants. The next big case was the Great Lakes Dredge and Dock case, where the barge went aground on the opposite side of Marathon in a large seagrass bank area called Red Bay Bank. That was a case that nearly went to the Supreme Court. [laughter] The thing that was so great about that was that we were involved from the damage assessment process all the way to the prosecution and litigation, and it included our science. That's when it became very important that our experimental work get published so that we could take it to court. That really grew. That took us to another level in terms of what we did in that area and expanded into other parts of the country as well.

FC: I think it bore out the importance of the government having experts that will stand up to the test because the defendants are going to – their experts are going to hire hired guns, and you have to have credible witnesses to oppose them. The agency either has to go out and hire some guns, too, or build their own competency within the agency, where they can have the credibility to convince a jury or a judge relative to the importance of the science and restoring these areas. So you spent time on a witness stand, and your credibility was constantly being –?

JK: It was the most stressful thing I've ever done, is sit through a deposition or sit through a grueling period of testimony –

GT: Cross-examination.

JK: – cross-examined by a defense lawyer. That was stressful.

FC: But that had not been going on in the agency in terms of marine habitat, to my knowledge, before that time, certainly not for seagrasses. You won, right?

JK: We won every case except one. In my opinion, the reason we lost it was not any of the experts' fault. But I think the attorney failed to do his job.

FC: He what?

JK: The attorney failed to do his job. Of course, when you get in – what happens in the process is all the damage assessment in the buildup is all done within the NOAA framework. But then, when you go to court, into the litigation, it's all handled by the Department of Justice. So there's an amazing amount of transfer of information and sharing, and there has to be a lot of collaboration.

FC: And education.

JK: Yes. In any particular case, one attorney from DOJ [Department of Justice] ends up prosecuting the case, and he's in charge, or she's in charge. They have to listen to their experts. In this case, the attorney didn't listen to his experts.

FC: Well, it shows that I think good hard fundamental research programs, in the long run, are the way to go and the way to pay off. You guys have no idea what we went through for decades, trying to convince the people that were funding us in our own agency that this was important. We were laughed at. We'd been called the Federal University, and it all bore out that the approach that was taken here was right, and it paid off. Seagrass, I think, is an excellent – the seagrass program is an excellent example of that. What's transpired? You guys have retired. One of you continues on in a capacity related to seagrass. What's that consist of, Jud?

JK: Well, most of it is really the legacy of what we did a long time ago. For example, the oil spill work we did after the first Gulf War. When *Deepwater Horizon* happened, the first person to get a phone call – I was actually down in Alabama that week, a few days after the rig blew, doing some work with Dauphin Island Sea Lab, and my phone rang. It said, “You're the NOAA expert. We need you.” And it went from there. But that was all due to legacy in terms of what we'd done in the past. Today, I'm doing pro bono work with APNEP [Albemarle-Pamlico National Estuary Partnership]. You remember the APES [Albemarle-Pamlico Estuarine Study] program?

GT: Yes.

JK: The first mapping of seagrasses in the state of North Carolina came out of Gordon's lab. I sit in on meetings, I do work with Don Field today, and it's always referenced back to what we did at that time period.

DW: Was Randy involved in that mapping?

JK: Randy was involved.

FC: Yes. Sure was.

JK: There are so many examples of that legacy application to today. I could sit here for two or three hours. I'm still working on green turtles in Bermuda because I got interested in animals eating seagrasses through all the work we did thirty years ago.

GT: And manatees.

FC: How long do you think that that legacy will last with the elimination of a seagrass program here at the laboratory? It would seem to me – your opinion would be important here – that there's still a lot to do, there's still a lot to understand. The program didn't work itself out of a job, right?

JK: No. I think what's happened is – of course, there's been change in organizational structure for sure. It's interesting. In the last ten years that I was still working here, we spent a lot of time collaborating with other parts of NCCOS [National Centers for Coastal Ocean Science?], like Mark Monaco's program. They learn from us. Those guys are doing seagrass work now; they're publishing seagrass work. So I think you can probably identify a dozen or more legacy events that are occurring today that were a direct outgrowth from Gordon's original program. It went through lots of transitions, but eventually, the footprint and the information are still being carried on in new work, new and important work.

GT: I think that what this has shown is that the basis upon which they're working was solid. It was a solid basis developed here and with colleagues throughout the US. It wasn't just six guys and a lady here, but it was spread around the country.

JK: Around the world, actually.

GT: Around the world, yes.

DW: Is there major work going on in this arena at Charleston and in Miami at the center proper?

JK: There's no seagrass in Charleston.

DT: There's no seagrass there.

JK: What's her name? The woman's name in Miami? She's worked a lot in Florida Bay. I forget her name.

FC: Joan Browder.

JK: Joan Browder.

GT: Joan Browder.

JK: Joan Browder has done a fair amount of seagrass work.

FC: She has?

GT: I don't know if she's still doing it.

JK: I don't know, either.

DW: I was wondering how the phasing down here in Beaufort and picking up in other parts of NCCOS might relate to proposals to close the Beaufort laboratory.

JK: I don't know.

GT: I don't have a feel for that.

DW: Just curious.

JK: It's kind of a shame the program's withered here because –

GT: No one came to carry it on. Excuse me.

JK: But if you look around, if you look at APNEP, the science coordinator of APNEP, Dean Carpenter, is absolutely a seagrass guy. He's not seagrass ecology or anything, but he's totally behind it. It's all largely based on historical –

GT: Work.

JK: – work. Joe Fodrie at IMS [Institute of Marine Sciences], who my son works with, more than half his work now is in seagrass beds. So even though there isn't a program here as active as it was in the past, the fact that it's surrounded by interest in programs and seagrasses all can be traced back to the [inaudible] –

DW: My funny question was focused very specifically on NOAA politics, not on science.  
[laughter]

GT: Well, the fact that all the seagrass people left at one time or over a short span of time –

FC: Good point.

GT: – has created a void, and there has been no attempt to –

JK: To backfill.

GT: This is a criticism – to backfill. If that program was as recognized as good as it was, there's been no attempt to backfill it.

JK: I would also suggest that there's been an attempt to take it over from a higher level.

DW: That was part of my question, actually; if Silver Spring –

JK: I guess this is being recorded and going on record, but there is a top-down effect that's happening, and I can point my finger at certain individuals.

DW: I had a question, too, related to some of Bud's financial comments about soft money. I was curious who filled the void after ERDA [Energy Research and Development Administration at DOE [Department of Energy] backed out in 1980, '81. It was '80, right? FY [fiscal year] '80 was the last fiscal year that DOE funded –

FC: That's right.

DW: – the radiobiological programming.

FC: There were times after that when we would have more than fifteen sources of funding coming into the ecology work at the lab where there used to be a joint program between AEC and National Marine Fisheries Service – at least fifteen. These guys have mentioned [that] right away, they had something to sell, as in other parts of the research in the lab. But that's where the Corps of Engineers, Fish and Wildlife Service, eventually the Restoration Center – all those people begin to come to the laboratory for two reasons: the expertise and the ease of working with us as opposed to competitive grants.

DW: FY '81 must have been a significant budget crunch at the lab.

JK: Yes, [Ronald] Regan was president. [laughter]

DW: I would think.

FC: What happened during that time was when Walter Jones was head of the Merchant Marine Fisheries Committee – during those years, we had a million dollars added to our base permanently. So that void was filled by political support.

GT: And he came here. Walter Jones came here. I remember meeting in the conference room and talked with us about what was going on in the programs.

FC: And his staff, yes. But it was really the expertise that had been built up here that drew people here. I think the graduate student – when you talk about what's going on today, these are all – it's kind of like seagrass DNA in the fact that you build up a cadre of cooperators and people you were closely linked to because they were students here. They went on, and you maintain that contact. Business is only done among friends. [If] you don't like somebody, you're not going to cooperate with them in research. These were established, and off they went – even Polly Penhale way back at the beginning, in the early '70s.

GT: She was in the program, and now she's what? Head of polar programs or is in the polar program?

FC: You could go on and on.

DW: At NSF? Polly is?

GT: Yes.

JK: Well, yes, a lot of people grew out of the – and grew into other things. One thing that would be valuable in this exercise, whatever you folks are going to do to do a compilation – this was part of the reason that I came here initially. In 1975, Gordon published a paper in the *American Scientist* called "The Impact of Man on Seagrass [Systems]." You can read that paper today, and you can pick out – basically, it was a paper that was documenting the potential impacts of man,

but it was really kind of forecasting and predicting. It's really interesting. Every six months or so, I pick that paper up, and I read it again.

FC: Is that right?

JK: Yeah, because it is what it is today.

DW: It got reprinted at least twice in two other summary volumes.

GT: Somewhere, yes.

JK: Someday, I'm going to write a paper – maybe Gordon will help me, too – to revisit that paper.

GT: I'd be glad to.

JK: I think for your exercise here, you might want to go back and read that paper.

GT: If you can find a copy.

JK: I've got a copy. I've got more than one, but not that many.

FC: Does either Doug have any questions?

Douglas Vaughan: No, I don't.

FC: Doug, any other that you'd like to bring up? [inaudible] any questions on seagrasses?

DW: When was the Walter Jones action taken on the lab budget?

FC: When?

DW: When. Which year? Do you recall?

FC: I have to go back. I have a letter he wrote down here when he did it. I saw it recently, but I don't remember the date. It was in the – I think it was in the mid-'80s, actually, because I was director.

DW: Probably. Probably the second or third year after the initial crisis.

DV: I remember meeting with his staff in the mid-'80s.

FC: Yeah, they would come down sometimes without congressional approval from our people. It was always a touchy point.

DV: Actually, it would have been about '84 because (Chap?) was still alive.



FC: Yes, they started coming –

DV: He died in the spring of '85.

GT: [inaudible] before I die.

JK: I've been thinking about it a lot.

FC: What's that?

GT: Think about revisiting that paper.

JK: Revisiting that paper. I even think the journal would be interested in [inaudible], too. It set the stage. You can follow everything since then and see what happened. What were the impacts? What weren't the impacts? What still hasn't happened but is likely to happen?

GT: It was a seminal paper.

FC: Can you finish up by maybe, off the top of your heads, giving some advice you might leave for the laboratory in terms of the importance of seagrasses and whether the lab should look at continuing this at some point and why? Or is it something that has run its course, and the systems moving and the kind of impetus that you guys provided here are no longer needed?

GT: I think you need to get the right person or people that have the drive to work in that area and work alone for a while and maybe draw some graduate students in. That's what saved our bacon was, as you've emphasized a number of times, is the graduate student group. I don't know how many master's theses and Ph.D. theses came out of the folks that were working with the seagrass group. I know I had nineteen, but they weren't all doing seagrass work. But you need to get somebody [inaudible]

FC: It was financially expedient to have graduate students.

DW: How much of that was going on after CMAST [Center for Marine Sciences and Technology] opened?

JK: How much of what?

DW: Adjunct faculty appointment and collaboration here in the lab?

JK: It continued. It was a different type of collaboration –

DW: Is it still going on?

JK: – because they had their own infrastructure.

Aleta Hohn: There's still collaboration between CMAST and us, a lot of it on the fish side with Jeff Buckel and his graduate students. We actually are in marine mammals, too, doing some prey studies with them. It's different, though. It's not what they were doing before.

GT: But there could be somebody – there could be some going on with – what's his name, who's working seagrass over there? I used to play poker –

DW: Pete?

GT: No, not Pete. I used to play poker with his father.

DW: (Fodrie?).

GT: (Fodrie?).

FC: While you're thinking of that –

JK: He's doing a lot of seagrass work. [laughter]

FC: I want to mention that the graduate student program was started by Ted Rice in the early '60s. When I came in '67, it was already in effect. Ken Tenore, who many of you know, did his master's and his Ph.D. When I came here, he was a master's student. Everybody that came down during that time was from North Carolina State. A number of them stayed on the staff. But the lab began [inaudible] out where, once North Carolina State got their own access to the sea, as Doug was saying with CMAST, we had graduate students from Oregon State, University of Virginia, where Jud and Mark came from, VIMS. A whole host of schools came –

DW: That was going on long before CMAST.

FC: Yes. Dave Evans was here in '72 as an Oregon State student.

JK: We also had a really decent cadre of folks who came through not as students, guys like Steve Bach that came, spent the summer to do specific research, got funded, [and] we collaborated with them, cost-shared–

FC: Like sabbaticals.

GT: Yes.

JK: Yes.

FC: We did have scientists coming here for sabbaticals, too, and for good reason.

JK: We had a number of students, a number of – what was Giuseppe? That program? It's not NSF. It's the National Academy of Sciences. We had a number of us – Gordon was one; I was one – that were appointed so we could bring people in through that program –

GT: Right, through the program.

JK: – and they funded it. It's a postdoc program. The last one –

FC: There was a NOAA postdoc program that we were part of. Yeah,

AH: NRC [Nuclear Regulatory Commission].

JK: The last one I – NRC, that's it.

AH: We still do that.

JK: The last one I had was Giuseppe DiCarlo, who spent four years here. I don't know how many that you had that actually worked in seagrasses, but those were avenues that we used to keep the seagrass program funded.

AH: That was an interesting program at the time because it turns out that as part of the NRC agreement with NOAA, OAR [Oceanic and Atmospheric Research] had to fund one NRC postdoc at the Southeast Fisheries Science Center. I learned that a few years ago, and so that was funds that were coming in from OAR. But when they redid the NRC agreement, that funding from OAR went away, and so there's no more center-based funding for all those great postdocs. People have to get the funding from their own proposals that they write. That's a huge loss for us.

DW: Who were some of the postdocs that came under that?

AH: When OAR was supporting? I don't know. We'd have to go back and look.

FC: Maggi Kelly, who did her –

AH: Many years of it.

DV: Was [inaudible] –?

FC: Maggi Kelly was one.

AH: Probably.

DV: He was under one of those postdocs.

AH: Yes.

DV: Then we hired him after about a year and a half.

JS: Was Jon Hare on one of those to get here?

AH: He might have been.

GT: He might have been here – Jon Hare.

AH: He was a postdoc, yes.

FC: Maggi Kelly was with the University of Colorado and did a satellite-based Ph.D. program here at the lab –

AH: She's at Berkeley now.

FC: – on [inaudible] permits.

DW: Working with Pat, right?

AH: No.

FC: She worked with Don Field and people outside the lab who were part of that C-CAP [Coastal Change Analysis Program] coastal mapping program that we did here.

AH: I'm sure we could come up with a list. It was a lot of years that OAR funded that postdoc, and then this lab that you all know better than I do out-competed all the other labs for that postdoc because it was a center-wide competition, but that mostly came to Beaufort.

FC: That's right. None of the other centers or laboratories within the center –

GT: Competed for it.

FC: – would compete for it. So we were getting it every year. Some years, we got two, where they built up some extra money and said, "Well, you guys are so receptive. We won't put this out for bid. Will you take another one?" So, it paid off.

DW: When was that going on?

AH: A long time.

FC: I would say in –

DV: Early 2000s.

FC: It was in the '90s.

DV: Late '90s.

FC: Brad Brown got funded at the center. Then any laboratory from here to Galveston could apply for those NRC funds.

AH: I don't have it off the top of my head, but I can tell you that it ended approximately, I'm going to say, six or seven years ago. I have a date somewhere where the NRC contract was renegotiated, and OAR said, "We're done giving money to the Southeast Center. We're not putting that in the new contract." So we're still part of the NRC agreement, but we no longer have the funds from OAR.

DV: That's too bad.

FC: Our most recent participant Here is Dr. Aleta Hohn, who's come into the meeting, and heads up the Protected Species program on the fisheries management side of the Beauford lab.

JK: And by the way, historically, protected species was a big part of the seagrass program –

FC: The links between –

AH: Manatees.

JK: In the late '80s, when the agency considered the first listing of a seagrass under ESA [Endangered Species Act], they called Gordon, and Gordon knocked on my door, and it went from there. I'm still on the recovery team, and we're still working on the species.

FC: This was mainly manatees and green turtles?

JK: This was Johnson's seagrass, which ended up getting listed. It was the first and only seagrass ever put on the endangered species list. It was listed as threatened.

GT: That was in Florida, right?

JK: Yes, and it still is on the list.

FC: Is that right? It still is?

JK: Yes.

FC: Do you guys have any final words that you want to say to somebody that will be listening, hopefully in fifty years, to this discussion about the work, about the science, about the approach to science?

GT: I'd like to say that I think Judd and I were lucky to have been here to get this program going.

FC: Well, it sure was a shot in the arm for the laboratory, and it certainly brought a lot of attention and respect for the laboratory, as well as a number of other programs. But it was

important. It's interesting to sit back and have watched the whole thing from the beginning to where it is now. When I started with Gordon, sampling the seagrass bed out there at Phillips Island – in fact, every time I'd come to work, I look out there, and he'd be out there. I said, "That bit is going to go extinct. He's going to sample everything in there."

GT: My kids called it "Daddy's Island."

FC: I can see why. That guy lived with that little thing he was pushing through there.

GT: You remember that?

FC: Oh, yes.

DV: [inaudible] anything left.

JK: We still have a study site and sampling going on there. In fact, the interesting thing is that Phillips Island has done a whole ecological shift from perennial eelgrass to an annual eelgrass bed.

GT: Annual.

JK: You go out there right now, and you will find no eelgrass in that embayment. But you go out there in late November through April, May –

AH: [inaudible]

FC: And it's there?

JK: It regenerates completely by seed.

GT: By seed. It's seeding.

FC: What's the species?

JK: *Zostera marina*.

GT: *Zostera marina*.

FC: It's eelgrass.

AH: Why did it switch? What's your guess about why it switched?

JK: Thermal stress.

AH: Yes, that's what I thought.

GT: It's such a shallow and [inaudible] area.

JK: Thermal stress.

GT: I think it shifted because they sold the island to somebody else. [laughter]

JK: Maybe they went out there and put some herbicide out. It's an amazing story because it's over fifty years now of sampling out there. It's made the shift. There are a lot of other meadows in the area that have done the same thing.

DW: Have you written that up yet?

GT: There's the basis for the redo of that paper.

AH: Yes.

DW: Have you written that up yet as a thermal stress hypothesis?

JK: Thermal stress is a hot topic right now –

AH: Hot topic. [laughter]

JK: – in seagrass ecology.

FC: Well, there aren't that many programs around that have those kinds of databases, where there's been any continuity for this amount of time, and so anything that –

JK: Fifty years.

FC: – can be put together would be very, very unique, that's for sure. Okay. Well, if there are no other questions, I want to thank you all, and we'll get this into the archives and properly labeled and hope that somebody listens someday. Thank you so much.

JK: You can put it on satellite or a space mission out to Jupiter.

-----END OF INTERVIEW-----

Reviewed by Molly Graham 4/8/2022

Reviewed by Joseph W. Smith 4/17/2022

Reviewed by Molly Graham 4/19/2022