

Molly Graham: [00:03] This begins an oral history interview with Dr. Usha Varanasi for the NOAA Heritage Oral History Project on May 5, 2023. The interviewer is Molly Graham. It's a remote interview with Dr. Varanasi in Seattle, Washington, and I'm in Scarborough, Maine. I wanted to start with your time as science director for the Northwest Fisheries Science Center. What were your goals and priorities when you first came on the job?

Usha Varanasi: [00:32] Right. I think we talked about how I came on the job. This Center was created out of another center, and they did it out of necessity or political needs or requirements, responding to political pressures. Most people thought this was too expensive, although scientific information needed to manage the West Coast fisheries was sparse. All the steps that were taken for the first three years, before I even came as a director of Northwest Fisheries Science Center, were minimal and [done] reluctantly, and therefore, there was no long-term good plan to get the needed science expertise. We had unique expertise in marine pollution, seafood safety, aquaculture, and salmon science. We needed to bring in the conventional or the traditional programs that every fisheries science center needed in their region to have in order to support the main mission of managing the fisheries sustainably and protecting species that were endangered or under assault from the environment or fishing. When you do things piecemeal and are only reluctantly supported, or you're forced to struggle to exist – I was watching the first three years of the Center's struggles. I had my struggle as a division director that I described in earlier sessions, but we had a really wonderful center director during the first three years who was, I should say, supportive but not participatory. I kind of knew when I was taking this job on – and not only that, Rollie Schmitten, NMFS administrator, very clearly told me during the final interview, when they had almost selected me, before giving me the job, that if the Center doesn't become self-sufficient and doesn't start to do the main core work of the PNW region for which the stakeholders wanted an independent center, that we may not survive too long. I had three to five years to show that this Center was needed and actually was a strong partner within the agency. I knew there was not much funding given [for the operation of NWFSC]. The deputy director, as I said, was a NOAA Corps officer (Warren Taguchi), a wonderful man, but he knew he was there only for three years. There was no budget allocated for either the deputy director or administrative officer, the two crucial positions. There was just no money. When I became the director, a couple of things happened. First, we were given a certain number of FTEs [Full-Time Equivalents]. No, let me think about the sequence [of events]. Right after the Center was formed, one big issue was we needed to take responsibility science needed for the West Coast groundfish management, both the surveys – not management, but the surveys, analysis, and stock assessments so that we can provide the regional administrator with the information, both economic assessment and fisheries stock assessments to make decisions about the fishing season and all the things that we do as the National Marine Fisheries Service to make sure fishing limits and the fishing season, etc. and regulation are sustainable. But we had no money to hire anybody. There was one scientist, Rick Methot, who was in the Alaska center, who was doing West Coast groundfish stock assessments and was actually a great expert in doing the analyses.

He used to work with meager data from limited surveys that were done for the West Coast groundfish; they were done once every three years and for a very short time because the ship time was – as you know, in the National Marine Fisheries Service, ship time is the most valuable asset – if you have the ship time, your battle is half solved because you need to have ship time to do fishery-independent surveys because you can't just use the data from fishery-dependent surveys that are done by the fishers, which is targeted to specific areas for particular fish stock. We needed to do some random surveys to see if the information from fishery-dependent data is aligned (validated). And we had no ship time, except on – I'm trying to remember. *Miller Freeman* was the ship that was largely devoted to Alaska. It's only thanks to people like – I'm trying to remember – Gary Stouffer and other people in the survey side that they kind of, almost out of the kindness of their heart because they felt that the West Coast fisheries did need to have some scientific support. So, we used to get it every three years, which is just truly insignificant compared to what was needed. Rick was doing a very complex analysis on very scant information. The models were becoming much more difficult to verify because many of these were using assumptions instead of real information. I knew that as a center director, I needed to somehow figure out how to get the West Coast groundfish program funded. For the first three years, Dick Berry just said he was happy to let the groundfish surveys and analysis be done by the staff of the Alaska center. He went to the council meetings to support or talk to the council. Mostly, it was Rick Methot who went to address questions about his analyses at the Pacific Fishery Management Council [PFMC]. The council would raise this with regard to the lack of robust data. At the time I became director, I did not know that we had a facility in Newport, Oregon. For the first three years when Dick Berry was center director, it was never mentioned [that] the Center had this particular facility there. The entire facility was used by Oregon State University [OSU] [headquartered in Corvallis]. Nobody in NWFSC thought much about anybody going there or doing anything because we had no funding to operate. However, there was one NMFS scientist there who used to do some behavioral studies. He was a very well-known scientist in his field, but he wasn't a mainline employee of the Alaska center, so nobody paid any attention to what he was doing. At least, I did not know about his existence. I did not know that we had this facility, and here I am at my first meeting of center directors in, I think, Woods Hole. I am told by Mike Sissenwine – at that time, he was the chief scientist of NMFS – and Nancy Foster, who was then deputy director of NMFS, that there was in the NMFS budget two million dollars add-on – or what is it called? I forget now – that the senators can put in or the legislators can put in. It wasn't something Fisheries had asked for in its budget.

MG: [10:34] Earmarked?

UV: [10:35] Earmark, yes. Earmarked two million for the Northwest Fisheries Science Center to be used in their Newport facility within Hatfield Marine Science Center at Newport. First of all, that was the first time I found out we had a facility there. I think people in NMFS headquarters might have thought that I had gone and persuaded somebody, stakeholders, about

the earmark, but I absolutely had no clue. I was just learning how to even do the ask. Because I knew I had to have the Northwest senators and the legislators at least know we existed. But suddenly, here is the \$2 million permanent increase in our funding. Immediately, the entire headquarters lights up because this is now a gift, but it also will put pressure on the headquarters to somehow make this gift work. That meant I needed to have staff, and everybody wanted a piece of that action. People came out of the woodwork, I felt, whether it was the Alaska center needed money on this – because, actually, the story was that the scientist who was in Newport had talked to Senator Hatfield. He may not have talked to – I don't know. But his supporters, like the fishing community, had said that they needed some money to be put in, but they had only asked for \$250,000. But Senator Hatfield felt, "Who wants to go through all that hard work to have such a small earmark?" So he put – two million. I was sort of called on the carpet or whatever it's called to answer how this came about. I said, "I did not know that I had a facility." But I realized this was like – it's very interesting. They all felt – the people in charge, the Southwest Center director, the Alaska Center director – that I did not know anything. I mean, I was so new. And that is true. I had not known how all these negotiations and how to work with Mike Sissenwine as a chief scientist. I must say, without Nancy Foster there, I don't think I would have gotten much of that money for the Northwest Center. But she was there; she thought this was a perfect way to get me started because what I needed was resources, and I wasn't taking anybody else's resources away. Right? This was new money. It's like, again, baptism by fire or holding the tiger by its tail. I said, "Okay, this is what we need to do." Then, there was a meeting at the Montlake facility, and the first thing to discuss was the groundfish program – however small it was. Should we move it to the Northwest Center? Rick Methot was interested in moving to the Northwest Fisheries Science Center because now he will have a program. But suddenly, the cost of the West Coast groundfish program became half a million, you see? So, we had to give half a million to the Alaska center in order to get this program transferred. It was all kinds of negotiations. That's a kinder term to describe what happened. But I still had enough money. However, my hands were tied; that money had to be used in the Newport station, and I could not use that in our Seattle Headquarters – I can use small amounts, but there is a limit to what I could use. Then, the Center needed to have new staff – the earmark also said something about how I have to have a certain number of FTEs. This was the time Gary Matlock was in a similar position as John Oliver in charge of the administrative and budgetary side of it. There was some kind of cap on FTEs in NMFS or some such thing. With that money, with that earmark, I was to have fourteen new FTEs. You wouldn't believe how fast these FTEs started to go to other centers or HQ. Everybody needed it. So, I think in the end, I ended up with just seven or eight new positions. The first one was Rick Methot because the Alaska center wanted to fill his position, although he was doing mostly work on West Coast groundfish, so I don't know. But anyway, many such things happen. To make a long story short, I took charge of the fact – okay, I have the money, I have the FTEs, I need to do something to populate that Oregon facility. The first thing was negotiating with Oregon State University that we want our space back. It was very difficult because they were all used to it. They said, "What do you want the

building back for?" I said, "As we start getting new people, we will start to fill space." But the nice thing was there were people at OSU who said maybe we can negotiate while we have Senator Hetfield on getting another building or something. OSU can get one more building on the Newport campus. They saw an opportunity in us getting funding and FTEs because they also would be supported. So, the consequences of that gift were kind of unseen. I sent out an announcement in Montlake that if people wanted to move to Newport because we needed to fill seven positions there, and we had seven new positions, we could also move people there and release a few positions for the Montlake facility. This would allow us to use some of that new money to develop a salmon program to extend our studies to include its life cycle in the ocean because otherwise, there would be no people because West Coast groundfish weren't going to get built overnight. Personnel issues are always more challenging than science. Actually, that was one of the biggest challenges. We had money, and we had FTEs, but we had no history or expertise in mathematical analysis or stock assessment of marine species, and the stock assessment group of scientists is so unique in the National Marine Fisheries Service that they know – everybody knows everybody. They are not going to move to a center that may not survive long-term [and] has a center director that is not a fisheries scientist. I mean, they didn't want to do anything with NWFSC. These experts needed to have a big program before you could entice them to take a job in NWFSC. So, I got into a double bind. That is the time – two things I did. One was to start working with Oregon State University. Three things, actually. One was to start working with OSU to see if they can be our partner rather than adversary, that they are being pushed out. Second, I asked our center staff if some of them would move to Newport station, so we will have a populated place where there will be a presence of Northwest Fisheries science center, and there were a certain number of people [who] actually wanted it to be in a smaller place than Seattle. They were either very young people or people close to retirement who would like to move. But still, that meant we could move some staff right away to HMSC. I was able to get – I don't know – \$250,000 from the total allocated to the Newport station staff and operations. I took some money and said, "I will use it as seed money to start a new program, and all division directors can propose new programs relevant to this Newport area because there is the Columbia River estuary. What can we do there?" I said, "What I'll do is I'll give that seed money of up to 150,000, which was big money then, for them to start a program, and then they have to start getting funding." After three years, they have to give that money back so we can start something else. Mike Schiewe, who was the director of the salmon program at Northwest Fisheries Science Center, said that all he had was experts working on the hydropower – Columbia and Snake River dams – and corridors – salmon going through the dams. However, there was no funding to study the survival of young salmon smolts in the estuary, and their life cycle in the ocean was a black box. Nobody had these data because our reimbursable funding came from Bonneville Power Administration, which only funded what they wanted to know, which is the movement of smolts in freshwater, not even transitioning to brackish water or estuary. But we convinced – Mike was very good at convincing Bonneville Power that unless we know what the survival in oceans and estuaries is, we won't have a

lifecycle model. If we don't have a lifecycle model, they will always be considered culprits for killing those fish. Because we only had data on mortality in the freshwater corridor, we didn't have data on what mortality occurs in the estuary. Everybody started to have some excitement. So, you see, you need partners within your staff, and you need partners outside. Because I had survived in the EC division with a meager budget and then the Exxon Valdez oil spill where I had made partnerships [with] people you would not traditionally expect to be partners, I knew the power of collaboration, partnership with all people, odd groups with odd interests, and that actually, if you don't speak the same language, you may learn new words. Do you see what I'm saying? You are enriched, and they can be enriched, so different partners have to come into your circle. Suddenly, Oregon State leadership started to become more of a partner – and then I realized that we did have a regional administrator who had primary responsibility for managing marine and anadromous fisheries off the coast of Oregon State and Washington State, and I needed to partner with the Northwest Regional administrator and his leadership staff. That's how I started. Very difficult time. Very challenging time. Something that I kind of thrived in. It was exhausting, but I knew it had to be done. And it worked. It worked in several ways. Some staff moved to Newport Station. I made allies with Oregon State University because they wanted the same thing as I wanted. We both wanted all of the facilities at HMSC ourselves, but we knew we would not survive. But what if we worked together? They get their resources, but they can legally talk to Senator Hatfield and say, "We want the following amount of money, but we need to also keep the NWFSC solvent." Senator Hatfield had this vision of making Newport station or Newport area a hub of federal agency scientists, science from various federal agencies – so, there is EPA, all that. It kind of worked in Northwest Fisheries Science Center's favor. During this period, not knowing lots of traps and pitfalls within the agency and the political – it's the context that is hidden, where somebody is trying to do something. If you don't know why they are trying to give advice or help you, you may just hear their nice words, but they sometimes have an agenda. Then, I began to realize that you cannot demand that unless people are totally truthful and tell you everything, then only you will work with them; it's not possible being an administrator or a center director. I had to think, "What are my priorities?" I need to make sure we provide the best science. We, as a center, met and talked about what our goals are for this Center to survive. There were four things. We wanted to do top-notch science. Therefore, what do we need to do? We need to attract top-notch scientists. They will then inspire younger people to come and work for us. The existing staff was very good in the areas of their expertise, but we had very little collaboration with – University of Washington fisheries department [Current name is School of Aquatic and Fisheries Sciences]. Northwest Fisheries Science Center had practically no connection. Most NWFSC fisheries scientists were so scared or mistrustful of academics. They did not know who to partner with – because UW legislative staff was successful in getting funding and could legally communicate with federal legislators about their needs. – there was this kind of not knowing and actually not wanting to know. But then this is when I started following this strategy. I realized I did not know the leadership in state and other federal and academic institutions involved in fishery science in the WA and Oregon states. I realized I

made a couple of pretty serious mistakes. Not serious in terms of the Center's future, but serious in terms of people who were good to me. I followed somebody higher up who told me, "Do it this way; that way, it will be – that's what you need to do. The staff have become too autonomous, these people. You need to take charge. I did not see the underlying context. I did that. It cost me a couple of good people who could have helped the Center and me as a person. But I learned. I learned that there were a few things I needed to do. There are things staff and colleagues won't tell me now because I am now in the position of the center director. Second, there were people who would like me to fail because NWFSC was created out of their Center. But here is a woman who should not make it because she has no credentials in terms of fishing; she is so different, and we know she's going to fail. There were no people in leadership positions in NMFS Centers who offered me cordiality except the Center director from the Southwest Center. At that time, Mike Tillman had moved to Southwest Center. I must say that he competed with me for funding, but he was also a person of high quality. I knew I could trust [him]. If he's saying something – he would just come out and say, "Usha, I'm going to go for the same program or the same staff that you are, but I'm telling you that I'm ...". That is good for me to know outright because I'm not going to think, "Oh, you can't take my staff away or something." Anyway, that is how I decided what I needed was to build a group of advisers who would help me because I'll be paying them part-time. They will be loyal to the job. I don't want to get them from somewhere inside the agency. I decided I needed people who really didn't have any agenda except to work on this. They may have some opinions. I hired Bill Cooper. Bill Cooper from Michigan State University. I met Bill Cooper when I served on the science committee for the reauthorization of the Clean Water Act. It was in early 1990, and I met him there. We had become friends, colleague friends, and I asked him if he could help me because he was an ecologist. He had just the right kind of experience and expertise. [He was a regular lecturer for the U. S. Office of Personnel Management Senior Executive Service and The Brookings Institution on environmental policy, a member of the National Research Council's Board on Environmental Studies and Toxicology, and an advisor for the EPA]. Bill's broad and deep knowledge of many subjects, his sense of humor, wit, and generous help remain vivid in my memory, even after decades]. I realized that I needed to build bridges with universities, especially UW, but I did not know anybody in its fisheries department. I knew only people in environmental science. I did not know many people in the Fishery department of UW, and Bill just happened to be retiring or [working] part-time. He said that sounds like an interesting position. I said, "What you need to do is to get me to connect with decision-makers and science leadership in UW and WA state and wider so our center and our science can get visibility." Also, I wanted him to work with my senior leadership as we built the Center because I came from the ranks, they just assumed I or our working relation would remain the same. But it had to change. They found it very difficult that now I had to make decisions which some of them did not like. This is where my grandmother's advice of – "You can't be popular if you want to be a leader" came very handy. But I needed somebody like Bill who could convey my thoughts and my desire to actually make everybody stronger, in a way, and also, I needed a man – can you

imagine? – because the guys were not used to having women in charge. They would smile, or they would even say it to our faces because Linda Jones was my deputy. They would say it to our faces – "Two women. This is a small center. You don't need to take on any more programs or responsibilities. Why do you want to have a groundfish program? Why do you want to work on the fishery management council? Why don't you just manage the small Center you have and be happy because that's wise. This Center doesn't have any important issues to tackle." I knew I needed somebody whom I trusted, but somebody of scientific stature who could really talk 'guy talk' with all my senior managers. And Bill did a good job. He did a very good job of talking to people, also developing what is needed as a model, what kind of science – he did a survey of what expertise we have [and] what we needed. That was the beginning of my being a science director who used this method of part-time advisors, this approach to get advisors in all different fields. I think I have written it out in quite a lot of detail in the ICES paper that in each area of science, I needed one person who was respected, who was not a part of the National Marine Fisheries Service, and who could give me unvarnished truth and advice and tell me what I needed, and they needed to know that, in the end, it is I who makes decisions, so they can't start running the Center. I had a couple of smart people who helped me inside strategically. Some actually turned out to become too big for – you know what they call – their head became too big. Then they started speaking to staff and collaborators as if I was speaking! I learned that while one thing I needed to do was to get expert advice, I could not make them my spokesperson, where they started talking about their own version of our Center's game plan. It's not that these few 'advisers' had a specific agenda, but I needed to remain in charge – my staff told me somewhere on the way that they were very upset. I needed to be out front, telling them what needed to be done rather than sending it through some other person they don't trust or respect. In other words, there were not many Bill Coopers in different areas. However, these "advisers" helped me develop many relationships for the Center. So, Bill Cooper helped me develop a relationship with the School of Aquatic and Fishery Sciences [SAFS]. I got to know the chair of SAFS, Dave Armstrong, through his help. I was able to get Andre Punt, a South African fisheries scientist and mathematician best known for his work on fisheries stock assessment, hired by UW as I could not hire him in NWFSC. See, my biggest challenge was to develop a cadre of stock assessment scientists, or we would fail as a fisheries science center. A couple of scientists were persuaded by the other science director, or Mike Sissenwine when he was the NMFS chief scientist. I didn't realize they came with some major personality issues. The other center directors or Mike wanted to move these FTEs for a variety of hidden or openly stated reasons. From a division director to a science director, I was still mostly a scientist. But I suddenly became a human resource manager. I had to manage people. I had to understand all the quirks, strengths, and failings of these analysts with big egos. But in every arena, I had one advisor. So, for West Coast groundfish, I asked Bill –

MG: [0:34:41] Cooper?

UV: [0:34:42] No, Bill Cooper helped me for the whole Center. Then, I hired a former director of the National Marine Fisheries Service, Bob Schoning. He had then retired. He was considered a straight shooter and a very good friend of all the fishing industry giants in the Northwest, like Bill Fisher, (Joe Eiseley?), and one more person. They had big trawlers. They were captains of industry, so to speak. I had a contract with Bob Schoning as a part-time adviser. I told him his was not the last word, but he could help open the doors for me in various sectors of the fishing industry. See, I could not meet any fishing industry people because they wouldn't even listen to me because they disliked our stock assessment model. I needed a respectable person to whom they trusted to introduce me. Bob) introduced me to the fishing industry, trawl fishery, the processors, the fishers, and all those people, so I could hear their voices. Because I could not understand why they were so angry at Rick Methot, NWFSC's director and chief groundfish scientist, and his stock assessment data. Later on, I realized that part of the problem was they were speaking two different languages. Rick was speaking pure stock assessment lingo, and they felt he was not hearing what they were saying. "You have hardly any data. How can you have your assumptions?" They were not listening to Rick, who was truly doing his best with the littlest amount of resources he was given. I needed somebody like Bob Schoning to take me to meet with everybody. At this meeting, full of trepidation in a roomful of unhappy men, I told them, "I will always be true to science, and I will protect my scientists when they are doing science. But if they are doing something else because of their beliefs, I need you to tell me." Anyway, we don't want to spend a lot of time on details. What we want to spend time on is what strategies worked. Because I did not do detailed science in fisheries management. But what strategies worked? The strategies that worked were getting very respectable advisors for each important issue, making sure that I remained in charge, and taking responsibility for each decision. However, I made sure that the advisors (e.g., Bill Cooper, Bob Shoning, and so on) were respected within the Center and outside and that I followed their advice on many issues in the report they wrote with many recommendations. And I needed to have such advisors. I needed to have people like Bob Shoning – who knew the fishing management and all. But for the science, it became very clear that we needed to get stock assessment scientists who were not going to come from – I don't even want to have them coming from the National Marine Fisheries Service because if the few we hired come with some kind of issues and history and opinions, whether they were personality issues or particular stock assessment model issues. I felt neither I nor NWFSC could not handle it as we were trying to build a cohesive team. I could not get any young people to work with them because there was in-fighting going on. So, at that time, Andre Punt – he's from South Africa. He is a very well-known fishery scientist and mathematician, well known for marine fish stock assessments. He wanted to move to the U.S., and Rick had worked with him; Rick really wanted him to join NWFSC. But Andre was not a U.S. citizen, so he could not work for us. So, Bill Cooper and I talked about it. We worked with the then-director of SAFS. I said, "I will give cover Andre Punt's salary if they will give him a research faculty position." The contract was drawn that he would work on Northwest groundfish stock assessment issues with Rick Methot and his group. I

also added funding to cover three graduate student internships so Andre can mentor them and develop them to work with our new groundfish division. The Center had three or four scientists to work with them to take on the challenges of the upcoming stock assessment responsibilities. This arrangement worked. I mean, it worked so well. It was so unusual. I was not given any new money. I was told, "Take care of it with whatever money you have." So, I took some of the new money that came for economic assessment. I took some of it. Extreme anger in the Center. "Why do we have to give money to the University of Washington?" But that relationship with Andre and SAFS, to this day, is one of my biggest achievements. Nobody now in the Northwest Fisheries Science Center or in SAFS knows that we did not have any relationship in 1994, that we didn't even know who each group was in 1994. We had some very individual relationships, but we hardly had anything else. So, once it starts to work, it just blossoms. So, I had two advisors for the West Coast Groundfish Program. Andre Punt was the science advisor who actually truthfully loved teaching and loved to work with young mathematicians at the Center and with his students. He was so well-known in the field that people started to gravitate. He worked well with Rick. So together, they developed many scientists. There are so many now; we have such an amazing stock assessment group there that all other centers want to emulate. At the end of my career with NOAA, when Steve Murawski was chief scientist, he talked to me, Andre, and Rick to learn how we began and how the partnering of NWFSC and UW worked. And it continues to get better and better. So now, I will discuss the salmon science program. That was a very big challenge even though we did get some money allocated to the Newport station used for the salmon life cycle in the estuary and ocean. But we still do not have anybody in the National Marine Fisheries getting at all interested in this amazing science we were doing, except for the new regional administrator, Will Stelle, who was a political appointment during the Clinton/Gore administration. Will's "lunch was being eaten" by all these lawsuits coming in because the lack of funding had resulted in the science being so fragmented. The quality of science was exceptionally high but patchy. We needed to gather information on the entire life cycle of salmon species under NMFS jurisdiction. See, if you just look at any portion of the salmon life cycle, then your model will not be able to evaluate the total mortality of a particular stock due to risks experienced by these iconic species from birth to spawning and death. If you only use your model in a fragmented manner, you can come up with a very wrong answer. And that is what we were doing out of necessity and due to a certain amount of neglect from National Marine Fisheries Service headquarters. Salmon, an anadromous species, was not on their list of priorities. Salmon live part of their life in freshwater over which states (Washington and Oregon) have jurisdiction. NMFS did not adequately fund or fully support salmon science and management responsibilities. But salmon are iconic species in the Pacific Northwest and a very critical part of fishery management in the Northwest. The PNW states and Northwest tribal nations had even less bandwidth (funding or expertise) to study risks faced by salmon species in their waters. As a center director, if I did anything that could be considered laudable, it was to try to build expertise so we got to study anadromous and marine resources holistically and see the big picture. To do that, I knew I had to attract a few lead scientists who knew how to

evaluate the complex landscape and factors that affected these species, their life span, abundance, productivity, and vigor. I knew once the Center had a few well-known scientists engaged, we would start getting younger scientists. It became very clear that getting scientists from within the National Marine Fisheries Service to come to my Center was not a viable option for two reasons. They come with a certain agenda. Agenda, I don't mean, but certain ideas and ideology. Plus, they are taken away from other units who are not going to forget it. So, how do you develop? The second thing is looking at the big picture and also having a long view. That is something I learned from the indigenous community; they are not into making things happen now. I mean, you have to respond to current demands. But you must always have one of your eyeballs on the longer goal. I love that because I come from a similar culture (India); even when I am gone physically, my thinking and my legacy can continue for many generations because some of the answers won't be answered within one generation. This is one of the things – politically, the agencies are so fragmented because every four years or every eight years, the federal or state leadership and Administration changes. So, how to conduct science with a long view, which is totally opposite of what happens at the political level, is the hugest challenge. I would say kudos to NOAA and NOAA's scientists and NOAA's civilian managers, who were able to convince the top political appointees that you cannot shift the direction of science and cannot develop scientific expertise on a four-year cycle. You cannot suddenly say, “Oh, you got 250 or 150 staff. Ask them to address whatever is the question of the day.” Now, occasionally, we need to respond to an emergency. [With] *Exxon Valdez*, we had to deputize staff to take on some tasks. However, I could not have asked a stock assessment scientist to go on an *Exxon Valdez* cruise to sample and conduct chemical analyses. I had to explain to NMFS and NOAA leaders that I have following expert scientists and technicians. Some are really good at aquaculture, or they are very good at seafood safety, but they can't do mathematical modeling. I needed to bring new blood. But when I realized nobody was listening to me, no matter what I said, I just decided that I was going to create this cadre of people, senior people, who then would attract [others]. After having Andre and Rick, working on the West Coast groundfish science and stock assessments and Bob Schoning helping me to connect with fishing industry leaders and PFMC, I focused on the salmon side. Mike [Schiewe], who was the salmon division director, already had a small genetics group. And two lead scientists were working on ocean ecology with a very small amount of new funding. We needed to get a senior scientist who would be an analyst who could look at the big picture. But getting somebody like that into a government position with a government salary is not an easy thing to do because, you see, if Andre had come directly to work for NWFSC, he would have left us in a few years to join an academic institution with its freedom. He flourished because he was an academic scientist who could get many grants and he could have so much freedom. During this period, Peter Kareiva, a UW faculty member, was looking for a new position. By then, Bill Cooper, because he was coming to Seattle every week and he had his ear to the ground, so to speak, at the University of Washington, he comes and says to me, “There is a scientist, very, very well known, somewhat difficult to work with, but younger people absolutely will adore him because they will learn

things from him that won't be learned anywhere else.” So, if we can somehow give him a position to develop a salmon life cycle model and understand the risks. It was named “the cumulative risk assessment” – all the different risks the salmon would face as it travels from freshwater to ocean and back – then you can assign proper management decisions about the magnitude of risk through each phase and habitat under the jurisdiction of various federal agencies because there were people in the indigenous community [who] believed that passage of salmon through the various dams on Snake and Columbia rivers was most perilous and hence wanted to take the dams out. Then there are people who strongly believed that hatcheries posed the most risk and proposed to shut the hatcheries out. Then there are people – it's all due to the warming of the ocean due to climate change. There's no way you could combine the pieces of their models. Each group was passionate and articulate, so they got everybody worked up. I am not a modeler. However, I understood the value of cumulative risk analysis. So we negotiated with Peter. I knew I was kind of getting somebody who wouldn't stay too long in federal service, and he had his own opinion about what the government should do. I had to caution him that if he wanted this position to build a team of scientists in NWFSC for a few years, he needed to respect our constraints. Anyway, he needed this position. I then talked to the regional administrator, Will Stelle, that unless I get a huge increase in funding for salmon to do this modeling, we are going to have a management crisis with dueling piecemeal models. This is one of the powers of political appointees because they can directly persuade the legislators. Will got the funding. This was another big accomplishment as we got eleven new FTEs. Brilliant young scientists were eager to contribute meaningful science that would be used to help the iconic species of the PNW, and some already were NWFSC, like Mary Ruckelshaus who was already there. Michelle McClure, who is now the head of PMC, is it?

MG: [0:51:33] PMEL [Pacific Marine Environmental Lab].

UV: [0:51:34] PMEL. And Phil Levine, who became very well known for ecosystem modeling, and now he's working for the White House's OSTP [Office of Science and Technology Policy] as the director of the first-ever U.S. National Nature Assessment. Lots of very good people, but they would not have come [to NWFSC or NMFS] if there wasn't somebody like Peter Kareiva, who treated them like they were working in a research unit in the university. I needed to be the go-between NMFS headquarters, the regional administrator, and the new team of mathematical modelers and ecologists. I had to keep them in balance. I had to keep the regional administrator happy – at least satisfied. Happy, nobody was. But satisfied. I had to keep the political appointees off our backs because they wanted quick solutions [answers]. I had to make sure the scientists were not running amok. That was another big thing. But it was so exciting. The science that was coming out of this team – see, no matter who I am, I am a scientist at heart. The results of the cumulative risk Assessment modeling were [breathtaking]. Then, the third group that I had to work with was the General Counsel's Office. Luckily, because I had worked with the General Counsel's Office during the *Exxon Valdez oil spill*, I knew the pluses and minuses of

working with them. Very luckily, we had some amazing General Counsel staff in the Northwest who became allies and truly advocates, who wanted the same thing as we did: science-based decisions. I'm trying to remember his name. His name was Mark. Last names are something I'm just missing because we always call people by their first names. Mark taught me so much about the legal aspects of the Endangered Species Act and what the National Marine Fisheries Service is required to do [and] what Fish and Wildlife and tribes' jurisdiction was because salmon stocks are co-managed by the tribes and the state with NMFS. Mark was so patient. He and Robin Waples had joined NWFSC a couple of years before. Great scientists who also had some degree of understanding of people [and] more understanding of all different factions. I felt I could trust him. I feel there were scientists who were very smart and capable, but they did not really confide in me or tell me the total truth. They only told me the truth they thought I wanted to hear. But there were a few people – Robin Waples is one – who became more or less like my partner. I would hear him. He would tell me, "Usha, don't do that." Even though I was his boss, he would tell me. I knew he really said what he actually thought. One thing, as a big boss, you know people don't tell you everything because there are reasons, and I understand that, but it took me a while to understand. So, Robin Waples, Mark in the General Counsel's office, [and] Peter Kareiva doing the big science piece, all together came to work for salmon. That program, I would say, was perhaps one of our best gifts to the people of the Pacific Northwest that the top-notch science was done for the salmon stocks. Our science and results were not liked, again, by most. Every party didn't like some other part of it, but it was the whole picture, and we were respected, although disliked. These are the things that when I die if I have a tombstone, which I won't because I am going to be cremated, but that is what I'd like to be on it, that I supported a holistic view of science, and we stood our ground.

MG: [0:56:40] I was going to say there wouldn't be enough room on your tombstone for all your accomplishments.

UV: [0:56:46] [laughter] In each program, there were basic tenets, I think, of what I liked and what the Center agreed on, which was that our science would be top-notch, our staff would be respected, and the only thing I could not do – the third thing – was we would have excellent infrastructure. In the end, before I left, we did have a ship, but it wasn't completely given to us, the *Bell Shimada*. We just got half of it or whatever. So, I wasn't able to do much for the Center's infrastructure as much. During my tenure, we did build one new building in Newport. But in Seattle, I just was not able to. That did not happen. But the last of those four goals or things you go by was that our science would be used on the ground to make a difference in people's lives or livelihoods. And I would say we did it.

MG: [0:58:00] Because in 2000, the salmon population started to rebound.

UV: [058:04] Yeah, right, the recovery. NWFSC staff did so much work. When people say, "Well, they are being paid," which is true, but they go a mile and a half more than you pay them for. One of the other things I did was always make sure my staff was awarded with merit awards. It is a lot of extra work to nominate staff for various agency awards, and I used to hear from several center directors and even chief scientists who told me, "Why? This is their job. We are paying them well. Give them a bonus. But why should they get an award?" I said, "Because they are doing so much more." Without that extra boost in their morale, I would not have a center that had, for a long time, a survival challenge, and they performed extraordinarily. Now, we are so well-known people don't ever think that we were in an existential crisis. So, when it comes to staff, there were a couple of things I learned early on. One is that people like to be appreciated. Because in the beginning, when I first started, when I was a scientist in the Environmental Conservation Division, at that time, the secretaries or the assistants typed manuscripts because we had typewriters, and not computers, which were just coming – those electric typewriters were used for manuscripts and long reports, etc. So, every time they type these documents, and we make changes, they have to retype them. The same paper was going back and forth. I was telling my small group, "We should really view it and edit it before we give it to them again so that they don't keep retyping more words that we should have picked up." This guy tells me – my colleague – "But she is a secretary. She is hired to type. She's a typist. What difference does it make how many times she types the same manuscript?" I said, "You don't realize that when a manuscript is finished and when it goes out, even if we don't give them credit, they feel good about it. They don't want to type the same manuscript thirty times just because we think that's their job." So the job satisfaction – I had learned very early – that even for a dishwasher or a lab technician, to say that they're being paid, therefore, you can just keep dirtying the glassware, it doesn't matter; it's wrong because they take pride in whatever their job is, and we should appreciate and give them, once in a while, kudos for doing it because, without clean glassware, you will not have any good analysis. Every cog in the wheel needs to be appreciated. That's something – I don't know – maybe I learned that from my father. When I was growing up in India, we had full-time domestic help. This is a good story. He was fifteen years old when he came from a village. His name was Lakshman. He came from a village – just a kid – looking for a job in the city, and he took this job to take care of our family, not cooking, just cleaning. My mother slowly trained him to be everything: cooking, cleaning, laundry, etc. My father always made sure that at every festival, when we got new clothes, he got a new shirt because he was a kid. He stayed with us from age fifteen to sixty-five. For fifty years, he stayed with us. He was treated – obviously, his job was to do what he was doing, and it wasn't something we were going to make him work on. It wasn't like we were going to promote him out of his job. But he became part of the family doing that particular job. At that time, when he was fifteen, I was twelve. He saw all my younger brothers. My sister and brothers were almost – he [raised] them. Their children still remember. When he retired, we did not want to leave – my brother said he could just stay with his family. He could not work anymore. He was very proud. He wanted to go back to his village. We wanted to give him enough money so that he

would never be in any need – but my brother realized that if you gave him a lot of money, his relatives would just take it, and then nobody would take care of him. So we gave him a pension; that is, every month, my brother sent him a money order via postal service – it was really lot of extra work for my brother. My youngest brother said, "Every month, I will send him a money order. As long as the money's coming, he will be taken care of." So this type of understanding was kind of ingrained in me that people who serve us – it's not only my brilliant staff or my amazing colleagues, but all staff, including maintenance staff; it is every piece of the machinery that needs to be treated with due respect and recognition. A couple of times, when I made the error of very quickly reorganizing the Center without informing and involving staff, the staff spoke back. They were upset. I think it was in 1999. In 1994, there was a big reorganization in NMFS that Nancy Foster, as a deputy director, was leading because it was becoming clear that the staff of the National Marine Fisheries Service did not feel at ease. They felt nobody was listening to them. Nancy decided that she was going to have a group of nine people that would arrange listening sessions in all the centers and regional offices and headquarters staff confidentially. Nowadays, such sessions and surveys have become very regular. But that was a very novel idea because NMFS never did that before; at least, I'd never heard of it. She asked me to serve on that nine-person committee to work on this reorganization. I said, "Nancy, I'm just starting to be the center director. I can't be in your group." And she said, "Yes, you can because I want that group to have people of all different types." So Mike Tillman, myself, Andy Rosenberg. Steve Pennoyer. We all had different personalities. We were very different personalities, but she wanted us to go as a group and the staff to know that they would be protected. So, I was again thrown into this major new assignment at the level of National Marine Fisheries Service reorganization. During that time, I met Cindy Zook and Lynne Carbone, leadership consultants who were hired by the National Marine Fisheries Service. I got training. See, part of it is I got training to be a thoughtful executive. All nine of us got training [on] how to listen, how to speak, how to work with each other who are so different. There were two regional administrators. There were two science directors. There was somebody from headquarters, etc. I realized much later that it was Nancy's last gift to me, especially working with Cindy Zook, who became my lifelong advisor on matters that broadened my thinking and quality of leadership. So, in 1999, I very quickly tried to reorganize my Center because we were not operating efficiently, and we really needed to do that. However, this created so much unhappiness and turmoil within the staff that people were even leaving. I suddenly realized, "Wow, these are the people I have known and worked with for so long, and they are not happy." So I talked to Cindy and deeply listened to her. We did the same thing that National Marine Fisheries did in 1994-1995; we organized listening sessions with two consultants that Cindy recommended. To get people to trust them, these sessions were confidential, and they would not be in trouble. Then Cindy and her consultants gave a summary of staff feedback, which really gave me an eye-opener. I was taken aback. She told me I needed to listen to them and be authentic, not just give lip service. I had a staff meeting, and I told them I just wanted to make changes, and I was impatient, but that change was good for us. It's just that I did not realize how

important it was to get them involved. – and they loved it. They loved it because they said, “Okay.” The staff accepted that we needed the Center to change, but they wanted to be listened to. This part of it is not truly in my DNA to wait for people because I'm very fast and because I can see clearly what is needed for my organization, including my staff, to succeed. Cindy said I take up a lot of airtime, telling people what we need to do – Cindy taught me, “Usha, justlisten...” When they did the Myers Briggs, she said, “Usha, just know there are two deficiencies in you. One is you have lots of ideas, but you need a team that could actually finish them because you are a flaming P [perceiving]. You have ideas, but somebody needs to make them happen. So that's one thing. Hire people around you who are J [judging], so they will help you accomplish your goals by finishing your plans. And second, don't give them your ideas. Think about some different way of getting solutions.” So I came up with this one thing – I know we have gone way beyond time, but I need to tell you that I came up with this one thing. When I said to my staff – I have an open-door policy. Anybody can come and talk to me. But when they tell me their problem, they need to give me two solutions that they think will work because I am not in their shoes. I can give you a solution, but it won't be your solution. It may not be the solution for a person who is living with that problem every day. So you have to pull yourself out of that problem by suggesting at least two solutions, knowing we can't fire or remove the other person. But you could still come up with a solution. That worked because I said I don't want a session of just listening to what the other person does wrong or all the agency does wrong. I know it, or I may not know it, but what do you want to do to get out of it? So that is the gift Cindy Zook gave me. Not that particular way of doing it but telling me that if I give my ideas or solutions, they will be good, but that won't teach staff to think independently, and also, they will not truly accept my solution, but they may not tell me – because I'm the boss. So you have to develop a team. Then, you have to let the team do it. My ICES [paper] has many of these changes that I made in the Center, like delegating to staff to develop a seminar series to bring eminent scientists to visit the Center and spend time with Center staff. Something that the center staff felt was theirs [was] developing an internal grant program to give junior staff the opportunity to propose their ideas into pilot projects, which we funded. We used \$150,000 from our training money to help them write proposals and do things that are not just the agency pipeline because if they had a good idea, how would one work on it? They wrote small proposals and got seed money, and out of that, they were able to attract a larger amount of funding. Staff got training in grant writing, working with their colleagues they would not have the opportunity to. This “experiment” was written by NOAA as one of the human resource training success stories and got into President Bush's report of achievements of the federal government to Congress. So that was staff improvement or staff buying into the Center because we had those [three] things: great science, great staff, and staff feel that the Center is theirs, and developing university associations. So, that's where we could stop? You got everything you wanted?

MG: [1:13:17] Well, I didn't know if there was anything you wanted to say about your final years in this position at NOAA.

UV: [1:13:22] So, if you have time, it shouldn't take more than ten minutes to say because it was a very important way it ended. Everything was now beginning to work smoothly. People were doing their thing [and] programs were developed. So I'm at a stage around 2007; it is thirteen years of my tenure, and I was thinking, "Okay, I need to start thinking about retiring." Then, there was a change in leadership at the Southwest Fisheries Science Center, and the groundfish program became very strife with politics because it was getting stronger. But in the Northwest Fisheries Science Center, there was always this feeling that we are a salmon center, something of that nature. I won't go into the politics of it or anything, but it made me realize it was the wrong time for me to leave the Center because the Center may lose a big chunk of it, which is our bread and butter. Salmon, as I say in my paper, is the soul of the NWFSC, but the groundfish program was our bread and butter because it was a mainline National Marine Fisheries program mission. Those two things kept us as a very strong and unique center within NMFS. The one thing about me is my perseverance and tenacious nature. Some of my staff used to call me Dr. Usha Tenacity-Varanasi. This Center is something that was built by our blood, sweat, and tears, especially the West Coast groundfish program – things I went through to make it work. As long as Mike Tillman was the SWFSC director, it was understood that we were partners. We were going to compete. But we are going to tell each other. We are not going to do things that anybody tells us to do if it harms the long-term viability of either of us. Different leadership, different ways of dealing with it. So, I decided to stick it out after Mike retired. It was a very difficult time in my life, a couple of years during that period. I want to mostly not speak about it, but in my paper, I write that you must stand up. See, many things happen. You don't take every slight or every injustice and fight because you will get exhausted. In 1991 Dr. Warren Wooster, renowned scientist and professor of Fisheries Oceanography at the UW's School of Marine Affairs and the first American president of the [International Council for Exploration of the Sea](#) approached me about hosting a first meeting of North Pacific marine scientists at the NWFSC's Montlake facility. I was then Director of the Environmental Conservation Division. I felt honored to work with Warren and provided scientific and administrative support for this meeting. A summary report of this meeting, which was held on December 10-13, 1991, in Seattle, Washington, has the names of participants and deliberations about establishing various committees. I worked very hard with Warren and the international delegates to formulate the role and charter for the Marine Environmental Quality (MEQ) Committee. My international colleagues graciously suggested that I be the first chair of the committee, which I dearly wanted to undertake. But Warren felt the chairmanship of MEQ should not be from USA since he was the founding Chair of PICES and we needed to invite members from other countries to lead various committees. It made good sense, so I ended up being a hardworking member. Once PICES (North Pacific Marine Science Organization) was fully functional, there were two delegates from each country on the Governing Council. For example, the US delegate was from

NMFS and a delegate from academia. The first US delegate was the Alaska Fisheries Science (AFSC) director Dr. Bill Aron and the academic delegate was Dr. Vera Alexander, University of Alaska. I was given to understand by the NMFS Headquarters that, the US delegate position would rotate between the science directors from the AFSC, Northwest Fisheries Science Center (NWFSC) and Southwest Fisheries Science Center (SWFSC). Expecting to be the US delegate in the future I did not step up to be the next chair of MEQ.

After I became NWFSC director, the NMFS PICES delegate Position transitioned from AKFSC to SWFSC. Mike Tillman, the SWFSC Director, called me to ask why this was so, I was baffled but was told, I was too new as a Center Director to take on this additional responsibility, so I assumed I would be the next US delegate when Mike's term was over. But the delegate position kept rotating between AKFSC and SWFSC and Pacific Island Center (PIFSC) when it was created from SWFSC.. Here is when I made a conscious decision not to fight this obvious discrimination, because I had so many other important issues and challenges for which I had to take a stand. I assumed because I was not a traditional fishery or marine mammal scientist, I was passed over.

What shocked me the most was the fact that when I retired in December 2010, and the NWFSC's acting Science Director John Stein, who has similar educational background as a chemist as me, was appointed the US delegate. So 17 years after that first meeting in Montlake, the NWFSC Director was appointed US Delegate to the Governing Councilody. John was eminently qualified and had contributed to PICES in many roles so he was most suited to be the US delegate. But it dawned upon me that the reason I was never appointed on any official position was not because I was a woman or a chemist, but because I was a person of color. The hierarchy wanted a white person to be representing USA on PICES and perhaps on other such organizations. And so I am never invited officially to any PICES conferences or celebrations although I did a lot of background work.

I narrate this story of systemic discrimination that I chose to ignore, because winning that battle would not have furthered my bigger goal to make the NWFSC and its staff strongly planted in NMFS culture and well respected scientifically. The NWFSC was created just a few years before I became Director, and establishing a solid foundation for the future was the highest priority for me.

But you need to think about which of those injustices you must stand up to, not just for yourself because I had enough personal wealth, and I had enough name and respectability; for me, I could just walk. But what would that say to all these young people – men and women – but especially women coming into the job? Do we just give up? Three things can happen. When some injustice happens, which is big enough that it affects many people, do you walk away and say, “Hey, I paid my dues? I've already done everything. I don't want to have this [headache]. I'm leaving?” Do you give up? Do you back down and say, “Hey, that's how it works. The majority wins, and they have connections with each other; they have hired each other, and they have

walked the rough road together. They are never going to take my, an outsider's point of view, even when they know it's wrong or the other person is wrong." Do you say you're going to die? Do you go underground? And a couple of times when there was a political appointee, Nancy had advised me, "Usha, build your Center. Don't fight them because they're too big." But this is my Center's existence. But this is personally affecting me, not a political appointment. So, do I say, "Oh, let it go?" But then I knew we'd bleed to death, and I would leave with not a feeling of accomplishment but a feeling of anger. I believe you should retire or leave a thing when you are on the top of your game, not when you are defeated. And defeat doesn't come easy to me. I had not spoken to anybody in the Center because one thing I did not want to do was to have that kind of stuff become the main story. That's not the main story. That's just one hump or roadblock in your journey, and talking too much about it is not good. But fighting for it was necessary. So I took a couple of people that needed to know – this was very much need-to-know basis – and I had very good help in the human resource side of NOAA because I had built bridges for a long, long time. I learned from them what I could do and what I couldn't do. This is the time to pull all your resources, bring all your chips in, and do the darndest, still knowing, as we know the management system, that management always wins. We know that we may not win, but we will give it a good fight. During that time, I was advised, I was cajoled, I was threatened, I was shunned – everything. But I said, "This one is too big to drop." And so it got done. It went all the way up and everywhere, and people got to know it. And it changed. It ended up changing the agency, not permanently, perhaps. The minority cannot become the voice of everybody, but the minority must be respected if we are talking about diversity being important. There are people at every level calling to give verbal support but could not do much more, saying they wish that I would have been completely vindicated and it would have come to a bigger change. But this is a better change because it didn't destroy anybody's facade. It didn't destroy people, which is a good thing because those kinds of things will come to bite you or bite the people you support. But it made a big enough impact to get my Center respected. My reward, so to speak, for going through two years of hell was that I got such a humongous amount of bonus. Each time, whatever bonus they give me from the National Marine Fisheries Service, it would get way higher when it went to NOAA because I worked with a lot of NOAA parts. I worked with NOS [National Ocean Service]; I worked with the Research arm, like Rick Spinrad and all. I had a very good relationship with the NOAA Administrator's office. So all those collaborations sort of took care of me, even though when I was hurting, they couldn't do anything because the damage was done for that one year's rating. So, after that, I was pampered, so to speak. But the biggest honor or the biggest – what you call – reward I got was when the Southwest Fisheries Science Center – both the center director and deputy director retired. The center director left, and the deputy director was just about to leave. They needed an SES [Senior Executive Service] person because it was 2008 when stimulus money was coming in. The Southwest Center, because California is so powerful, was going to have a new ship built to replace one of their ships. They were going to have this humongous, beautiful new building. But it is a huge responsibility. All those people at the head of the National Marine Fisheries Service came to me together, several of

them, and my bosses and all, telling me that they wanted me to oversee Southwest Center until they get a permanent director, which may take at least a year, year and a half because it's a very big process. Most of the people who knew my struggle said, "What the heck? Just say, 'No.' Just say, 'You take care of it yourself.' Just say, 'No.'" I said, "No, no, this is exactly what I should do. I should not only be the Acting Center Director, but I should also show them that I will take care of SWFSC in the same way I did take care of NWFSC. I am not going there as a Northwest Center Director." There was so much unhappiness when it was announced that I was going to be the acting director because they were scared. They feel they're hearing all kinds of stories that I will – because we were at loggerheads as two centers, and we both have less money than any other centers. They were so worried that I would remember who did what to our Center. I said, "That is not how I do it. If they give me something to take care of, I have to take care of it." At that time, they are getting this new deputy director, Kirsten –

MG: [1:25:27] Koch?

UV: [1:25:28] Yes, Kristen Koch. She was new. Steve Murawski, NMFS Chief scientist, told me she needed one year of a mentor or somebody because she's just coming in fresh, and she's coming in a center that's already feeling devastated by so many changes, and this huge responsibility of millions of dollars, that if that doesn't get used properly, the whole agency will go down. That was my reward that I gave the National Marine Fisheries Service, the best tenure – at least they said that to me – working there. Jane Lubchenco had come. I knew her quite well. Eventually, most of the SWFSC staff felt that I was there for them just as I was for the Northwest Fisheries Science Center, where I had a wonderful colleague, John Stein, whom I had mentored since 1980, and we had become trusted allies. When I retired, John Stein became NWFSC director. We developed all kinds of cooperating agreements and worked together with SWFSC. So that is when I decided to retire. When Cisco Werner was vetted as the new SWFSC director, we met with him a couple of times privately, Kristen and I. I wanted to make sure that Kristen had all the tools of someday becoming a director – she is now SWFSC director – and that she felt supported. We had such a wonderful time doing that. La Jolla became my second home. I stayed there and stayed in Seattle. That was actually a great way to retire because I got to meet all the fishing council people and Scripps people. Over the years after retiring, I still keep in touch with a number of them in Scripps as I do with NWFSC staff. I have gone to the SWFSC center a few times. I feel like retiring like that was perhaps the best decision and a great gift to me.

MG: [1:27:51] Well, you did such a good job summing this all up. I'm so grateful for your time and your service to NOAA. This has been such a pleasure for me to get to know you. I'm really inspired by the work you've done and just who you are.

UV: [1:28:04] Thank you so much. It all gets written up. That's so wonderful. So, we are not saying goodbye yet. We're just saying one mode of connecting is over. It's about time for you [because] you have so many others. So tell me about this just for a few minutes.

MG: [1:28:25] Sure.

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[Addendum from Dr. Usha Varanasi:

“Life after NOAA”

One of my unrealized dreams during my career was to collaborate with the fishery and environmental science community in India. I had occasionally collaborated with visiting Indian scientists at NWFSC and UW but was unable to be more deeply involved. Then in 2009, Rick Spinrad, who was then the director of OAR, invited me to participate in a newly crafted MOU between NOAA and India's Ministry of Earth Sciences to collaborate on mutually beneficial projects in India. Rick wanted to expand NOAA's participation to include fisheries. As I was already serving as the acting director of SWFSC in addition to my full-time job as the NWFSC director, my plate was full. Also, I was planning to retire from NOAA as soon as SWFSC's permanent director was selected. I chatted with Ned Cyr, the director of the NMFS Office of Science and Technology, about this. Ned asked me if I could visit some of the fisheries science centers of MoES when I went to India to meet my family, which I happily did to make a few introductions. After my retirement, Ned invited me to help expand NMFS collaborations with Indian fishery science institutions.

NOAA has a long history of collaboration with Indian oceanographic and meteorological agencies to study climate and weather but not living marine resources. Ned thought that my Indian heritage and cross-cultural understanding, as well as my position as a senior U.S. fisheries scientist placed me in a unique position to broker a new partnership. From 2011-2020, I enjoyed serving as an advisor and a co-PI on technical cooperation in the development of predictive capabilities on marine fisheries and harmful algal blooms of the Indian seas with the Indian National Centre for Ocean Information Services (INCOIS) and the Centre for Marine Living Resources and Ecology. Together with these Indian institutions, we organized annual workshops between scientists from India and the U.S. as well as planned joint projects and training cruises aboard NOAA and Indian fisheries research vessels. These collaborations led to a deeper understanding of mechanisms underlying harmful algal bloom events in India and helped India increase its scientific capacity to assess coastal and ocean fisheries (Baliarsingh et al., 2016; Holmes et al., *In Press*). The latter work has developed the basis for modeling effects of climate change on Indian sardine fisheries that will be instrumental in furthering the NMFS mission related to fisheries management and will address important conservation goals as part of the UN

Decade of Ocean Sciences (2021-2030). I had steadfast support from our Indian colleagues, such as INCOIS directors Satheesh Shenoi and Srinivasa Kumar, as we promoted scientist exchanges, including the training of young Indian scientists. *I sincerely hope that these efforts will lead to more international scientific journeys such as mine.*

While my formal role with this collaboration came to an end in 2020, the efforts by NMFS scientists is continuing to improve institutional capacity in modeling and fisheries statistics in India. Thus, the story continues by people who believe in the idea of open science, that all should have access to knowledge and tools. In this effort, I am indirectly involved because my husband and I have endowed summer student support in University of Washington's Math and SAFS and the interns work with NWFSC mentors. This year one intern worked on a training session conducted by one of NMFS scientists.

I am happy to continue my association with NMFS and NOAA because, despite all the challenges I have faced, I have had many successes, not in small part because several of my colleagues and superiors believed in me and supported me. I truly feel that an opportunity to work in NOAA for nearly 40 years has been an incomparable gift that has enriched my life, and even now I have so many friends and colleagues who share my life as we continue to help the new generation of scientists.

Reviewed by Molly Graham 7/11/2023

Reviewed by Usha Varanasi 8/22/2023

Reviewed by Molly Graham 10/8/2023