



Jane Lubchenco Oral History Interviews, April 20, 2015

Title

“Understanding and Advocating for the World's Oceans”

Date

April 20, 2015

Location

Cordley Hall, Oregon State University.

Summary

In her second interview, Lubchenco discusses her work as an advocate for improved science communication and effective science policy.

The session begins with Lubchenco's memories of various travels that she has taken for her research and teaching, including trips to South America, Africa and New Zealand. She remarks on the collaborations that formed as a result of these trips and the unique cultural perspectives on the oceans that she observed.

From there, Lubchenco shares her views on the crucial importance of effective science communication and describes the ways in which this need led to the creation and progression of the Leopold Leadership Program and the Communication Partnership for Science and the Sea. As Lubchenco notes, both programs aim to enhance the public's understanding of the world's oceans, including the ways in which the oceans are changing.

The bulk of the interview is devoted to a discussion of Lubchenco's tenure as head of the National Oceanic and Atmospheric Administration, including the challenges that she faced and the accomplishments of which she is most proud. In recalling her four years in Washington, D.C., Lubchenco emphasizes the positive impact that the agency had in introducing reforms that have curbed overfishing in U.S. federal waters. She also points to NOAA's creation of a robust scientific integrity policy, its reinstatement of a Chief Scientist position, and its addressing of a dysfunctional weather satellite program as major achievements of her administration. NOAA also forecast a spate of unprecedented wild weather during Lubchenco's time as head, and likewise helped to create a National Ocean Policy.

From there, Lubchenco speaks to her experiences as a mentor to undergraduate and graduate students over the years, and notes her efforts to propel gender parity within her research space. The session concludes with Lubchenco's memories of Hatfield Marine Science Center as it has evolved, and her delight at being a part of OSU's robust program in ocean sciences.

Interviewee

Jane Lubchenco

Interviewer

Janice Dilg

Website

<http://scarc.library.oregonstate.edu/oh150/lubchenco/>

Transcript

Jane Lubchenco: Hello, this is Jane Lubchenco, today is April 20th, 2015.

Janice Dilg: And this is Janice Dilg, the interviewer for the OSU Sesquicentennial Oral History Project and we're in Dornfeld Library in Cordley Hall today and this is the second of two interviews, and thank you again for sitting down again.

JL: Thank you, Jan.

JD: One of the areas that we didn't really touch on much last time were kind of the research and visiting professorships and fellowships that you've been involved pretty much since the beginning of your career, and as they've happened in various places around the globe. I was hoping you would start by talking about some of those.

JL: One of the great, fun things about being in marine biology is that the whole world has oceans and coasts and so there really are lots of opportunities to learn about the natural world, see how things are similar, how they're different, think about why those differences exist, create experiments or monitoring programs to evaluate those ideas, and then also track how systems are changing and learn from other experiences around the world about the best ways to use ecological systems without using them up. And I've been very fortunate in my career in having the opportunity to travel and see other seashores, other nearshore coastal oceans.

In particular, I was interested in, initially, how basic patterns of community structure varied from one place to another. So, we tend to see zones of plants and animals from highland shore to lowland shore, in rockier type areas. You see that everywhere, but the number of species here is considered; the types of species often vary from one place to another. And I was interested in both differences, comparing the west coast of the US to the east coast of the United States. Those are the places I did my master's degree and then my PhD. And then later, in doing temperate tropical comparisons and looking at rocky seashores in Panama, trying to understand how those places differed and why from the temperate places that I studied.

We got really interesting results, my husband, Bruce Menge, and my students, our students, over many, many years, understanding those systems, and really developed a new approach that involves doing similar experiments in different places around the world in exactly the same way so that we have a greater ability to compare the results. So, not just looking and seeing the differences but trying to get at the causal factors that are, in the end, responsible for those differences.

At some point, as our interest in patterns increased in scale to the size of a large marine ecosystem, for example off the west coast of the US, we have the California current, large marine ecosystem that goes along Washington, Oregon and California, and we became interested in how the dynamics of that system were similar or different from the dynamics in other coastal upwelling ecosystems. And so, we went down a path of initiating studies in Chile, in New Zealand and in South Africa. And each of those has a similar oceanographic, atmospheric system and there are intriguing differences. And so, we acquired the resources, and through lots of grants, and then did a lot of exchanges of faculty and students. Not all of those places at once, but one and then another so we have sort of a global comparison now, with many of the same researchers, collaborators in those different places continuing to do experiments along the lines that we had initially designed. So, it's provided really rich insights into how changes in the intensity and the nature of upwelling can modify the abundance and the distribution of species in a particular ecosystem. So, that's been a lot of fun.

JD: And this has been over what span of time?

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JL: Oh, probably twenty years. And we were really fortunate in being able to have funding to help sustain that for a long period of time, to bring in modelers, to bring a lot of collaborators. My husband, Bruce Menge, has been a strong lead in this. It's been very much a partnership and we have invested a fair amount of time and energy in each of those places, but it's been very insightful. So, we've been fortunate to have students from those places come study with us and we have our students, they've done part of their, either undergraduate research projects or masters or PhD dissertations, in some of

those other countries, or have gone on to do a post-doc in one of those countries. So, what a great opportunity for students. They've really learned so much in being not just exposed to a different seashore but a different culture, a different way of thinking about the problems, different languages, different foods, and it's been very interesting.

JD: I'm glad you brought that up because, as you were speaking, I'm thinking "well, there's that scientific piece of it but these are very different locations around the globe and very different cultures that come with them." And I guess I'm wondering about the cultural component and how that affects, or not, how those places view their relationship with the coast and the oceans or whether that's one of the things you figure out, is there's a lot of similarities.

JL: There are both similarities and differences and one of the great things about exchanges is that you learn from each other. It's not just unidirectional. And we've learned from our Chilean colleagues, for example, how important it is to work with the local communities, the local fishing communities, and we got a lot of new ideas about marine management systems from the experiences that they have had in Chile. Very different type of fishery management than we have here, but really interesting to learn about, and each of those different places has had some unique features and some different features.

Many people have thought about, let's see, Oregon, South Africa, Chile, New Zealand, and they immediately leap to wine and say "those are all great wine producers," and it's true. And that was one of the nice benefits of this. It just so happens that the coupled oceanographic atmospheric systems that produce the kind of conditions that are relevant to this coastal upwelling are also the same conditions that are conducive to growing wine. So, we didn't choose the areas for that reason, but we certainly have enjoyed the benefits of having that great opportunity. When there aren't good low tides, we go sample some of the local fare.

JD: And am I understanding correctly that there were also some teaching opportunities that you were able to do and—then you're in a classroom in a different culture, and being able to compare that to OSU, what were those experiences like?

JL: In fact, the first time I went to Chile it was at the invitation of Chilean colleagues to come and teach a course. I did that and then discovered these systems and thought "gee, this is really interesting, I wonder why this is this way or why that is," and so teaching is a really great way to explore a new culture, to explore a new system and if the conditions are right, to set up some kind of exchange programs. As it turns out, OSU has had a long, long history of exchanges with many Chilean universities. Not surprisingly, because the systems are similar, but that just makes it all the more interesting. So, teaching in another place is very rewarding and often leads to other things.

JD: Well, and I know one of the topics that we talked about some and I've certainly read about is your interest in the ability for scientists to be able to communicate with the broader public, with policy-makers, and I guess I'm wondering how perhaps some of these partnerships fostered that and how that just perhaps expanded how you communicated science to other people and groups?

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JL: Over time, I really came to realize that a lot of the insights that scientists had obtained from studying their systems were often not shared to the general public, to policy makers, to business leaders, to the media, and that we were also missing out on an opportunity to learn from locals what they know, and trade information. And over time I've really become convinced that scientists have an obligation to engage more with society in an open fashion. Not just telling them what we know, but sharing what we know, but also being open to their questions, their insights, their perspectives and their knowledge. And that concept initially was really completely contrary to what was expected of academics when I was growing up. Academics were in this ivory tower, they were supposed to focus on doing their research, they were supposed to produce new knowledge, publish it, move on to another question. Yes, train students but the real focus was the discovery part of science.

And that's incredibly important but I think it's no longer enough. I think we really have an obligation to share what we know more broadly and to do so in ways that are credible, are understandable, are salient, and we don't, by and large, do a very good job of teaching our students to do that. Today, 2015, students are eager to learn to do that, but that's new, that's different. They're motivated because they see the world around them changing and they want to be part of the solution,

not just part of the problem. But that interest in engaging with society is relatively new on the part of students. I think it's great but the universities still, by and large, train our students, graduate students, to do science. We now train them to teach. We didn't used to train them to teach very well. We do a much better job of doing that now.

The next challenge for us is to train all of our students to be what I call bilingual. I think students need to learn to speak the language of science, with all of its nuances, all of the jargon, and to do so really, really well, but I think we also need to teach them to speak the language of lay people and to be adept at both.

Now, not everyone is going to be equally good at the discovery part of science and the communication part of science, but the community of academic scientists needs to be more supportive of this engagement and needs to create an environment where students are empowered to not just be scientists but be scientists who are really engaged with society.

JD: And, so you mentioned that when you were coming up through academics there was this great divide, how did this change occur for you? Was it gradual or was there an epiphany you had at one point that set you realizing this was so important?

JL: I think a couple things happened. I was seeing many study sites that I knew well change, and nobody was really aware that they were changing and few people really understood why they were changing or, so both that they were changing and the causes of the changes were not broadly appreciated. It became clear to me that scientists had a lot of information that was relevant to a lot of decisions that society was making, but we weren't really connecting the dots. And so, I became increasingly interested in helping to share information to policy makers, to the public.

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At the same time, the Ecological Society of America was engaged in doing a broad identification of the priorities for ecological research in what became the Sustainable Biosphere Initiative that I led. And this exercise of defining what are the priorities for ecological research that we hope to communicate to policy makers and to Congress and to the federal agencies was, that effort required a better ability to connect the dots for people, between seemingly very esoteric research topics and relevance to society.

And both in the process of seeing my own study sites change and wanting to share information about them and being, leading this national activity of communicating the importance and relevance in ecological science to policy makers, those two efforts converged in my realization that we needed more scientists able to connect the dots for people, more scientists being bilingual, more scientists being able to talk about the importance and relevance of environmental science in ways that they're credible and understandable and relevant to the decisions that people make.

As a result of that realization, I helped co-found the Leopold Leadership Program to train academic environmental scientists to be better, stronger leaders and more effective communicators of their knowledge. And I co-created COMPASS, the Communication Partnership for Science and the Sea, to help do that communications training, to help provide a network for academic scientists who entered this world of being more public and needed a safety net, needed colleagues who were supportive, needed coaches who could help them. And I'm just delighted with how successful both of those programs have been.

I think we're in a very different place today, now, with many more academic environmental scientists, as well as young students just chomping at the bit to share what they know with the public and to do so in a way that is not unidirectional but is really engaging more with society. So, we've seen quite a change in the last twenty years on this front. And I think it's very exciting. It's not as far as it needs to go but we've made remarkable progress and it's urgently needed and I'm pleased it's happening.

JD: And if you think back to twenty years ago when you were founding or co-founding these two programs, did you have to do much arm twisting? How did you get them going among your colleagues at the time?

JL: When we first created the Leopold Leadership Program, a number of people thought it was a very good idea. We held a lot of town hall style meetings with Ecological Society of America meetings and there was lots of hand-wringing, lots of angst, lots of ambivalence about whether we should be doing this, but I think most of all people were afraid that if we created a program, nobody would sign up to take this training. As it turned out, our fears were unfounded. We had

spectacular scientists who said "I need to be doing this. I know I need to be doing this but I don't know how and I am afraid that I won't be good at it and I need help." And so, every class of Leopold Fellows that we had often started off with this same sort of true confessions, with people saying horror stories, telling each other about things that had happened to them, how they'd been misquoted, how they'd blown it, and feeling "okay, now we've got that over with, let's get on with learning how to be better at this."

So, we brought in really spectacular trainers through COMPASS that, it's not just media training, because the thing that scientists struggle with is figuring out how to take something that's very complicated and very nuanced and boil it down to something that is understandable but still accurate. And you need to know a lot of science to do that and you need—it's actually a group exercise to try to figure out how to communicate something.

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What are the right analogies, what are the right metaphors, what are the stories that you can tell to make it interesting and engaging? And it's getting scientists into a different way of thinking about communication. It's not materials and methods and all the history and then you, you know, after a long time get to the bottom line. It's sort of flipping things on its head, starting with the bottom line first, which is what journalists typically do, and answering the "so what" questions, "why should anybody care about this?" And that is hard for scientists who have been trained in one way, thinking and presenting information, they kind of have to get out of that comfort area and get into a different one. But when they do, it's like magic and many of the people now that have been through this program are just spectacular communicators, and we need them doing that. They, in turn, have created programs in their own universities to help their students.

And we prototyped most of those training exercises here at OSU, so many of the students that have gone through my programs have actually been through these programs, not formally but we tried them out and refined them before we actually implemented them into the programs.

JD: And we just passed yet another Earth Day yesterday, do you think it was the environmental movement, or what outside forces were sort of pushing that scientific, academic community to know that they needed to be able to communicate more or that people were coming to the scientists and asking for question—asking for answers to questions that they had?

JL: I think most ecologists in particular, that I know of, are just seeing all of the changes happening around the world and saying "I have something to contribute to this. I know a slice of the world well and what I know might be useful. So, I want to be more engaged in finding the solutions to these grand challenges that we all face." So, I don't think it's any particular movement, I think the same thing that created Earth Day, an awareness that the environment was changing and it has real implications for people, is part of the same realization that is driving scientists to want to be more engaged with society.

JD: I was listening to, it was a brief interview on Oregon Public Broadcasting after you received, as one of two recipients of the Tyler Prize for Environmental Achievement just in the past month, I believe?

JL: Yep, that's correct.

JD: And one of the comments that you made was about people not understanding oceans well. I'm, you can tell me how wrong that I have this, that I'm trying to requote to you: "because we sort of live next to them, not on them like the land, so we don't have quite that same relationship." And this seems like the kinds of things that aren't necessarily specific to a topic but just kind of more broadly what our earth is about. How do you—how are you thinking about meeting that challenge? And you and others, I guess?

JL: We call the planet we live on Earth, but in fact it should probably be called Ocean, or maybe Sea, because two-thirds of it is covered by water, and that's just the surface. If we look at the volume, this is absolutely a salty and wet planet. But we live on the terrestrial part of it. We live on the land, we can see what's happening, at least a lot of it. What happens beneath the waves is something yet entirely different. And science gives us many more tools now to dive beneath the waves and see what's happening, but it's still a foreign place for a lot of people. And it's easy to look out over the ocean and think everything's fine.

People who live and work on the ocean, fisherman, others who are very observant, know full well that the oceans are changing in some pretty dramatic ways. Scientists have documented that. And part of the challenge is to share that information with people in ways that engage them in being part of the solution, not just turn it off because it's not something they can deal with.

JD: Well, there was the interesting arrival of the partial hull of a ship from the tsunami, now five years ago, that had fish inside. That, for me as a non-scientist, that was one of those moments that kind of got my brain churning about how the oceans work and the currents and how it got here and how these fish survived in very different types of waters. And I don't know how to make that more obvious all the time, I guess.

JL: Well, it is true that there is so much about oceans that we don't know, and that's part of the fun of studying them. Every time we turn around there's another problem. On the other hand, we know enough to know that a lot of the current practices and policies are really unsustainable. Now, we've had some great news in showing it is possible to turn things around. It is possible to end overfishing and recover depleted fisheries. And we just had, a couple days ago, the new report from NOAA's fishery division of the status of the stocks, US federal fisheries and US waters for 2014, and it continues the good news story that has been underway. When I was at NOAA, we made a point of saying "we have turned the corner in ending overfishing," and in fact all of the efforts of fishermen and fisher managers and scientists in ending overfishing is actually paying off.

In the year 2000 there were ninety overfished stocks in US federal waters. In 2014, there were only thirty-seven. So, we have dramatically reduced the number of overfished stocks. That is great news. Moreover, we are rebuilding stocks. Again in the year 2000, there were zero stocks that had been rebuilt, i.e. recovered to the point where they could sustain fishing pressure. As of 2014, we now have thirty-seven stocks that have been rebuilt. So, every year we're seeing more and more progress, and that progress is accelerating. And so, the changes that were—the legislation that was passed in 2006, the Magnuson–Stevens Act, and the very difficult challenges we had at NOAA in actually implementing that legislation, making it happen, and creating a right-spaced management system called catch shares—not creating it, but implementing it at a much broader scale—has really turned things around. This is impressive progress and it gives me hope, it gives a lot of people hope. It is possible to turn things around and to recover some of the bounty that has been lost.

Now, the fact that Europe has taken a look at this and said "hey, maybe we could do the same," they have reformed their common fishery policy. They have yet to implement it, which is the real tough part, but they are on a different path because of the success that we have had. And the new position that I have as US Science Envoy for the Ocean gives me a great podium to talk about the successes we've had in oceans, how it is possible to use oceans without using them up, how there is an urgent need to turn things around and it is possible to do it.

And ending overfishing with commercial fisheries is one thing. Small scale fishery reform is a much bigger challenge, but that's one that I'm working with a number of partners to tackle head on. That's one of the projects that I'm working very diligently on right now. A number of the students here at OSU are helping with that. And I think there's good reason to believe that there are, there is definitely hope there. We've seen great signs in a number of developing countries. The challenge now is to scale those up. So, it's a story that is both, its coupled urgency and hope. It's urgent that we make changes because lives and livelihoods depend on it, but it's also hopeful. We know that we can do it. We just need the political and community support, political will and community support, to really make those changes. So, tough times, exciting times, but it's actually, you know, it's do-able.

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JD: You touched on NOAA, which was another topic that we talked a bit about in your first interview, more kind of how you were selected in going to NOAA, but I really wanted to give you a chance to talk about a few more of the significant accomplishments. Certainly the one that you just mentioned, but there was a lot happening in the years that you were in charge of that department. Well, is it a department?

JL: It's an agency.

JD: An agency, thank you.

JL: NOAA is a federal agency and the four years that I was at NOAA, from 2009 to 2013, were incredibly challenging years. It was the time of intense partisan bickering about climate change and the science of climate change, and NOAA is one of the lead agencies for climate. It is—we had the most extreme weather in any four years in the US history. We had a Congress that was completely dysfunctional, highly partisan and legislation-light, shall we say. We had some major challenges with a satellite weather system, we had a legacy of science having been manipulated and distorted, so sort of across the board all of NOAA's responsibilities, satellites, weather, oceans, fisheries, climate, the whole shebang, there were challenges on every one of those fronts.

Much to my delight and amazement, we were able to get a huge amount done despite those challenges, in part because we had a really fantastic team of scientists at NOAA and academics around the country that were providing knowledge and information and support. I guess in terms of looking at successes I would start first and foremost with NOAA's scientific integrity policy. NOAA is a science agency, it produces science, it supports science and uses that science to provide services, like the weather service, and to be a good steward managing fisheries, for example. And so, science really is at the core of what it does. And if the American people can't trust the science that NOAA does and if NOAA can't talk about the science that it does in ways that are true to the science, then we have a problem.

So, when the President first came into office in 2009, he made a commitment to scientific integrity and he issued guidance to all the agencies. NOAA—and part of that guidance was each agency was to develop its scientific integrity policy, but it varies how a policy plays out, it might vary from one agency to another. We spent a considerable amount of time on this when I was at NOAA. It was a very inclusive, iterative process that involved intense conversations within NOAA as well as a lot of consultation, drafts, getting comments on drafts from the agencies, from the public, and after about a two-year period of time, NOAA produced its first scientific integrity policy, which others have labeled the "platinum standard" for scientific and integrity policies. It says, in no uncertain terms, that it is not acceptable to manipulate, to support—I mean, it is not permissible to manipulate, to suppress, distort or cherry-pick the science. Moreover, scientists at NOAA are free to talk to the media without going through a gatekeeper or being scripted. And that's pretty revolutionary, it is highly unusual, and it is absolutely the right thing.

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So, NOAA has a very robust scientific integrity policy that I think will stand the test of time because it was done in a very public way and because it's gotten so much public attention, and because it has the ownership of all the people at NOAA, the twelve-thousand-some folks that are at NOAA, that worked on it, it really has ownership. And for those reasons, I think it will be durable. It's going to be a lot harder for somebody down the road to come in and say "nope, got a new policy." So, successes that we had at NOAA begin with the science. The scientific integrity policy is a strong anchor of that.

I also reinstated the position of Chief Scientist at NOAA, which had fallen by the wayside, hadn't been around for almost two decades. And that's now a robust position, and in fact Rick Spinrad, who used to be the Vice President for Research here at OSU, was tapped to go take that position. So, when I came back to OSU, Rick unfortunately left OSU to go to NOAA, but he's now serving the nation in a very important capacity as NOAA's Chief Scientist.

I strengthened science in other ways at NOAA but that's one really important category of accomplishments. We touched briefly on ending overfishing and turning fishing to both sustainability and profitability, not an easy thing to do, not at all. Fisheries are highly contentious, but we made just amazing progress. And the statistics that I cited earlier are proof that, in fact, it's working.

Another arena where we made progress was fixing a dysfunctional weather satellite program that was building the next generation of weather satellites. The program had been seriously problematic for over a decade and was so complicated nobody even wanted to touch it. We tackled that and fixed it and then had to get funding for it. And one of the experiences I had in getting that funding really illustrates some of the challenges of a job like this. It's important to know that over ninety percent of the data that go into the weather models come from satellites. They're incredibly important. The ones that are up there now work fine, what we're talking about is building the next generation of weather satellites. So, I went to different members of Congress to explain to them how we'd fixed the management structure, how it was back on track and how important it was for Congress to fund this program. And one member of Congress said to me "Doctor, I don't need your weather satellites, I've got the Weather Channel." And I thought "Oh dear, maybe I better take a couple steps

back and explain to him where the Weather Channel and all the other private weather providers get their information. It's from NOAA and from NOAA's weather satellites."

So, we put that program back on track, we accurately forecast all the wild, wild weather that we had in the four years that I was at NOAA. We had over seven hundred and seventy major tornadoes during that period of time, 2009 to 2013. That's just unprecedented, seven hundred and seventy major tornadoes. We had seventy Atlantic hurricanes, including Sandy, Isaac and Irene. We had six major floods, I'm talking serious flooding. We had three tsunamis, we had record-breaking, unprecedented heat waves, droughts, wild fires and record-setting blizzards and snow falls. So, every single category of weather, we just blasted the records. And that's a challenge because that coopts a lot of time and energy and everybody is staying on top of all these different crises and making sure that people have the information they need, when they need it, to make the best decisions, whether it's individual citizens or emergency manager providers or airports or whoever it is. So, that was a major challenge.

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We had to deal with the Deepwater, BP Deepwater Horizon oil spill disaster. Five years now, we're celebrating the anniversary of that. It was a disaster, it continues to be a disaster. NOAA was one of the agencies that was intimately involved in the response; it continues to be involved in the restoration, the damage assessment and the restoration phases, focusing in particular on the natural resources and the public's access to those natural resources.

Another major accomplishment that we are proud of is the creation of the nation's first ever National Ocean Policy. The nation has a Clean Water Act, a Clean Air Act, but we never had any sort of overarching statement about what do we want from oceans. The National Ocean Policy puts the focus squarely on stewardship and it says, in no uncertain terms, healthy oceans matter and the federal agencies need to do a better job of coordinating among themselves to achieve that, and the federal government needs to be a better partner with the regions and the states and the tribes in coordinating what happens region by region.

So, we've set out a new course on that front. So, that's a few of the things that we dealt with during the time that I was at NOAA, and again I think some very significant achievements. We weren't able to do everything that I'd hoped we would. I had proposed that it was time to think about creating a National Climate Service, not unlike the National Weather Service that we have. And for a variety of reasons, that did not come to pass. Climate is highly politicized now. I'm hopeful that at some point we'll get past that, but in the meantime NOAA was instrumental in leading the most robust national climate assessment that we've ever had, which really took stock of how climate change is already happening and what the impacts are in the US. And that, I believe, in addition to all this extreme weather we've been having, has been instrumental in helping the public understand what actually is happening and the fact that it's real and has real consequences. It's not something that is something in the future or just affecting polar bears someplace way far away. It's actually happening in people's own backyards right now. So, we weren't able to create the National Climate Service but we did do the National Climate Assessment that I think has been very helpful. So, a lot of things to be proud of.

JD: And I think it's interesting, you've talked in some other places too about—and the BP Deepwater Horizon spill is probably one example of NOAA's a really critical agency that probably a lot of people don't know what it does, ongoing or in emergency situations like that. Do you think you were able to change the profile or the awareness of NOAA when you were there? Or perhaps that's ongoing with your predecessor?

JL: Changing the profile of an agency is always an ongoing effort. I do, I have been told by previous NOAA administrators that NOAA's profile during the time that I was there was at an all-time high. They said "finally, NOAA's getting some of the recognition it deserves." And recognition among the public as well as access within the White House. I was fortunate enough to brief the President multiple times when I was there and was told that that was pretty atypical. And partly because the President had made a strong commitment to science, partly because NOAA was so relevant in a number of things that were going on, whether it was the Interagency Ocean Policy Taskforce or the Deepwater Horizon oil spill or weather-related phenomena or fisheries. You know, one thing or another, what NOAA was working on was really relevant to things that the administration cared deeply about.

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JD: Science certainly gets challenged a lot these days, and as you were talking earlier about the Healthy Fisheries Policy and how Europe's starting to look at that, do you have examples of how people are looking at the scientific integrity policies that you put into place and perhaps considering replicating that?

JL: As I mentioned, each agency was charged with doing its own scientific integrity policy. An outside group, the Union of Concerned Scientists, has really been the watchdog on scientific integrity policies. They were active before the President directed agencies to get their act together, and then they scrutinized everybody's policies as they came out and pointed out where they were strong, where they were weak, and they continue to play that very vital third-party role of just saying what's good, what's bad, what needs improvement. NOAA's policy has been praised by them. Most other agencies have been told "you need to do more like what NOAA did."

So, that's an ongoing effort and the Department of the Interiors policy came out first. It was not as robust as NOAA's and they have recently revised it and it's now more like NOAA's was. I think it's quite likely that many agencies' policies will continue to be updated and revised with experience, as they both learn internally but we also, agencies learn from one another.

JD: It seems that one of the threads that runs through a lot of your research work, as well as your academic work, is sort of collaboration and, I would say, mentoring. You're not only worried about what you're doing, but helping to prepare a generation or two or three that will follow you. We didn't really talk much about mentoring, and maybe you could start with OSU students. You certainly deal with, over the years have dealt with, undergraduate through graduate students here, and then maybe even expand beyond the campus.

JL: We've been really fortunate in having super, terrific students during the decades that Bruce and I have been here. And I think we've had an opportunity to give many of those students great opportunities, experiences. They certainly learn from one another, they certainly taught us a lot, and they've gone on to do really, really great things and I'm very proud of them. And they, some are in the academic world, some are in the business world, some are in the NGO world, some work for federal agencies, so I'm really proud of the fact that they, as a group of, as a family of students, they're very diverse, and I think that that's healthy.

They, by and large, are really good at what they do, and we stay in touch. It's very much a family relationship that has been created. And what's been really fun to see over the years is how they mentor one another. We sort of have big sister and little sister relationships, and oftentimes at scientific meetings there will be a group of students from the "Lubmengo" lab, they call it. The Lubchenco and Menge, it's sort of hybrid, the "Lubmengo" lab. They will get together, they often help each other out, provide guidance, counseling, whatnot. So, students have been a very central part of what we do.

And one of the best things about being around students is that they will challenge conventional wisdom, they'll challenge ideas and many of the things that previous generations were hung up on, they've moved past that and they're on to something else. They're always bringing new technologies and new ideas and fresh energy. And harnessing that and enabling them to thrive and grow and learn is just such a great joy. It's been very, very wonderful to be a part of that.

JD: And I believe I ran across some comment that you had made about sort of that you feel like over the years you've almost perhaps reached gender parity within the students that you're mentoring or students in the program? And I know women in science still can be challenging, was that something you overtly worked at? How do you make that happen, I guess, how did you and perhaps Bruce make that happen?

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JL: So, we didn't achieve that, we've pretty much had gender parity all along. And that would not be so unusual now but it was very unusual when we first did it. And I'm speaking in particular of our graduate students. Bruce and I have taken one to two students a year pretty much continually until I went to NOAA. And looking over that period of time, starting in the late seventies, we've had pretty much equal numbers of men and women graduate students, and we always went for the best students and, as it turns out, we got really spectacular men and women students.

We have taken special pains to be sensitive to the, not only intellectual interests of all our students, but the qualities that help make them competitive on the job market: how to do presentations, how to interact effectively as a team, how to

communicate and project that in ways that say "I've got confidence in who I am, I know what I'm doing." And we have deliberately both modeled, but also coached, mentored and given experiences to both our men and women students, to help them, as individuals, grow where they may have been out of their comfort element, but in fact were willing to stretch in some new directions. And I think as a result of that we've had very successful men and women graduate students, again, in a variety of career paths that they have chosen.

I think that we're now seeing an emerging imbalance where the vast number of students applying for graduate school are women. And that is a distinctly different situation from what used to be the case. It used to be mostly men, then it was more equal, and now we're seeing mostly women applicants. Not exclusively, but that's certainly a new trend. And that's being seen around the country. So, it might be challenging to keep this gender parity going. It depends very much on the pool of applicants that you have.

JD: Sure. I think a couple of other things that we haven't touched on is the Hatfield Science Center and even all the research festivals that have, you know, there's been a whole series of them that I'm assuming factored into your work and certainly that of OSU. And I'd like to get your thoughts on the role those have played.

JL: The Hatfield Marine Science Center has evolved considerably from the time that Bruce and I first got here in the late seventies. We have always used it as a base of our operation for our fieldwork on the coast. We've got some twenty to thirty sites up and down the Oregon coast and I remember when we were first working here, there was pretty much no place to stay other than the Hatfield Marine Science Center, and so we'd sleep in the bunks, and when our kids were little we would camp out. South Beach, for example; pitch our tent and have our kids with us. In fact, our older son I think probably spent more nights in a sleeping bag at the coast just for a summer than at home in his bed at home.

But the facilities that are available now are much better than they were, and of course the lab facilities. Not just the housing facilities but the lab facilities and the research capacity, in terms of the vessels, have only gotten better and better and better through time, and that's very exciting, it's very appropriate.

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Much of the research that we do is on the seashore or in a small vessel that we got the funds to acquire. We have it and now the university operates that vessel for us. We have been less dependent on big ships that are the ocean-going ships that OSU has, because we do a different type of research; it's near shore and coastal, as opposed to blue water, open ocean. The importance of those ships to us, though, is the access that it gives our colleagues here at OSU, and one of the great things about OSU is the depth and breadth and sophistication of marine sciences across the board. So, for us to have a robust program, it's really helpful to have world-class oceanographers, which we absolutely do. And to have those, you need some of those big ships. You need a really great marine science center.

And the colleagues that we have in, not just marine sciences, but marine studies, in so many different units, are now—those colleagues have been interacting loosely over the years. We're now seeing a very exciting, new development under the Marine Studies Initiative, to bring more visibility and cohesion to that diversity in ways that are going to be truly transformative for students. So, what has always been really great pockets of strength now has the potential to be just a spectacular program where students need not worry about what unit different faculty are in, what department at what college, and just to have really cutting edge, meaningful, hands-on experiences that enable them to really grow into their own. So, it's a very exciting new time and really takes advantages of all of the great past, but is creating a whole entirely new future for the students.

JD: Well, we're nearing the end of our time and that might be the perfect wrap-up, but if you had any additional thoughts of your time here at OSU and kind of where you see the future of OSU, this would be the appropriate place for them.

JL: I truly value the opportunity that I had to serve the country for the four years that I spent at NOAA, but I have to say how delighted I am to be back here in Corvallis among faculty and students, friends and colleagues, and it really is a very special thing that we have going here, and it's nice to be part of it again and to be planning for even more exciting times down the road. I'm delighted.

JD: Great. Thank you again for your time.

JL: Thank you, Jan.

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