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Lipton, Doug ~ Oral History Interview

Ruth Sando

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

Interview with Doug Lipton by Ruth Sando

Summary Sheet and Transcript

Interviewee

Lipton, Doug

Interviewer

Sando, Ruth

Date

June 23, 2016

Place

University of Maryland, College Park

ID Number

VFF_SS_DL_001

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Biographical Note

Dr. Doug Lipton is currently the Senior Research Economist at NOAA Fisheries and a member of the Council of NOAA Fellows. He has a Bachelor's in Biology from Stony Brook University, a Master's in Marine Science from the College of William and Mary, and a Ph.D. in Agriculture and Resource Economics from the University of Maryland. He started with the National Marine Fisheries Service as a Sea Grant Fellow in 1979 and was hired by NMFS as a fishery biologist before returning to school for economics. He also worked for Sea Grant as the national economics coordinator.

Scope and Content Note

Interview contains discussions of: fisheries economics, resource economics, NOAA, NMFS [National Marine Fisheries Service], marine science, human dimensions, Sea Grant Fellowship, Magnuson-Stevens Act, ecosystem-based fisheries management, Cooperative Institutes, ICES [International Council for the Exploration of the Sea], modeling, big data, surveys, watershed

In this interview, Doug Lipton discusses his current role as senior scientist for economics in promoting the inclusion of high-level economics in NOAA. He describes the history and growth of economics in NOAA during his time with the agency, from one or two economists in each center to 100 economics and human dimensions employees across the country, and modern interdisciplinary research on how to manage fisheries through an economic lens.

Lipton details his work on projects to incorporate economics into ecosystems-based fisheries management, and also spends time discussing the important role of Cooperative Institutes, coalitions of universities that can easily collaborate with NOAA. He hopes to establish a Cooperative Institute specifically for economics. He describes similarities and differences between working in government and working in academia, since he has experiences both worlds, as well as the history of Sea Grant and his extensive involvement with the program throughout the years, from being one of the first Sea Grant Fellows to becoming the national Sea Grant economics coordinator.

Lipton analyses the impact of more detailed and extensive data on economics research in developing accurate models for decision-making, and the difficult and time consuming process of developing surveys for sampling and low survey response rate. He is most proud of his work building a watershed and water quality program and creating new positions to deal with watershed problems. To people coming into NOAA, he advises that one must not only be self-motivated, but also be able to choose the things that are most important to work on and do one's very best with them.

Indexed Names

Carter, David
Curtis, Dr. Rita
DePiper, Dr. Geret
Gautam, Amy
Hicks, Rob
Holliday, Mark
Kasperski, Steve
Miller, Morton
Paolisso, Michael
Trot, Lamar

Transcript 001

Ruth Sando: Alright, I think we are now recording. I will put it right here

Doug Lipton: Okay.

RS: Alright, so let me just read my statement. This interview is being conducted as part of the Voices from the Science Centers project funded by the Northeast Fisheries Science Center. It's also part of the Voices from the Fisheries project that's supported by NMFS Office of Science and Technology. I'm Ruth Sando, and today I'm speaking with Dr. Doug Lipton at his office at the University of Maryland. We're meeting on June 23rd, 2016 at 9:30 a.m. Dr. Lipton is the Senior Scientist for economics at NOAA Fisheries and a member of the Council of NOAA Fellows. He has a Bachelor's in Biology from SUNY Stony Brook, a Master's in Marine Science from the College of William and Mary, and a Ph.D. in Agriculture and Resource Economics from the University of Maryland. So, thank you for meeting with me. Let me start by asking you

to describe your current role at NOAA.

DL: Okay, my current role, which I've been in for the past—just a little over three years—is a new position that was created a little over three years ago to really elevate the role of economics within the agency to a high senior level so that as economics is discussed amongst the agency leadership, that there's an economist in the room who can really represent that. So, in the past, economics in the centers is usually a branch in part of the division, in headquarters is one of the components of the Office of Science and Technology, Economics and Human Dimensions Branch or division, so that everybody above that—their information... were not economists, usually biologists or other fisheries scientists that would need to interpret the economic information. So, the idea was that agency leadership felt it was important enough that economics be represented at a much higher level that's internally to the agency, and then externally to have somebody at a high level dealing with other federal agencies, other institutions, about the economics program and the interpretation of that. And I should say that although it is an economics position, that it's generally thought of as broader, human dimensions, so the other social scientists are—I try to represent them as well, understanding I'm not trained as a social scientist or anthropologist or sociologist or political scientist, but trying to interact with them and represent their interests and, more importantly, their findings and its' ramifications for policy across the agency.

RS: What is the history of economics as sort of a discipline within the National Marine Fisheries center? Does it go way back?

DL: So, it does, but it goes way back at a very low, small level. I know about this because I started my career at National Marine Fisheries Service headquarters in 1979. I was a Sea Grant Fellow. I was in the first class of Sea Grant Fellows, and I wanted to work for NMFS for my career. So, when they said, where do you want to spend your year fellowship? I went around and interviewed different places around D.C. and I said, "oh, I want to work in NMFS in the office of what is now Science and Technology", and maybe they'll hire me—I'll get a job in one of the centers or something like that after the year if they like me. So, I started at that time. I was a fishery biologist, I was just finishing up my Master's in Marine Science. I know you didn't ask me this question about my career, it was more about NMFS, but I'm getting to that. I decided to go back to school while I was working at NMFS headquarters—in fact, they were willing to help fund that. But I decided I wanted to get a degree in economics. The reason I bring this all up is that I sort of morphed into an economist in my position.

So, from... I think it was about six years from when I went from being hired in a fishery biologist position into an economics position. I ended up working with a gentleman named Morton Miller, and he was the head economists at NMFS headquarters at that time... And so, I got to know more—I don't know what age he was at that time, he was probably younger than I am now when we started working together. But we worked very closely together except from about 1985 to 1989 when I left NMFS to come here to the University of Maryland to work. I got to know the economics program across the agency. There were four centers at the time, there weren't six: Northeast, Southeast, Northwest and Alaska, and Southwest. Each center had one or two economist and that was it. They often did their thing, and in headquarters we had a couple of

economists on the regulatory side—on the management side, and then I was on the science side with Morton. I remember him telling me about the old days where actually—and I'm pointing to you, they can't see this in the recording, I'm pointing here—they actually had an economist group on the University of Maryland campus that worked for National Marine Fisheries Service, small group of folks, and the economists...it was an economist team, and then somewhere in that period they kind of tried to reinvent economics in headquarters and they dispersed that team to the centers. So, one or two people went to one center or another and then the thought was to try and rebuild an economics program in headquarters that was somewhat different.

Part of it was that the early role of the economists were mostly about tracking what was going on with the industry with revenues in the different fisheries, what was going on with the international trade, and just producing reports that were sort of summaries of what was happening. They weren't really doing very much in the way of economic research. It was more of a description of what was happening in these fisheries, and again, mostly from what was going on with revenues. Were they up one year and down the next? And tracking those kind of things. A little bit on things like seafood demand. So, the thinking was that that group was not really doing sort of the modern fisheries economic research that was emerging. This was not that long after Magnuson Act was passed, and so doing research into how to manage fisheries better through an economic lens was not really happening. So my knowledge of them, what happened, sort of diminishes after 1989 because I left the agency. I sort of left because even though there was this promise of building something, it just wasn't happening.

RS: Let me ask you again—it said that you came in in '79, right?

DL: Yes.

RS: This switchover from basically documenting and kind of collecting data to becoming more involved in research itself, what was the timeframe for that?

DL: So, again, it's sort of mixed up in the, you know, the individual, the team that they assembled that was doing this sort of industry descriptive work, was not the same, didn't have the same skills to do the research science part. They were just trained differently, not being disparaging it, they just were trained differently not to do that. So, the thought was to build something new, bring in some more really trained folks with some of the more modern techniques, and do the research. So, that was from that period from about '85 to '89 that I was there, but nothing really happened. I was doing a little bit of that kind of research, some of the folks at the centers were doing it, but there didn't seem to be any prospect for implementing this vision that some of us had. So, over that timeframe, not much happened and that's what I'm saying from '89 to about 2000 I was a little bit in touch with what things were happening—partly through students here. I came to the University of Maryland in '89, but our students, they started going to work through National Marine Fisheries Service. A young woman who I worked with here, Amy Boss—got married, now is Amy Gautam, G-a-u-t-a-m—started working at headquarters. Rita Curtis was a student here, she started working at headquarters. Now, Rita is the head of the Economics and Social Science Division in the Office of Science and Technology.

RS: She's one of the people on my list.

DL: You're talking to Rita, so she'll be able to fill in sort of the timeframe with Amy going there, and then Rita. There was a gentleman, Mark Holliday, I don't know if you are going to talk to Mark.

RS: Yes.

DL: Mark's recently retired. Mark and I started at Fisheries at the same time. Mark was trained as an economist, so even though he—I don't think he ever worked technically in an economics position, I can't be sure about that—he was very instrumental in building up the economics program which Rita now had. So, I think the time frame of that was around 2000, when they started bringing people on and really expanding both in headquarters and in the field. Now we have six, seven, eight economists, maybe two, three, four, varies by center. We have a headquarters group of about ten people, so we probably have about 100 people working in Economics and Human Dimensions that are federal employees throughout the agency. So, we went from having, as I was describing in the early '80s, one or two people in each center and only four centers, so a dozen people maybe working across the agency to about 100 working on economics. The other big change was sort of the nature of that work being this more quantitative, bioeconomic type of approach rather than the industry descriptive type of work. There's still a little bit of that that goes on, but again, it's mostly more of this integrating economic type models into the biological population dynamics models, and actually a broad array of other topics and areas that our program currently deals with, protected resources and valuation of whales, recovering whale populations and protecting sea turtles and looking at cost effectiveness of our policies, looking at alternative management approaches, evaluating fishery catch share programs versus other types of management programs. So, it's changed quite a bit, and particularly from the period of 2000 to now.

RS: I wanted to go back and ask you about the linkage between economics and human dimensions. Is that, you know, if a grad student were to come to the University of Maryland, would they get a degree in that? Or is that something that NOAA put together within its' own program?

DL: NOAA's put it together, so right. If you come to a university, you get trained as a resource economist or you get trained as an anthropologist or a social science sociologist, there could be other fields. So, in anthropology, there are people that are interested in natural resources and environmental issues. They get trained in anthropology, and so there's no really combined thing like that at the university, at this university. Now, in other universities where they have sort of departments of natural resources, they tend to blend disciplines. They become more interdisciplinary. At Fisheries, you sort of have the biologists and the physical scientists and oceanographers as one group, and then they figured everything out, the economics and human dimensions side, they would fit better together. There is a good synergy between those so each of those—there are things that each of those groups do that are independent and sort of their own thing, but because they're usually within the same branch or division we've seen a lot more synergy and economists working with anthropologists developing new products that we wouldn't

have thought of to even do. So, I don't think it was really a strategic, we're going to do this for a particular reason but we don't know what to do with these groups of—and there's always when you talk to people - I'm not a big labeler so I don't - but you get people, what do we call it? Do we call this economic social science or is it science? Is social science included in economics? We have the term non-economist social scientist, which some people think is fine. Some people don't like that word. It doesn't matter, just as long as we're doing important stuff that is helping to improve fisheries management then it's all good—I don't care what you can yourself. If you do good work, it will get recognized as such and just go on from there.

RS: Well, you mentioned that in '85 you left.

DL: No, '89.

RS: '89.

DL: '85 is about the timeframe—I didn't check my records, so I don't know exactly the date—where I sort of formally converted from being a fishery biology to an economist within the agency. So, they had to do a personnel action to reclassify me in an economics position. But even over that time, I started—I mentioned I came to Fisheries under the Sea Grant Fellowship now the Knauss Fellowship, '79, did a year. They hired me at the end of that year in a fishery biologist position. I did that for about a year. Then in about '81, that's when I decided to go back to school for my Ph.D. and that's when I decided that I wanted to add economics in my toolbox. I had been trained as a fisheries biologist through my Master's degree and just was really interested in the human side of things and so it made sense for me. There was also a practical reason—the part I loved about biology was being in the field and doing field work and now I'd been hired into this headquarters position, I wasn't in the field. The ability to go out and go off and collect data for a couple of months every year wasn't going to happen. In economics, you're often using data that other people have collected, so it made practical sense as well as where my interests were heading. There was a good linkage. My supervisor at the time, a gentleman named Lamar Trot, headed up the office of what they call Resource Investigations in headquarters—it was under the Office of Science and Technology and he was very supportive of me going back to school and supporting me. He was a real mentor to me, knew some of the faculty members here at the University of Maryland and I remember (just pointing down the hall now, just a couple of offices down the hall) he and I came over one day and met with the department chair and they were very welcoming in the department here. They really wanted to bring in somebody who had sort of the biology background to study economics here. This department has a very strong fisheries and traditionally resource economics department. I mentioned people that are at National Marine Fisheries Service now, such as Rita Curtis, Amy Gautam who is there, Rob Hicks who was there in headquarters for a while, now at William and Mary, and even currently now Geret DePiper who was one of my students from Maryland, now at the Northeast Center at Woods Hole, Steve Kasperski who is now heading up the economics group in the Alaska Center, so we have a rich tradition of placing students at National Marine Fisheries Service. There's always been a very strong tie between this department and the University of Maryland. I know other colleges—University of Washington has some strong links with the centers in Seattle and UC San Diego in Southwest and so on. Traditionally, Woods Hole had a good link with the

University of Rhode Island. So, it's a small community, everybody knows each other, we know all the good students and so we tend to hire, they're very well trained and we've got a great group of people now.

RS: Well, let me ask you a little bit about what your current responsibilities are.

DL: So, I mentioned earlier this is a new position so I got to define it somewhat. One of the reasons I was interested in taking this position was because it was just seen as just a leadership position, it was not a programmatic—I don't want to program, I don't supervise anybody. I do have a post-doc that works for me that keeps my research going, which is part of my responsibility. I'm supposed to be a leader in doing research, demonstrating—on the forefront of the profession. So, it's not a big part of what I do, keeping the research going, and that's why I have a post-doc who can kind of do things on a day-to-day basis. So, I am continuing to advance research, publish papers and so on through that mechanism in collaboration with others. So, that's part of it, is just doing sort of cutting-edge research. But again, representing economic issues within the agency through our leadership, representing the economic thinking of National Marine Fisheries Service to other federal partners, and internationally being sort of—I'll give you a good example. Recently the European Commission held a meeting on trying to do a better job within the commission of integrating economic advice into European fisheries management and I was invited to be a keynote speaker at that meeting talking about how we do things in the United States. So, I would be the person that would be identified when these sort of general questions about how do we do economics in fisheries in the U.S.—and again, we have great people in the field who know all the details about the fisheries that they're working on—but somebody that could speak more broadly about that.

In a way, it's almost like being an ambassador for economics and economic thinking. Sometimes ideas come into the agency and they want it has an economics component to it and the question is, is this valid? Is this a good point? Is this something we should be pursuing? And again, having somebody at a high level within the administration being able to make that decision and therefore it's carrying a lot more weight than something that is sort of farmed down and then some response comes up and also eliminating that sort of having to do that by having somebody at a high level.

RS: Now, you said your role is to promote research and publications. Do you have a budget for giving grants, or it's just through your post-doc?

DL: Right. So it's just a small—my only budget goes to my post-doc. We're doing very specific research projects. I've chosen those projects to be what I would call demonstration projects that they're, hey, here's what we can do with economics that maybe hasn't been done before and look at these results, they make a really big difference in terms of how we manage our fisheries. The big thing in fisheries now, you may have heard, one of the big areas now is in ecosystems-based fishery management. I have several projects going on that try and demonstrate when you incorporate economics into ecosystem-based fisheries management, it really can change the outcome of decisions and recommendations that you would make in managing fisheries than if you don't include it. Then I try to encourage through this demonstration for others to kind of pick

that up and apply it in their specific cases in their region.

So, I don't control the budget. There's a small —when you talk to Rita Curtis, she's the one who controls the budget, and certainly Rita and I confer and she wants my help and my direction on where emphasis should go in that work, but it's not like we have huge sums of money. One of the things that I see as my role is creating opportunities for leveraging. So others people's money, that's where... When we go back to the 2000 time period, that was when a lot of resources were put into economics and positions were created. I hope that happens again because we don't have enough, but just being realistic of where we are in terms of budgets and the amount of money that is controlled directly by economics within the agency, I see more room for growth in terms of identifying things like ecosystem-based fisheries management, identifying things like climate and climate-ready fisheries, resilient communities. Basically making sure, kind of getting in the door of those discussions, and part of it is that the stature of my position keeps those doors ajar a lot than maybe some other folks, and reminding people who are controlling maybe big budgets for this that if you really want to do this well, if you don't account for the economics and the human dimension—broader than just economics—than you're likely to get it wrong. The long-term prospects for your programs are not going to be so good. If we incorporate thinking about economics and human dimensions right from the start and put a little bit of resources towards integrating that work and those people into what you're doing, we're more likely to have a positive outcome and grow the program or continue it into the foreseeable future.

For the most part, I would say it's been a very welcoming... people aren't pushing back and saying, well, we've only got this much money and we don't have time for you guys. I think there is a very much an acceptance that the economic and human dimension component is very important and a willingness to provide resources and again, one of the differences of having this position is then there's the follow up, and there's accountability, let's say, back to me if it's not happening. I can bring that to the attention of others in leadership and pressure could be put on. But it really hasn't had to come to that. So far, and we're really just getting rolling on some of these things, but I would say these big programs on climate and another one that's a NOAA-wide program is Integrated Ecosystem Assessment Program. It's like ecosystem-based fisheries management only bigger, very much has economics and human dimensions as a part of it. So, I see the role of my—is identifying the current programs that are like that, where there's an appropriate role, and also being engaged so that when other things emerge that we're aware of it right from the start and can influence things as they develop.

RS: Well, it sounds like a lot of your role, as you've described this part of it anyway, is sort of promotion and—I don't want to say political—but sort of making sure that economics is positioned in people's thinking.

DL: Exactly, yeah.

RS: Let me ask you about the relationship with universities as sort of research centers.

DL: It was funny because when I was giving my talk, when I was answering your question

earlier on, it popped in my mind to mention the university linkage as well, and then I forgot to mention it. So, I was talking about international groups and other federal agencies and now NGOs, non-government organizations, also pop into my mind. But universities are a huge part of it, and it's another good example of where I'm trying to leverage. So NOAA has these Cooperative Institutes, so it's groups of universities that have a formal relationship around a very broad topic that facilitates the contracting of work and interchange between the agency's needs and what the universities can provide. Again, a lot of the expertise lies there at the universities and even though I described an economic and social science program that may be 100 people, they're still dispersed and so there isn't a huge amount of capacity. Getting capacity to do the work often comes from universities. So, part of it is that we just contract with universities to do work or work alongside our folks and bring certain levels of expertise.

But, yeah, we're engaged more broadly with discussions about expanding Cooperative Institutes. For example, what I would like to see—it's not going to happen overnight but maybe, I've kind of mentioned it already at leadership meetings—is the idea of a Cooperative Institute around economics or social sciences. So, most of them are more broadly around fisheries science. Actually, there are several NOAA ones that are even broader, more about oceanography and marine science. The one in the Northeast, which is headquartered at University of Massachusetts... at, I think, Dartmouth, maybe, I may not be right. But they usually have like one university is the main conduit and the administrative home, but it's a partnership with other universities, so Rutgers University is part of that, University of Maryland Center for Environmental Science is part of it. But again, it's mostly—the Northeast one does...the Rutgers relationship is with an anthropologist who's been at Rutgers for many years, but for the most part it's not really set up for economics. It doesn't have a lot of the major economic institutions. So, one route would be to expand the existing Cooperative Institute to include more economics and social sciences, so that's a possibility. But another one might be, as I was saying earlier, focused and have a Cooperative Institute that's just around this topic. So, it would be made up of universities that have expertise that's of interest to NOAA and the National Marine Fisheries Service with an annual budget. The Cooperative Institutes have a certain level of work that they do out of that annual budget, but then when they become a conduit for—when funding becomes available for a project to get the institutions on board in doing the work for us. So, working in that, in the academic sector from a variety of ways.

What I just mentioned, even we have an education program, so even utilizing our academic partners to develop courses that are related to fisheries economics and encouraging that. Even as simple as we have a webinar series and I've invited economists in from academia to present their work in that series. Again, it's more of the promotion—here's what we do, here's why it would be valuable to you.

RS: Well, give me an example of how the Cooperative Institutes function in relation to an issue like climate change. Do they not have a sort of topical focus at all? How would that happen?

DL: You know, I don't—I haven't looked at the Northeast ones documentation recently to see how specific...my guess, I'm sure it does mention climate change in there, but the way things typically work is that there might be some sort of initiative that's federally-funded on climate

change where we don't have the internal capacity to do the analysis. We have limited capacity. So, rather than just doing a broad research announcement and going through that whole, with tons of people applying that really aren't even qualified or whatever, you've already pre-identified a group of academics that have expertise in this broad area and then they can, under the Cooperative Institute, put together a proposal—it still has to be evaluated and peer-reviewed and all that—but really just facilitates working with our obvious partners to begin with and the people with expertise. They're not funded to just go off on their own and do this work. It's a mechanism to facilitate this partnership and keep more of a longer-term relationship going. You'd fund some work for a couple of years and then take it to the next stage. It just makes more sense to do it through these types of institutions than I said, just going out with the regular contracting route.

RS: So, it's being implemented under your oversight.

DL: Right. And there's sort of an umbrella of activities that it fits under. So, if you're just funding a variety of projects at a variety of different institutions, they do the work, they write the final report, and it may or may not be utilized in some way. Here it's continued to be organized under this Cooperative Institute umbrella that really facilitates making sure that that work gets used and is built upon.

RS: So your role as pushing the science forward—are the Cooperative Institutes a vehicle for you then, in getting that done?

DL: What I was getting at is that in the days when this was set up, there wasn't a position like mine in the leadership who were making these decisions. There wasn't somebody there saying, well, what about the economics? Let's build this in. So, the way they're currently set up, as I was describing, there isn't a strong economic component to the existing Cooperative Institutes and they weren't developed—so, if we had said we want a Northeast Cooperative Institute and we want different organizations to put in...there's a sort of initial award to the Cooperative Institute, and you specify what it is you want that Cooperative Institute to be able to handle generally.

RS: And it's kind of a broad mission?

DL: A broad mission, and if economics isn't prominent, you're not going to get it. But if you put that in there as one of the key components and say we're only going to entertain funding a Cooperative Institute that has a really strong economic and human dimensions social science component to it, then it would have been formulated differently. So, I'll give you a very specific example—so there's an economist here in the Department of Ag. and Resource Economics at the University of Maryland that had some particular expertise where we wanted that individual to do some work. I mentioned that the University of Maryland Center for Environmental Science is part of the Northeast Cooperative Institute. Well, we, the Department of Agriculture and Resource Economics, is not part of the University of Maryland Center for Environmental Science, it's a different institution but part of the University of Maryland, College Park, not part of the Cooperative Institute. We're not able to just directly incorporate that research into the Cooperative Institute work. We ended up partnering with somebody at the Center for

Environmental Science and they subcontracted with the University of Maryland, College Park to do that particular work. We shouldn't have to go through that, that's an added layer, more administration and so on. If that Cooperative Institute as I said was built from the start to have that economics component then that probably wouldn't have happened. So, that's why I'm saying that my goal would be when the opportunity arises—I think these institutions are created, they have like a five year life span and then they get renewed or reviewed—so, on the next round I'll be able to influence that overall mission of the Cooperative Institute and put in those words. Again, I doubt very much that there'll be somebody resisting me saying we don't want to do that. I'm pretty confident that if I ask for that, it will get included and we'll have made progress in that regard.

That's one mechanism and then what I suggested is at least exploring the idea of having a Cooperative Institute whose umbrella mission is economics and social sciences around all the things that NOAA would be interested in, so climate change, fisheries, and the like—and it could be broader than just fisheries, resilient communities that are dealing with sea level rise, and NOAA's very interested in how these communities are responding to those kinds of things. What kind of economic research do we need in that and having a mechanism to carry that forward.

RS: How far back do the Cooperative Institutes go, and did they always have a research component to them?

DL: I don't know, we're kind of on this Cooperative Institute road and I'm by far not an expert in them, so I don't know when they were created. There's like five or six of them in NOAA, and only one is sort of fisheries-centric—that's the Northeast one. CINRUN or something... Cooperative Institute for Natural Resources something, out of UMass and all. I was just giving the Cooperative Institutes as an example, any sort of a good concrete example of an approach where there's existing organizational structure that has traditionally left out economics, human dimensions, social science. Can it be changed and expanded to include that? The reason I told you that is because then it becomes a permanent change. It's not a one-time thing. So there's two methods—one is sort of these institutions and sort of infiltrating the institutions with economics and human dimensions and making it a core part of what they do... Now I can't remember what my other thought was on that.

RS: You had mentioned that you also represent the state of marine economics when international discussions are going on. How would you—do you feel like when you look at how it's done in Europe, that it's better integrated, the human dimensions and economics and the marine sciences? How would you compare it?

DL: It's interesting, I mentioned that I had been at a European Commission meeting back—I think that was in February or that time frame—and I heard, so I gave a talk, but I heard a lot of other talks. Then I was, we had a meeting that we co-sponsored, National Marine Fisheries Service along with ICES, the International Council for Exploration of the Sea, which we are a part of but is mostly a European science institution. They have, they're starting to have this discussion as well, I would say. I didn't have a lot of interaction with ICES. I didn't have a lot of interaction with the EU [European Union], prior to coming to my position with NMFS. It just

wasn't something that was a big part of the work I did here at the University of Maryland. As I'd been learning about it, I'm finding that we're much further along.

So, we just got back three weeks ago from a meeting in Europe that was sponsored by ICES and that we co-sponsored on integrating human dimensions into—well, we call it integrated ecosystem assessment. So, I mentioned NOAA has an IEA, Integrated Ecosystem Assessment Program and we have now integrated the human dimensions team. We have a team of people, it's a subcommittee, a working group of that. That group met in Colorado a few months ago. A lot of work going on where human dimensions economists are working with modelers, ecosystem modelers and the like, in designing projects. Then, we went to this meeting in Europe and they're just starting to talk about it. So, ICES has started a working group called Strategic Initiative in Human Dimensions to sort of promote, sort of do what I'm doing as an individual, do it as a committee and group across Europe. The meeting that we just got back from on marine socio-ecological systems and bringing in the human dimension was sort of the subtitle of it...there's, again, work going on, there are researchers who are doing human dimensions research in conjunction with ecologists, with modelers, but they're just starting to get their hands around it. So, we're a little bit ahead of them, but there are things they're doing we can learn. I don't want to make this sound one way, so I'm going there, I'm engaging with them to find out what it is they're doing and what ideas they may have that we could utilize here. I invited somebody from that human dimensions working group to come to our integrated ecosystem assessment meeting to see what we were doing and what we were talking about. So, really trying to promote exchange. I think there's a lot more going on in Europe that, in a way, there's a lot more research examples going on there. It just hasn't been formalized—a lot of individual studies. Somebody who is interested in a topic does the work, but it's not really been talked about or formalized within their organizational structure.

So, how does that research get translated into advice for fishery management or ecosystem management? They're sort of having that discussion and then the researchers are doing the work and we need to connect that broad discussion about advice to the research that's getting done. I would actually say that we had a lot of examples of Europeans—it was international in other parts of the world as well—doing really good work that we'd like to see here in the U.S., but we seem to be better at having those discussions about linking it up with the leadership that is sort of driving this into the management process.

RS: Thinking about the development of science and the funding for research, what's your impression of the idea that students have about the desirability for working for NOAA, working for the government, having a career like you have had in marine sciences and economics?

DL: Right. So, it's interesting, the difference between the students and the faculty of departments. Having—just in the way of background—spent 25 years so the bulk of my career at the University of Maryland on the faculty, and so sat in on a lot of faculty meetings and had this discussion although I've always had that one foot in the NOAA world. Not just a little bit through fisheries, more so through Sea Grant, Sea Grant program. So, I've kind of lived in both worlds. In an academic department, the gold standard of your student is that they get a degree from your department and then they go teach at a department that's as least as high-ranking, if

not higher-ranking than your own. That is an accomplishment—that's the high achieving accomplishment. If they go to work for the government, that's not so good. That's just the mindset, that's an academic mindset, but of course over the years as they've had opportunity to interact with a lot of students—part of it is that it's changed. So, going to work for NOAA National Marine Fisheries Service and continuing your trajectory of research many years ago was challenging. Now, I see very little difference between the mindset of a NOAA economist, fisheries economist, or human dimensions researcher, in terms of wanting their work published in highly respected journals, going to professional meetings to get peer-reviewed validation of their work. It very much aligns with the types of things we like to see out of our students that come out of our program and I see a lot of students that are more interested that perfectly had the capability of trying to get that high ranking academic position but would rather work in fisheries because the work is potentially more satisfying, the research that they get to work on, their access to data that they would have to jump through hoops to get if they were in academia. The problems, the issues that they're working on—and again, the mindset is to me, when I go and visit the centers, they're like mini academic departments.

The science side is really held in high esteem, and there's that consistency between an academic department and the quality of the science that you want your students to produce or you're producing and why people are being asked to do fisheries. There's tradeoffs in both as well. There's probably things that you're being asked to do and you don't have quite the academic freedom to do what you want working for NOAA that you would in an academic department. On the other hand, you don't have the teaching responsibility—although some of our folks teach because they're really good, but they teach because they want to teach and they're really good at it and they really can add a lot to the nature of what they teach because they have really great hands-on experience. The tradeoff in an academic department, the publish or perish to get tenure pressure is not quite the same although as I said, you're still expected to do that academic-level work.

So, I think it's changed over time and the respect and some of the people we have working in our centers doing research are as good as anybody in an academic institution. They could easily be in that world if they wanted to, and some have gone back and forth or whatever and whatever they are at their life stage and whatever makes sense for them. They're perfectly capable of thriving in either world. And again, I think that's changed. I think earlier on the thought was, well, if I go and work for fisheries I'm really not doing that high-level academic work, and now you really can't get away with not doing really high level work at fisheries.

RS: So you feel like NOAA can attract any top-tier person?

DL: Absolutely. Absolutely. If somebody has in their mindset that they want to be at a high ranking academic institution, that's going to trump everything else. But if they're open to just focusing on the type of work that they'll be able to do, then it can be a tough decision and it's going to depend on their individual circumstances and things like that, what makes sense. But yeah, any of the students I mentioned from this department, we're a very high-ranked department, our students are very highly sought in a variety of places and I think even the department's thinking has changed and is now looking at somebody going to NOAA Fisheries as

being a great success for the department. Just being honest, again, if they go to Harvard or MIT and get a professorship there, that's going to trump everything. They still like to see that, but now—again, because we see the level of work coming out, and we see the publications coming out of our scientists at NMFS, and when I say we, I say the faculty in the department, and they say "oh, we want that person here publishing that work out of our department". So, I think that barrier has been broken down quite a bit, and changed quite a bit.

RS: You've mentioned Sea Grant. Can you—and I know you've been affiliated with Sea Grant—can you talk a little bit about the history and mission?

DL: So, I've been very affiliated with Sea Grant. I can't get it out of my blood because I mentioned that I started my career with a Sea Grant Fellowship, now the Knauss Fellow, in 1979, that was the first year. They have an alumni, a huge amount of Sea Grant Fellows are all over the place in the federal government. I'm just very proud that I was part of that original class.

But when I came... So, I had a careened very back and forth early on. In '81 I did an IPA, the Intergovernmental Personnel Act, from the federal government to here at the University of Maryland working on a Sea Grant-funded project. Then, I went back to Fisheries after a year and a half on the IPA and then I worked there for a few, until '89. Then when I was hired in '89 at the University of Maryland Department of Agriculture and Resource Economics, also part of my appointment was to be the Sea Grant Economic Specialist for University of Maryland. So, I sort of had two bosses—one was the chair of my department, and one was the director of Maryland Sea Grant. I was one of the -- different Sea Grant programs run differently. In Maryland, the Sea Grant specialists are in academic departments and they have academic standing and Sea Grant agents are sort of in the field and they're part of the extension service. So, I was a specialist and then in—I'm trying to think of the year—say '93, '94, I was then appointed to be the leader of the whole Sea Grant extension program. So this team of specialists and agents around the state in Maryland Sea Grant, now I was in charge of them, so I had supervisory responsibility, programmatic responsibility for that program.

The Sea Grant programs, they're state-federal partnerships, so the federal government funds through National Sea Grant that's matched with state dollars and there's a research component, so there are regular—every two years there are research competitions and there's an extension component. I was in charge of the extension component and I would get a budget from the federal government. I would have a state budget. I would merge those and use that to run the program, hire people, run projects and that kind of thing. I did that for 20 years.

So, I took that program over and that meant that as the extension program leader, I interacted with other extension program leaders in the region throughout the country. We had a national assembly of Sea Grant extension program leaders that met once every other year or something like that. That also engaged with the Sea Grant Directors who are sort of in charge of both the research and the extension part of it. They have a broader role. So, interacted with the National Sea Grant office over many years. I also did an IPA in probably 1993, '95, something like that, now going from the University of Maryland to the National Sea Grant office. I was the Sea Grant—for a year or so, I was the Sea Grant Economics Coordinator in the National Sea Grant

office. So, I had a little bit of back and forth between Sea Grant and through my 25 years of being a Sea Grant-funded person as well as 20 years of being the Sea Grant extension program leader...yeah, it's in my blood.

We deal a lot with Sea Grant at the National Marine Fisheries Service. We're having lots of discussion about improving our relationships and I think I've been able to add a lot of insight to those discussions, having been on the ground and knowing the way that things work at the local level at a university in a state, not just from the program that I ran, but again, from my interaction with my colleagues around the country. So, I think that's something that I bring, fairly unique. It's not specifically about economics and that part, but we're talking all the time about leveraging and working with the Sea Grant programs and so I've been able to influence a little bit of that discussion. Like I said, we're just sort of getting started and looking for ways to expand that relationship. There's always been a little bit of tension between Fisheries and Sea Grant and I still hear it. Sea Grant—one of the terms that we use in explaining what we do in terms of the extension program is that we're "honest brokers." So, we don't have a bias, we don't have an agenda that we're trying to promote. The only thing we're really trying to promote is the science. The science says this, you make your decisions based on the best science. If you need me to help you cope with that science I can do that, I'm trying to do that in a way, again, that's not biased. I'm not trying to drive you to a specific outcome, I just want you to make the best decisions possible based on the best information. So, that's the role of Sea Grant and that's sort of your brand, and you're trying to brand and then you'll get approached by fisheries in saying well, we want fishermen to come in to do this. It's a little bit of a fine line in terms of how you promote that. The classic case study is the use of turtle-excluder devices in the Gulf of Mexico.

RS: The use of what devices?

DL: Turtle-excluder devices.

RS: Turtle *excluded*?

DL: Excluder devices in shrimp trawls. So, the shrimp fishery in the trawls, they end up killing a lot of turtles and they're protected species and so you want to preserve the ability to continue to go shrimping and earn a living, but you want to protect the turtles. So, you can put this device into your trawl net and if it works well, the turtles get excluded out of the gear and don't get killed and so we wanted—they wanted fishermen to adopt this gear, use this gear and fishermen are resisting because they think it's going to hurt their bottom line and their revenues, their profits are going to decrease because it's not only going to exclude turtles, but a percentage of their catch is going to go through the net. So, this is a...I can't remember the timeframe of this, this is many years ago when these were first getting introduced. NMFS was very instrumental in developing the gear and wanting to require it. The thought was, well, we'll get the Sea Grant agent who's down at the dock and knows the fishermen to kind of push this technology. The folks at the time really resisted doing that. They didn't want to be seen as sort of just another arm of National Marine Fisheries Service enforcing what NMFS wanted. It was perfectly legitimate, what you really wanted again, was this neutrality. You don't want to push them or not-again, it's that fine line between what does the science say. Let's say the science says that these devices

work 100% effectively, they don't kill any turtles and you don't lose any money, and we'll subsidize you to put them on your—we'll pay for you to put them on your net. There's still going to be a resistance from the industry. So, even if the science is saying, and I'm the messenger saying there's no cost to doing this, I'm still being perceived as this messenger. And then there's going to be some other regulation, this loss of trust between the Sea Grant agent and the fishermen would just damage the viability of the whole program going forward. I think this is an extreme case and I think there were better ways to handle it, but this idea under different topics continues to come up. The association of the Sea Grant agent in the field with National Marine Fisheries Service...they're trying to keep that separation.

RS: From the point of view of the fishermen, in general, how would you characterize their perception of the Sea Grant process?

DL: That's part of the issue. From the point of view—one of the things I've learned in the 25 years is that the fishermen don't make a distinction between...they're Sea Grant, they're feds, they're NMFS, whatever. It's all them, they're the government. The topic is, they tend to group the opposition and these are all - your part of that group. From my own personal experience, it took me a lot to gain the trust of the fishermen that they separated me from the institutions and could trust me. They wouldn't even realize—they didn't care what institution I was part of. It was really the trust about the individual, so that's what you're trying to preserve.

We had instances that didn't involve NMFS necessarily, but in the State of Maryland with different institutions. I mentioned the University of Maryland Center of Environmental Science and the University of Maryland College Park. A number of years ago, the Center for Environmental Science decided to eliminate a position that supported the seafood industry in the state. The seafood industry got very upset and they went to the politicians and they said we're really mad at the University of Maryland and I was involved in that discussion and I was trying to come up with a solution and they didn't distinguish that I was from a different part of the university and it was all just lumped together. So, it was just hard to maintain that trust, and so you understand that, put that shouldn't prevent us from finding ways of working together. If everybody understands the situation and how it works, there are ways to be effective. I wouldn't walk into a meeting and say, well, I'm here representing Sea Grant and the National Marine Fisheries Service. You just have to be careful about how you present things and how you word things. It's more probably about building relationships over time and preserving them and then being able to go in in a controversial situation and not sort of lose that credibility. If you're sensitive to that, you can do it. So, that's an example.

As I was mentioning, there's always—you think it's be easy to work together, but there are challenges and that's again, one of the things I think I bring with a lot of experience in the field of maintaining—how to maintain that relationship that we can do it. We just need to be aware of it. Sometimes I've been sitting in a meeting and I'll hear NMFS folks saying, "well, we'll just get Sea Grant to do that". There's just a lot more to it. Yes, we can do—that's sort of another aspect to it. It's not just that honest work relationship, it's also the fact that these people are already 100% employed. So, what are they going to give up to do this new thing that you want them to do? How do we work through that? And oftentimes you find that it's things that they're

already thinking about doing or doing anyway, and there's a lot of overlap and it ends up being a win-win. But if you present it as here's a new job for you to do, you immediately get resistance. But if you start exploring commonality and goals and incentives and find that common area, often again, you can work towards where oh, this would be a better product than what I would have been able to do on my own and I'll have more exposure, more people will know about it because of the leveraging or this other expertise that I wouldn't normally have been able to tap into available to me. So, it's just getting away from the kneejerk—

RS: It's the human dimension.

DL: The human dimension of the interactions, yeah. It's interesting you mention that. One of the things—I have an anthropologist here at the University of Maryland that I work closely with, a guy named Michael Paolisso, and he worked on a project with the blue crab fishery in Chesapeake Bay that I was a part of. Not a leader of, but just part of this project which sort of explored the relationship between the fishermen and the managers in the scientific community and how they're all related and communicated or didn't communicate and that was a fascinating project and we even did workplace exchanges where I got to go out with a fisherman and go crabbing for a day. Fishermen, they didn't come to my office because it's pretty boring sitting watching an economist do their work, just on the computer, but going to the scientific laboratories and seeing what scientists do. It really changed sort of the interaction—there was a level of respect that didn't exist before and where fishermen who tend to be wary of scientists and really don't understand their motivation learn that there's a lot of commonality in what motivates scientists. Not just in the research that they do, but in just wanting to earn a paycheck and take care of their family and those kind of things. That whole aspect of it is a thing to study in and of itself, this whole relationship.

RS: I wanted to ask you too, given your length of time both here at the university and at NOAA—how would you characterize the development of economics as a discipline in terms of changing methodology, changing in data collection and analysis?

DL: Yeah, so it's changed tremendously. I was just talking about this the other day at a presentation I was making on climate change. What did we do 20 or 30 years ago in economics and our data was, we had very aggregated data, so you knew how much of a species was landed in a year or a month, we had monthly data. You had a value so you could figure out what the prices were on average for a month, so you had monthly prices, monthly data. You might know how many fishermen, how many vessels are in the fleet or something like that. You had very aggregated data, so you had very aggregated models. Everything was sort of like an average of what the fishing fleet would do. Now, we have data on individual tows of vessel gear or sets of vessel gear. So, we have very detailed data, we have very detailed spatial resolution so temporally, we have very fine-scale data and spatially we know a lot more about the individual fishermen and what vessel did what and where they went and where they went fishing. It's given us an opportunity to apply models that look at the way people make choices and understand how fishermen make choices. And if we understand how they're making choices under current conditions and what's influencing that choices, it gives us a much greater ability to project what they would do under different circumstances, and that's often what we're interested in. So the

different circumstance could be a decrease in some major fish stock for whatever reason—it's overfished or it's going away because of climate change. We can see how they make a different decision because fuel prices is something that's changes. I used to say are getting higher, how would fuel prices get lower? You see fishermen behave differently. Changes in the marketplace with prices of fish and things like that.

Our ability to predict and develop scenarios under different management options has grown tremendously from what we were able to do 15 or 20 years ago. We tend to go to the commercial examples, but on recreational fisheries and actually where we made the first inroads on this sort of spatial modeling because we had from the NMFS recreational surveys, you would get individual fishermen taking fishing trips. We often would go back and survey—the economists would go back and survey these people later to follow up with them and get more detailed information so we could run economic analysis of recreational fishing. So, we're now able to value changes in recreational fishing as well as commercial fishing.

Oftentimes that becomes—I was in a meeting yesterday we were talking about allocating fish between commercial and recreational fishermen and what's the greatest value to the nation, being able to provide advice on if more fish are allocated to one sector or the other, what the consequences would be. So, being able to do that type of analysis, to place a value on recreational fishing which is what we call a non-market value. On the commercial side, fish are bought and sold, so you have prices and quantities and you can do standard types of economic models. On the recreational side, if I'm the recreational fisherman, I'm the buyer and seller of the trip. Unless I'm going out on a party boat or a head boat, if I have my own boat or I just go down to the dock or the shore and fish, there's no transaction that anybody's seeing. But our recreational survey gets that data and we go back and we get information and we can actually put a value on access to the fish or on changing availability of different species.

Now, we've expanded as well—I mentioned very early on about protected resource and we're doing surveys where we can try and put a value on recovery of threatened or endangered species and add that into the discussion process. Broadly, it's been sort of like two dimensions. One is the breadth or areas where economics is being applied, and so our strongest programs in NMFS are in the commercial and now recreational fisheries, but we even have a small and growing program in protected resource economics and fishery habitat economics. So, the breadth, but then in each of those areas having the data on individuals gives us a much richer data set and much more precision about what we think is going to happen. Because if you just average everything together, you miss what happens on the edges of that distribution. That often is where the important changes are being made. So, it's changed remarkably and the complexity—which isn't always a good thing—but the complexity of the models, needing large computing capability is essential to economic modeling as it is to some of the other kind of climate modeling. Not quite, but still there are models that are complex and take a long time to run but are not too complex that they don't have any meaning, that there's the basic fundamental economic ideas that are being examined in those models.

RS: I've been reading in market research about the difficulties of sampling and how hard it is to reach people who just don't want to cooperate anymore. Is an issue for you and how do you deal

with it?

DL: Very much. So, survey fatigue and we rely a lot on surveys. We do surveys of the general public and we do surveys on specific sectors, and it's a problem in both examples. If we're doing a survey of commercial fishermen on what their expenditures are, we're suffering from cooperation and survey fatigue from that group that you think would be motivated to complete the survey—although sometimes they're concerned that it's going to be used against them. So you have that issue but then in trying to do these threatened protected resources, species surveys—those are sent to the general public. So, they're in that whole mix of political surveying that's going on and market research that's going on and we're trying to break through that and the whole survey world is becoming quite challenging.

RS: What kind of response rates do you tend to get?

DL: Well, it really varies depending on the nature and types of methodology used for follow up with postcards and things like that. But if I were to send out—I've had experience, I've done my own surveys and done my own mailings—let's say in an industry survey, and I've done surveys of let's say Chesapeake Bay fishermen, I could get up to like a 30% response rate with multiple mailings which is pretty good. Your initial response rate is going to be like 10 or 15%, and then you've got to really work to get it up to thirty we have had examples throughout the agency and so on, depending on the follow up, the nature of the survey, now we're adding ability to do online surveys and things like that, getting things as high as 60%. More struggling to get the 30 or 40. I think one of the changes that people are looking more into is just getting these sort of panels that are already configured so, internet companies that will do the survey for you and they have a representative panel that supposedly would be as good as doing just a mailing. So, those are sort of the ways we're trying to work through that.

RS: What about social media? Do you use social media at all?

DL: So, we're experimenting. We had a great study, one of our economists in the Southeast Center, David Carter, has been looking into this, trying to look at mentions on specific fish species in an area trying to gauge—matching that with our other survey data to see whether or not you could pull out of the social media data. So, this isn't a specific social media type approach—I mean, we're not designing anything specifically, we're just harvesting data off of existing social media like Facebook or whatever, and trying to use that to pull off mentions of species or something like that and see if that's correlated with levels of activity in the fishery. So, we're trying to find innovative ways of doing that. It came up in a meeting I was in yesterday, using these apps for recreational fishermen that would recording their catch and the fishermen in the meeting were saying well, we should require this of everybody. That's a challenge within itself, biases...there's all sorts of issues with relying on social media that have to be dealt with, so it definitely needs to be looked into and explored as ways around just throwing up your hands and saying oh yeah, we're certainly getting lower and lower response rates. So, it's a challenge.

RS: What about the development of big data?

DL: So, in a way, that's what that study I was talking about was. It was sort of a big data study because you were just scouring searches to pull down information. We're mostly working in a sort of medium data environment in fisheries economics. We're getting more and more data, as I said, on individual fishermen, on individual fishing trips. It's becoming bigger data, but it's certainly not—you're still dealing with a small segment of society who are going fishing. So, it's really not in the realm of big data. Yeah, we need to be exploring more how we could be using big data to do some things that we aren't already doing. It may be in areas that we're really not, we're really lacking the level of effort that we would like but big data provides an opportunity. So, one of the things, areas that I'm really interested in is just better understanding seafood markets and what's going on and how they're changing over time. That may end up being sort of a big data approach to getting some insights, but we're just starting to explore.

RS: How would you characterize the role of economists in guiding decision-making at NOAA?

DL: So, you have this formal council process for decision-making--

RS: Is that the—you mentioned that, or I mentioned I guess in my introduction, that you were on the Council of NOAA Fellows?

DL: No, that's something totally different. I am on the Scientific and Statistical Committee for the Mid-Atlantic Fishery Management Council. There's not a whole lot on a routine basis that an economist does in that role because it's almost all about the biology, population dynamics of the species. But, I mention the fishery management council is considering looking at reallocating fish between recreational and commercial. They have contracted for an economic study and so I'll be on a peer-review for that. Part of my role would be again, interpreting results from that study and explaining it and showing other regions that they could use a similar kind of study to do the analysis that they want to do. So, there are specific types of decisions that councils are making such as allocation that very much have a large economic component to it as well as other human dimensions because you have communities that are dependent on these fisheries and now they're being taken away or so on, and what is that going to mean. So, that's sort of a role that's fairly routine within our science centers in terms of these kinds of studies. A lot of our research is more on the exploratory end of things, like the ecosystem-based fishery management which really hasn't been implemented in any really meaningful way at this point, but as it gets incorporated then you're really starting to look at tradeoffs in your decision making. You're looking at what they call forage species versus prey species and do you not fish on the forage species so there's more available for the prey?

RS: Forage, f-o-r-a-g-e?

DL: F-o-r-a-g-e. So, do you not fish those species and that means there's more for the predator species which you may be fishing on so you can fish more? What's the tradeoff there? How much more fish will you get? How much do you have to give up? These start becoming economic issues and so I think there's a growing opportunity as we move towards an ecosystem-based fisheries management approach to utilize economics and decision-making at those levels. The integrated ecosystem assessments go beyond fishing to other uses of the marine environment

such as offshore oil and gas and wind farms and things like that. Again, what are you gaining in terms of having these facilities and what are you giving up? Framing that in an economic setting is going to be really important. So, I see a growing role as we're evolving as an agency broadly in these areas to utilize economic information and again, I think it's prescient of the agency to create a position like mine where right now you might say, well, it's sort of standard, routine economics in fisheries, but if you look at where we're going as an agency, if we don't build that economic capacity and keep it as part of the conversation as we go forward, we're going to find ourselves being in sort of this tradeoff analysis world without the economic information.

RS: Do you focus just on data collected in the U.S. or American fisheries, or is there a focus on global demand on fish stock?

DL: So, I mentioned earlier there's a demand and what's going on in seafood markets is an area where I would like to see more work done when I was answering your big data question. So, we don't have as much as I'd like to see on understanding big trends that are going on. Some of the nongovernmental organization are producing reports in that regard or these large multinational government groups like the World Bank and International Monetary Fund and other types of agencies that are doing those kinds of global studies. We really don't have the capacity to do that. Most of our data analysis studies are being done on U.S. fisheries. We do have a little bit of international work, I mean, we have international fisheries, tuna fisheries things like that. We're engaged in those discussions in the economic information, but we're not doing very much in terms of global fishing issues and patterns and things like that. We're relying on these other groups to do those types of studies. But, I would like to see more internal engagement with that than we currently have, but again, that's hard to do. It's partly, I think, my role to be cognizant of these works that are going on and having us engaged a little bit. It's hard for scientists in particular fisheries science centers too sort of be that person when they've got their responsibilities for the fisheries that their center is involved in.

RS: Yeah. Well, fish are migrating, so [laughter].

DL: And that's where, when there have been issues regarding transboundary fisheries that there has been economic—so we are studying those fisheries and engaged in that. But if you're talking about more what's going on globally with fish catches, I think a big thing we haven't talked about at all is aquaculture, fish farming, and what's going on there internationally and how that's going to affect seafood demand in the U.S. and the prices in our fisheries and which fisheries are going to be affected. We don't have a lot of ability to do that kind of reconnaissance.

RS: That brings up a question I had which is, what are some of the challenges of doing science in the government?

DL: So, one challenge is working with academic partners that are not under contract with us. So, one of the advantages of working for the National Marine Fisheries Service is availability of proprietary data that we collect as part of the routine data collection but can only be made publicly available in aggregate form. But we have that data that we use for doing specific kinds of analyses and therefore our economists have access to that data and can do economic work

that's very specifically based on individual decisions and things like that I was talking about earlier. If we want to work with an academic partner on that, they cannot have that data, we cannot share that data with them unless they are under contract to us to do that. So, that's been a big—as I go around the country and talk to my colleagues in the field, that's one of the things that comes up all the time both internally, our folks wanting to work with their colleagues, and from our external colleagues saying to me, "I've got this great project I'm funded to do it, but not by you guys and I can't get the data—can you help me?" It's frustrating because you can't. The rules are fairly tight on protecting that data. We understand the need for protection, we just don't have the flexibility in place that would be appropriate that allows the analysis to get done but still protects the proprietary nature of the data. So, that's come up as a big one.

Another big one has to do with surveys,, that they all have to be—on the one hand, we were talking about survey fatigue and the problems that everybody's having, so that's one of the reasons I think that the Office of Management and Budget limits and wants to review every survey that we do, and that could end up being a hold up. And then when we try and do something new and different, they're very skittish about it.

RS: Is it a long process?

DL: It's a long process and we've been told no. So, our latest example had to do with, I think it was stellar sea lions in Alaska. We wanted to do a national survey of the value of recovering these species. It may not have been, it could have been a different species so don't quote me on that. But they said, you can't do a national survey, you can only survey people in Alaska, which from an economic point of view is ridiculous, I mean, you're leaving out the vast majority of the population that cares about this species. So, sometimes we just don't even like the answer we're getting and it's a long process, and then you get told no. So, that's been a problem.

We want to improve our surveys, we're changing them, and you almost say I don't want to change the survey because that's a whole different process for approval. We sort of have these broad blanket approvals and they go through pretty quickly, but if you change a couple of questions then they want to review them and make you jump through more hoops. So, that's been frustrating. I would say I haven't experienced these things directly, but that this is what I'm being told are some of the more frustrating things. But again, the freedom to do work you think is important is there. They're not being restricted. I imagine the individual workloads are—they would like to be able to do more of their free-thinking kind of work and less of oh, we need this for the meeting next week, but most people understand that that's the nature of the job that they're in. So, I don't hear too much complaining about it other than boy, I'd really prefer doing this study because it's so much more interesting.

RS: Well, you mentioned earlier about the relationship the extension officers have with the fishermen and that the fishermen weren't distinguishing where you came from and who you were affiliated with. What would you say about getting scientific knowledge out to the sort of ultimate target, if it's the fishermen? How well does that work?

DL: Yeah, I...well, I don't want to talk about science in general but more the economic analysis

and things like that. And it really varies. So, there are cases where the industry is really interested in the economic information and the analysis and providing data and really liking the reports that we're producing, and then there are other cases where they're resistant to providing the data. They don't see the value of the analysis and so they're—we don't really have a process in the National Marine Fisheries Service other than through our published reports or through if things are getting introduced through the fishery management council process to sort of interact with fishermen on a routine basis and get feedback on your work and that's not...in my role in Sea Grant, it's very much an engagement role with the fishermen community. So, I go to the Watermen Association meetings on a Thursday night and I'd listen, and then I'd make presentations and get feedback and build that up.

So, the opportunities that we have are more there's an audience and here's our presentation and it's probably a hostile crowd because even if while we're saying it's not controversial, something somebody else is saying is and it just kind of all gets eaten up in that regard. So, I can't say that there's really a strong interaction. We interact more with sort of national level or regional level committees, whether it's the Sport Fishing Association or some group like that that's interested in our economic data and we can have a meeting and back and forth with them at a very high level. You don't get down to sort of the rank and file fishermen and so it might be the head of the fishing organization or something like that, and one of the things I've learned over the year is that the head of the fishing organization doesn't necessarily fully represent the diversity of opinions within the organization itself.

It's challenging and it's difficult and I don't think we really are giving the time to or the incentive, really even, other than if you think it'll improve your work to have that kind of interaction. There are cases where you have sort of small studies where you're working with a segment of the industry and you're working really closely and you build relationships and it works really well, but across the board that's not happening. It would be challenging, too, because it's just not set up that way. The Sea Grant model's a little different because it's more of an embedding of the agent within the community and they're really tasked with making that connection. So, that might be the better way to make this happen if we can sort of solve that little conflict that I was talking about between Sea Grant and National Marine Fisheries Service and utilize the Sea Grant extension agents more to communicate.

RS: I've seen situations where there are people in the field that are tasked with developing and maintaining the relationships and they really hate it when other people come out to go directly to those people because they feel that it can threaten--

DL: Right, exactly.

RS: -- these valuable—do you see that with Sea Grant or with maybe some field people?

DL: I haven't seen—most of the examples I've had where people, if they're going out as a scientist, then it's different than if you're going out with sort of a management regulation sort of agenda and you're trying to convince people of that. But if you're going out...I've seen cases where the scientists in the University of Maryland have started working with a small segment of

the industry to study something that the industry is interested in...No, I don't see that. I haven't seen that as a problem, but we could build off of that by making that connection let's say, with the Sea Grant agent. We have these, in National Marine Fisheries Service, these study fleets and these research set aside programs where we do have people working directly with the industry. It would be good to educate the extension agent about that work so that they could build on it, learn about it. So, other than the territoriality response that people might have at first, why don't they go through me first or whatever, my feeling is get over that and if they're doing some good work, how could we collaborate to make it even better, get more mileage out of this. So, I'd like to see it go more in that direction—not really as a threat.

RS: Can you describe a project from any part of your career that you're most proud of?

DL: There's a few different dimensions...yeah, I mean I'm really—if I'm talking about my Sea Grant extension leadership, I'm most proud of building this watershed collaborative program, working with the state in creating new positions to deal with issues at a watershed level and creating those people in the field. This is not a fisheries project per se, it's more about achieving water quality improvements and working with communities at a small scale. So, it's something I'm proud of because it's sort of built out of nothing but it captures my idea of taking small pieces of what people are motivated to do and cobbling them together into a collaborative effort and then actually building and that's sustained since I've left the program. So, that's one example. I think in terms of my research, I think my early work on the impacts of water quality and recreational fishing values was somewhat pioneering so I'm particularly proud of that. There's a couple of examples.

RS: I know you sort of straddle both worlds of the academic side and NMFS. What advice do you tend to give people coming in after grad school or post-docs or whatever to NOAA? If you do give them advice.

DL: You mean about working in NOAA or?

RS: Yeah, how to be successful and how to be effective.

DL: Right. Again, what I described earlier where the mindset in NOAA in the centers and in headquarters as well of the people that we have who work on economics and social sciences is very much an—very similar to an academic environment in terms of getting your work out there and published and peer-validated and being engaged at a regional or national meetings or even international meetings. I mean, we have five or six people at this ICES meeting that I mentioned earlier representing their work. We just—we have every two years, we do a publication, sort of best publication award, so everybody's sort of putting in their entries into that effort. So, we're sending out that message and we care about the quality of this work and if you're working on important stuff and it's high-quality, you're going to be okay. I guess one of the advice I've given is consistently through everybody that's worked for me, because people have had challenges where there's an expectation about somebody who did something previously in this position and we're not doing it. It's always about—you're always going to have people casting aspersions and so-and-so did this, and you're not doing that. I said, what are you doing instead?

That's the... it's not defending why you're not doing something, but if you can easily say yeah, I realize that was important to you but look what I'm working on now, and this is *really* important. Then, it's being validated as being really high-quality work, then you're going to be okay.

So, my reviews of people who used to work when I was a supervisor was you have academic freedom here, you can work on anything you want, I'm not telling—it's a little bit different in the government, there's a little bit more supervision, but I'm not going to tell you what to do. First of all, if you're looking for a job where people tell you what to do, this is not the job for you. Maybe a little bit more in the government, less so in academia. But even working for NMFS, if you're expecting your supervisor to say do this, this, and this today, that's not the job for you. So, you have to be self-motivated, but ultimately, you're going to be reviewed on the choices you make about what's important. So, I'm not going to tell you what's important, but you're going to be responsible for telling me why it's important or demonstrating it's important. I'm going to use outside validation. People come up to me and say, so-and-so is working on this and this is really important to us and they're doing a great job. That's what I'm looking for.

You're never going to be able to satisfy everybody, you're never going to be able to do all the things that everybody wants you to do, so you're going to have to choose a small subset of that and then do the best job you can on it. Again, remember that you're being held responsible not just for the quality of the work, but its' relevance. So, that would be my advice: work on something that's relevant and, it seems obvious, do it high quality—which isn't that obvious again, if you're young it's hard to say no to people. So, do you end up accumulating doing lots of things and not being able to do them well, or do you focus on a few? That would be another part of my advice—focus on a few things and do them well and then you'll always have that sort of in your pocket when people come and say, you know, you're not doing this, so-and-so's not doing this. So yeah, that would be the nature of my advice.

RS: Well, anything else that you would like to get into the record that I haven't already...?

DL: [Laughter] I'm trying to think if there's anything... Yeah, I would just add particularly for this is for the record and I'm in this new job. Although it seems like it's three years, well, I should kind of figure out what this is like—it's interesting that I didn't necessarily point anything I've done in this job as sort of my most proud accomplishment. Maybe that comes with age, sort of being patient and doing the due diligence, putting the things in place so that when the opportunity arises to really have a great accomplishment, you'll be able to look back and say, oh, that was a pretty good accomplishment. I don't think even in the examples that I set out, particularly these watershed positions, I didn't sit down one day and said I'm going to create three new watershed positions and they're going to look like this. Things happened along the way and I stayed engaged in certain conversations and we did some work and ultimately things worked out. If luck was different, it might not have and I'd have to come up with another example. Now, I'm a little more patient that I know if I stay on this course that there's going to be things I can point to right now that are emerging I could have said, but I don't really see the big payoff. But I think they're going to, in two or three years I'll be able to look back and say that was you know, something that I helped steer, which is another part of it is, it is never done

by yourself. You could steer a thing, you could influence and that's fine. You could take all the credit, or a fraction, it depends on who you're...when you're in your annual review, take all the credit for it, when you're amongst you colleagues that shared it, be generous and they can take all the credit when they're in their review.

RS: That raises a question for me, and that is do you sort of work across disciplines, or are there one or two disciplines you tend to work with most often?

DL: I would say that's one of the characteristics of my career, has been working across disciplines and often I've been the only economist in the room. That's worked out great for me, and it's allowed me to produce things on sort of a different quality margin than other people. So, there's quality in terms of the economics and how sophisticated that is and on that margin, but there's the margin of applying economics to a place it's never been applied before in a very unique way, and I think that's where I've made the greatest contribution and we need both types—we need people who are really sort of focused on advancing economics, and I work very well with those people so they're my gurus in terms of what's the latest and greatest in economics, and then I stay attuned to what's going on in the other fields where economics can really slot in and really change things and make a difference. So, I've tended to work a lot with other disciplines and enjoyed that, and that's what works for me.

RS: Well, it is a very multidisciplinary environment, yeah. Well, I don't have any more questions, so let me...

DL: Ok, great. This was actually a lot of fun.