'Oregon to Obama'
Rosalind Franklin Society Annual Board Meeting
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The Honorable Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere & NOAA Administrator
As Delivered

I. Opening – An evolving career path

Thanks for inviting me to join you today at your annual board meeting. And thanks for all that you do to promote the full participation of women in the life sciences. I welcome the opportunity to share a little about my experiences and, in keeping with your meeting theme, the choices I've made that brought me to Washington D.C. to serve as part of President Obama's science team, to lead NOAA, and champion science and policies grounded in science.

Being a biologist has always brought me great joy. I delight in the process of scientific discovery. I went into biology, specifically ecology, because I love the fun of solving mysteries and figuring out how the world works. Seeing patterns in the natural world, asking

questions, posing hypotheses, and devising experiments to separate correlation from causation is just downright fun. 'Why do plants and animals live where they do and not elsewhere?' 'Why are some places more diverse than others?' or 'What makes some ecosystems resilient to change and others not?'

For many years, I was fully immersed in teaching and satisfying my curiosity, using rocky seashores as a model to understand the basic workings of ecosystems, gaining insights into natural patterns and processes in space and time. Along the way, however, the ocean ecosystems I was studying began to change dramatically. The spectacular, diverse, colorful coral reefs I studied in Jamaica were transformed into weedy algal wastelands due to overfishing and nutrient runoff from the land. One fishery after another crashed precipitously, with consequences to the ecosystem as well as the human communities dependent upon fisheries. The once healthy, productive coastal ocean off Oregon and Washington is now a dead zone every summer, most likely

as a result of climate change. Rich arctic ecosystems are changing rapidly and radically, with ice-dependent species seriously threatened. All of this disruption and depletion – from the tropics to the poles – is due to unintended -- but nevertheless real -- consequences of a variety of human activities.

As a result, my research efforts expanded to also include a strong focus on solutions -- on ways to use oceans and ocean resources without using them up; ways to reduce nutrient and chemical pollution flowing from the land to the sea; ways to reduce and adapt to climate change; ways to recover the lost bounty and health of oceans so they can provide the things that people want and need.

Much of the research that is relevant to understanding and solving real-world problems turned out to also be cutting-edge scientific research. So much for the old paradigm of scientists having to choose to do basic or applied research! The reality is that there is a wealth of opportunity

and need for fundamental research that is immediately relevant but that also pushes the boundaries of basic knowledge.

Along the way, I also realized that so much of the scientific knowledge about the world that scientists take for granted is not broadly understood by nonscientists. Decisions made by citizens, businesses and governments are all-too-often not informed by relevant scientific information. And so I began to work toward changing the culture of academia to encourage scientists to share their knowledge broadly and to give them the skills, awareness and opportunities to be effective communicators to lay audiences. And I began to champion the idea that scientists have a social responsibility to share their knowledge, not just with other scientists through their publications and meetings, but directly with society, in ways that are understandable and relevant to decision-making. I consider the sharing of knowledge with lay audiences to be part of the 'social contract' that we scientists have with society.

Thus my original career as an academic researcher and teacher led to shifts in research topics as well as opportunities to promote science and share scientific knowledge widely.

II. On the President's Science Team

And now, as a member of President Obama's science team and head of NOAA, my job includes (1) promoting and enabling the science of oceans and the atmosphere, (2) using science to provide services to save lives and property and enable the creation of jobs, and (3) using that science to be good stewards of oceans, coasts, the atmosphere and the planet. At NOAA, we discover, share, and use science.

One reason that I am so excited to be in this position is the track record of excellent science at NOAA, coupled with the commitment to make policy and management decisions based on scientific knowledge, and the focus on delivering useful services based on that science. One quick example to emphasize the scientific excellence at NOAA: 2/3 of the

federal authors on the most recent Intergovernmental Panel on Climate Change (IPCC) Working Group 1 report were from NOAA.

For me, 'the call' from the President-Elect's Transition Team came in December, while I was in Australia lecturing and doing research. When I flew from Tasmania to Chicago to meet with the President-Elect, we discussed ways that NOAA could provide America the best climate change science, restore her ocean's vitality, provide the best possible weather forecasts and disaster warnings, and help our nation transition to more sustainable ways of living. After asking some very perceptive questions, his comment was simply, "Let's do it!" Now, how refreshing is that?

And despite the very tough challenges facing Americans these days, President Obama continues to energize us with a sense of hope and optimism, and a belief that if we work together, we can build a better world for ourselves, our children, and grandchildren. I am inspired by

his vision for our country, and his commitment to bring good science to good government.

Early on, he pledged to, in his words, “restore science to its rightful place.” In including the Administrator of NOAA in his early wave of nominations -- the earliest science nominations that anyone I've spoken to can remember -- and as part of his ‘Science Team’, the President signaled his confidence in and high expectations for NOAA and our mission. And the fact that most of the senior scientists in this administration know each other well makes it much easier to work together and be effective. Science easily crosses boundaries, be they national boundaries or agency boundaries! We have a common bond, common goals, and a common understanding. And the unusually large number of scientists in senior positions enables science to be 'at the table' to a much greater degree than before.

President Obama is the first chief executive to tackle the integrity of science head on, stating last spring at the National Academy of Sciences that (QUOTE) “the days of science taking a back seat to ideology are over.” (UNQUOTE)

To realize this commitment, on March 9th -- less than two months in office -- the President issued an Executive Order on Scientific Integrity, tasking his Science Advisor, John Holdren, to lead an interagency effort to recommend policies that would ensure that scientific integrity is protected.

The Executive Order made the following five points:

1. The public must be able to trust the science and scientific process informing public policy decisions.
2. Political officials should not suppress or alter scientific or technological findings and conclusions.

3. Scientific information developed and used by the government should ordinarily be made available to the public.
4. To the extent permitted by law, there should be transparency in the preparation, identification, and use of scientific and technological information in policymaking.
5. The selection of scientists and technology professionals for positions in the executive branch should be based on their scientific and technological knowledge, credentials, experience, and integrity.

The Executive Order also established an interagency task force led by the Office of Science, Technology, and Policy to develop recommendations for action that guarantee scientific integrity throughout the executive branch. NOAA has played an active role in the task force. And I'm determined that guaranteeing scientific integrity **and** strengthening science will be hallmarks of my leadership at NOAA.

III. Key influences and choices in my life

As you are aware, the President's senior science team includes a number of superbly qualified women scientists. Kerri-Ann Jones at State, Marcia McNutt at USGS, Lori Garver at NASA illustrate the high caliber of people he has recruited. Each of us has our own story. Interestingly, some of those stories are shared: Marcia McNutt (Director of the US Geological Survey), Lori Garver (Deputy Administrator of NASA) and I all attended the same small liberal arts college, Colorado College, as did Ken Salazar (Secretary of the Interior) and Harris Sherman (Under Secretary for Natural Resources and Environment at the Department of Agriculture). For a college of 1800 students to have 5 high-level appointees, is astonishing. Colorado College was clearly doing something right!

I mention this connection simply to emphasize the key role that institutions and environment play in providing opportunities, building confidence, developing skills and critical thinking -- in short, in

providing choices and the means to pursue them. As we seek to strengthen the opportunities for women scientists, it continues to be useful to focus on key elements to success.

Much of my success I owe to my family -- my parents and husband in particular, but also my five sisters and two sons.

I am extraordinarily fortunate to have been raised in a family that has long valued women as individuals, as professionals, and as mothers. My paternal grandmother, Portia McNight, was the first woman to graduate from the University of North Carolina Medical School. The year was 1912 -- yes, 1912. She had been rejected multiple times for admission to medical school 'because she was female'. "We just don't accept women," she was told repeatedly by the dean of admissions. But her persistence, force of personality and sense of humor finally either changed the dean's mind or simply wore him down. Either way, she flourished in medical school. After graduation, she accompanied her

new husband, Alexis Lubchenco, a Ukrainian agronomist, to czarist Russia , where she practiced medicine, he taught agronomy and developed new hybrids of cotton, and they started a family. Both were very active politically and close friends with Alexander Kerensky, the leader of the White Russians who championed democracy. When it was finally clear in 1917 that the Bolsheviks were winning the struggle for control of Russia, Portia and Alexis and their three young children fled to her home in South Carolina. 'Dr. Portia' as she was known to all, became a rural physician, travelling the country side in her horse and buggy that just happened to be a gift from the very dean of admissions who had repeatedly rejected, then finally accepted her for medical school. In the end he was immensely proud and supportive of her.

My father, Michael Lubchenco, the 4th of their 5 children also grew up to be a physician. He and my mother, LaMeta Dahl, a pediatrician from North Dakota and Minnesota, met post medical school when he was an intern and she a resident in Denver during the second World War. My

mom, now a spry 92 was a polio survivor from age 2. Her parents, a banker and a homemaker who taught French and piano in her home, raised her to be independent, curious and progressive. A path-breaker in her own right, my mother never thought what she did was unusual. She had been raised to believe that she could do anything she wanted, and she chose medicine, a family, and an active live. When we were young, she worked only part-time, during the hours we were in school so she could lead our Girl Scout troops, teach us to cook, take us to the library and to all of our swimming, diving, ballet, volleyball, basketball - whatever! - practices and meets. And simply to be there when we needed her.

My five sisters and I were thus raised with a strong dual heritage of empowerment of women as something natural. This is not to say that we never encountered obstacles, but simply that our mindset from the youngest days was a 'can-do' attitude. My parents valued learning, quality education, sports, public service, extracurricular activities and

free time. They provided a nurturing, loving home life. We were encouraged to be well-rounded with a balanced portfolio of intellectual, spiritual, athletic, cultural, public service and family activities. In pre-Title IX days, we were jocks, playing multiple sports, both team and individual. The six of us followed our own hearts, encouraged by our parents to find what we each loved. We chose different careers - science, teaching, art, business, counseling, and law - but we remain close and supportive of one another.

I must confess that having five sisters and playing numerous contact sports were excellent preparation for the rough and tumble of academic politics, and now real politics!

My subsequent career choices have been strongly influenced by this beginning. I fell in love with the oceans during a college class in Woods Hole, Massachusetts, at the Marine Biological Laboratory, thanks to a college professor who took me under her wing. To a Colorado native,

life in the oceans seemed exotic and endlessly fascinating. My exposure to the oceans was love at first sight and there was no turning back. I couldn’t get enough of things marine, and decided to pursue graduate studies – initially at the University of Washington, then Harvard. The pursuit of gaining and sharing scientific knowledge has become my career and life passion.

Like my mother, I chose marriage, family, and career. I saw no reason why I couldn't 'have my cake and eat it, too'. My Mom had. I could. I met my husband, Bruce Menge, at the University of Washington, in graduate school. He, too, is a marine ecologist. We took turns following each other for our first few career choices. (Equity has been a constant theme in our marriage.) By the time we both had Assistant Professor positions -- at the University of Massachusetts at Boston and at Harvard -- we decided we were ready to start thinking about having a family.

The problem was that we both wanted to continue the teaching and research that we loved, but also to spend significant amounts of time with our children-to-be. Rejecting the typical path of one of us working and the other being a full-time, stay-at-home parent, we explored alternatives. We both wanted to work half time, but be tenure-track. Oregon State University agreed to take a single faculty line and split it into two, separate, but 1/2 time tenure-track positions. The arrangement was not a joint position, but rather split positions. And the difference is important: each of us would be judged and promoted on our own merits. Each job was independent of the other, but half time and tenure-track.

And so, 32 years ago, Bruce and I went to OSU. We each worked half time for ten years, then 3/4 time for three, then when our sons were 12 and 9 and I became departmental chair, we returned to full time. Not surprisingly, we are strong champions of fractional tenure-track positions as a viable option for combining family and professional lives. Throughout our careers, Bruce has been strongly supportive of my

choices, and I of his. One of the smartest things I've done was to choose my spouse wisely!

Both of us have felt a strong obligation to give our genetic and academic children the same sense of choice and empowerment that we were fortunate to have.

IV. Expanding choices and quality of life for younger women

And my new role as Administrator of NOAA affords even more opportunities to expand options for women as well as underrepresented minorities. As an environmental science agency, NOAA has recognized that its workforce is not diverse, and although we have some stellar senior women scientists like Susan Solomon, we must do much more to hire and support scientists and non-scientists who look more like America. So, too, can we provide educational

opportunities, networks and mentoring for young men and women across the nation.

NOAA has a number of programs that support educational opportunities for young scientists, and I look forward to strengthening them.

1. NOAA's Environmental Partnership Program has five Cooperative Science Centers at Minority Serving Institutions (MSIs) to advance collaborative research in the NOAA-mission sciences. The Center Director and Distinguished Scientist at each Center develop and lead key education and research activities.
2. NOAA supports a Graduate Sciences Program, which is aimed primarily at increasing opportunities for students in NOAA-related fields to pursue research and educational training in atmospheric, environmental, remote sensing and oceanic sciences at minority serving institutions (MSI) when possible.

3. NOAA's Undergraduate Scholars Program is intended to increase the number of students who undertake course work and graduate with degrees in targeted academic fields integral to NOAA's mission. This program targets students who have completed their sophomore year, attending minority serving institutions (MSIs), and have recently declared, or about to declare a major in atmospheric, oceanic, or environmental disciplines that support these sciences
4. The Ernest F. Hollings (Hollings) scholarship program is designed to: increase undergraduate training in oceanic and atmospheric science, research, technology, and education and foster multidisciplinary training opportunities; increase public understanding and support for stewardship of the ocean and atmosphere and improve environmental literacy; recruit and prepare students for public service and education careers.

However, in addition to focusing solely on career opportunities for women, I believe we should also recognize how policy decisions may differentially affect women. We know this to be true for health issues. But it is also the case for environmental issues. Just this morning, the UN released a report articulating the ways in which climate change will impact women around the world more strongly than men. It emphasizes that climate change is about more than energy efficiency or industrial carbon emissions, but it is also an issue of poverty and gender equity. For example, women differentially care for the sick and the elderly,. Those burdens are expected to increase with more floods and droughts and weather-related disasters. In countries like Belize where tourism is the nations' largest employer of women, as coral reefs collapse with increased ocean temperatures and ocean acidification, those jobs will wither away. This report the pending climate meetings in Copenhagen and beyond underscore the importance of better communicating and using scientific knowledge to formulate sound and just policies.

As the science agency with significant expertise in climate, NOAA has a special obligation to bring climate science to the table more effectively than we have to date. Moreover, as the realities of climate change and ocean acidification become obvious to more people, there will be more and more demand for information about climate change. For these reasons, NOAA is in the process of establishing a National Climate Service. Somewhat like the National Weather Service, this NCS would provide forecasts and information to inform decisions by citizens, businesses, governments and civil society.

- Imagine public health officials being able to plan for or even avoid outbreaks of malaria based on forecasts of precipitation patterns years out.

- Imagine farmers being able to plant with knowledge of drought conditions 2-3 year down the road.

- Imagine city water planners being able to make decisions based on expected patterns of precipitation 5-10-20 years out.

- Or imagine coastal cities being able to plan for growth, build bridges and roads and airports with knowledge of expected changes in sea level. This 'National Climate Service' is an exciting concept whose time has come. It is one of my top priorities at NOAA.

V. Conclusion

In the last 30 minutes, I've shared with you some of my background and choices as well as current challenges and opportunities. In conclusion, let me just say that now is a tremendously exciting time to be a scientist, a woman, and a member of the Obama administration. I greatly value and appreciate the people who created opportunities for me. My goals are to make the most of those, create opportunities for others and provide the best service I can to the American people and the President.

Thanks!