State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Mailing Address: P.O. Box 43200, Olympia, WA 98504-3200 • (360) 902-2200 • TDD (360) 902-2207
Main Office Location: Natural Resources Building, 1111 Washington Street SE, Olympia, WA

April 2, 2021

Paul Doremus
Assistant Administrator (Acting)
National Oceanic and Atmospheric Administration
1401 Constitution Avenue NW, Room 5128
Washington, DC 20230

Dear Assistant Administrator Doremus:

The Washington Department of Fish and Wildlife (WDFW) appreciates the opportunity to comment on Section 216(c) of the Federal Executive Order 14008 on *Tackling the Climate Crisis at Home and Abroad*, concerning actions that may increase the resilience of fisheries and protected resources under a changing climate.

WDFW is steward and co-manager of a diverse set of commercial and recreational fisheries. The ecosystems within which we conserve and manage fisheries include the Puget Sound, the Pacific Ocean's California Current, the Columbia River as well as many other rivers, lakes, and streams. Washington is also home to one of the nation's largest fishing and seafood industries and one that depends on the fisheries of the Bering Sea, Gulf of Alaska, and other marine and aquatic environments of Alaska. Climate change and ocean acidification threaten them all.

We are also all too familiar with the challenges of conserving and recovering protected species in marine and aquatic environments. Washington is home to Pacific salmon and steelhead, the Southern Resident Killer Whales, and other species listed under the Endangered Species Act as well as to thriving populations of marine mammals managed under the Marine Mammal Protection Act. Conservation and management of protected species is challenged at present by conflicting recovery goals among species, large societal forces such as habitat destruction and degradation and pollution, and more. Climate change will only exacerbate these challenges.

From this perspective, the best answer to the central question you are seeking input on—on how to make fisheries and protected species more resilient—would be to address the root cause of climate change and ocean acidification. Like you, our authorities and ability to mitigate greenhouse gas emissions are minimal. Yet as a fellow agency committed to the best available science, we hope you will communicate the message that mitigation of carbon and other greenhouse gas emissions is the primary means of increasing resilience of fisheries and ecosystems throughout the Executive Branch and with Congress. We applaud the President's message that "we must listen to science and meet the moment."

Our work on climate resilience and the comments provided here pertain to our abilities to monitor and adapt to change. We recognize the importance of the work and remain committed to it. However, the public must also be made aware that adaptation may not be possible in many cases, especially so the longer greenhouse gas emissions go unaddressed. Washington stands to lose fisheries and ecosystems that its residents have long valued and that our tribal partners have cherished and depended upon since time immemorial.

I. Climate change poses grave risks to fisheries and protected resources

Warming and altered precipitation are already impacting the marine and freshwater ecosystems critical to healthy, self-sustaining fish and shellfish populations. Similarly, these shifts are affecting operations in shellfish aquaculture and finfish hatcheries. As the effects of climate change and ocean acidification intensify, we anticipate population declines or shifts in many of the species that currently support harvest, as well as the continued spread and growth of non-native species and pathogens. Greater variability within and between years may mask these trends, further compounding the existing challenges to management. Despite the remaining uncertainties, the consequences of climate change for natural resources will certainly demand creativity and flexibility from policymakers and the public.

As an example of particular significance in Washington, warmer water and more varied streamflow (i.e., higher highs and lower lows) are likely to further degrade the spawning and rearing habitat needed by salmonid species, including those that are already listed as threatened or endangered.[1] Greater difficulty in meeting recovery goals for these species may increase dependence on hatchery production, yet increased disease prevalence and inconsistent water supply may also impair hatchery operations. Technological innovations may provide a path forward in some instances, but quick, simple fixes are unlikely.

The expected shifts in species distributions in space and time are likely to drive changes in monitoring programs, to prompt restricted or eliminated harvest, and to exacerbate conflicts.[2] More variable fishery opportunities will impact businesses and livelihoods, and losses may profoundly harm fishing-dependent communities.[3] As the entity charged with stewarding Washington's fish and fisheries, WDFW recognizes the importance of confronting such daunting challenges.

In the recently completed 25-year strategic plan, the agency has embraced the development and implementation of a climate resilience plan and has conducted a series of internal workshops focused on climate-change readiness. Building greater organizational readiness and

[1] Crozier, L.G., McClure, M.M., Beechie, T., Bograd, S.J., Boughton, D.A., Carr, M., Cooney, T.D., Dunham, J.B., Greene, C.M., Haltuch, M.A. and Hazen, E.L., 2019. Climate vulnerability assessment for Pacific salmon and steelhead in the California Current Large Marine Ecosystem. PloS one, 14(7), p.e0217711.
[2] Shelton, A.O., Sullaway, G.H., Ward, E.J., Feist, B.E., Somers, K.A., Tuttle, V.J., Watson, J.T. and Satterthwaite, W.H., 2020. Redistribution of salmon populations in the northeast Pacific ocean in response to climate. Fish and Fisheries.
[3] Ritzman, J., Brodbeck, A., Brostrom, S., McGrew, S., Dreyer, S., Klinger, T. and Moore, S.K., 2018. Economic and sociocultural impacts of fisheries closures in two fishing-dependent communities following the massive 2015 US West Coast harmful algal bloom. Harmful Algae, 80, pp.35-45.

strengthening the capacity for effective responses will be a long-term process, but this work has helped to identify various actions that, taken in conjunction with federal, state, and tribal partners, may improve outcomes for human and biological communities under changing conditions. Based on these initial efforts, we offer the following comments and organize them into two broad categories: (1) refining data, research and tools to aid understanding of and preparation for change; and, (2) reassessing policy and regulatory instruments to provide greater flexibility.

II. Strengthening research and monitoring strengthens adaptive capacity

Tribal, state, and federal managers need strong science for the effective administration of fisheries. Federal support for scientific data collection is particularly important to co-management of fisheries in the Pacific Northwest. As evidenced by recent reductions to surveys that inform fisheries managed by the Pacific and North Pacific regional fishery management councils, NOAA Fisheries' budget for living marine resource monitoring has not kept up with increasing costs. Bolstering the resilience of fisheries to climate impacts will be impossible without additional resources for enhanced research, monitoring, staffing and technology deployment. We encourage renewed investment and attention to the following research and monitoring topics:

- **Monitoring and assessing population abundance and distribution data** – At present, the need for population surveys and fishery dependent data is met only for a relatively few species. There are data gaps and major uncertainties even for the best studied species and populations. Understanding the spatial aspects of a population greatly increase the data needs. We lack basic life history data and baseline information for many others. Our ability to recognize fisheries-related changes and associate them to climate will be limited without continued and increased investment in science and data collection. This includes investment in tools to make data readily available and in the people needed to analyze, interpret, and advise policymakers.
- **Linking oceanographic and ecological drivers to stock dynamics** – Research and monitoring for relating atmospheric and oceanic circulation patterns to marine ecosystems and watershed processes will be critical to meaningful seasonal forecasts and longer-term viability assessments under a changing climate. NOAA Fisheries' integrated ecosystem assessment for the California Current and the Alaska marine ecosystems have made strides in this area and should be the focus for continued and increased investment.
- **Increasing in-season and fishery monitoring** – Responsive and responsible regulation of fleets and individuals under the increased uncertainty associated with climate change will require enhancing our knowledge of what is being caught and where. Effective and timely communication with harvesters will be essential to applying this knowledge and conveying the basis for decisions.
- **Encouraging new, innovative technologies** – Developing alternative fishing gears and practices, testing water recycling and treatment systems at terrestrial aquaculture facilities, exploring novel methods of controlling disease and non-natives, and trialing cutting-edge

genetic and computational tools are key areas where technological progress can benefit fisheries.

- **Tracking water chemistry, biotoxins, and invasive spread across domains** – Coordinated monitoring of invasive species spread, ocean acidification, diseases, and marine biotoxins from harmful algal blooms is needed to align agencies and to provide managers with real-time data for decision-making. Fisheries managers have complex intergovernmental relationships with, for example, municipal and state health authorities, sovereign tribes, and private sector businesses.

III. Regulatory flexibility, habitat protection, and education can foster resilience

More resilient fisheries and fishing communities will depend on strong relationships between managers and harvesters, on strong local markets, and on diverse methods of harvest. Yet, even with additional resources and planning, changing climate conditions will make some fisheries less viable in the future. The elimination of fisheries will have serious impacts on the broader marine industries sector and on coastal communities. Strategic investments and planning to increase flexibility can help prepare fisheries managers, fishers and coastal communities for more variability and declines in fisheries.

Greater climate-related uncertainty and non-stationarity in complex ecological and social systems will impose fundamental limits on our predictive ability. As management proceeds into this uncertain future, it will be important to deploy decision frameworks and communication strategies that reflect these constraints and that can accommodate more conservative harvest regimes on some stocks. The following policy and regulatory shifts can help to meet this need and promote resilient fisheries and protected resources:

- **Assess and improve capacity for adaptive management –** Fishery and resource managers will need to respond to novel environmental conditions, yet current statutes, regulations, guidelines, and plans may lack flexibility and hinder timely and adequate responses. Incorporating adaptive management language into Biological Opinions, harvest and fishery management plans, National Pollutant Discharge Elimination System and dredge/fill permits (i.e., CWA §402 and §404), and Federal Energy Regulatory Commission hydropower licenses would improve the ability of managers and policymakers to adjust to changing conditions.
- **Refocus on habitat protection and restoration –** Degraded estuarine and riparian habitats already impair various fisheries, but habitat protection and restoration efforts such as marine protected areas and watershed conservation projects can provide crucial buffers against both existing and anticipated threats. Committing resources to protection and restoration programs will be vital to long-term fishery and resource resilience.
- **Ensure continued action to remediate contaminants –** Climate change will interact with and amplify the adverse impacts of contaminants on species and ecosystems. Accelerating contaminant remediation in and around critical habitats for federally protected salmon and steelhead, themselves essential food for Southern Resident Killer Whales, may ameliorate additional harm from climate change for these protected species.

- **Expand educational programs and materials** – Public awareness of how the changing climate will affect fisheries and protected resources is essential to building support for measures than can increase resilience. Deepening and broadening this awareness will depend on more of the consistent leadership that NOAA has shown in creating and disseminating accessible information for diverse audiences.
- **Protected Species** – Like many protected species, the ecosystem, habitat quality and prey base required to recover the Southern Resident Killer Whales are dynamic and are being impacted by changing climate conditions and human population growth, challenging recovery actions. The plight of the Southern Residents is an example of how climate will require us to adapt our approach to species recovery, overhaul actions, speed up timelines, and increase collaboration to be effective.
- **Continued Collaboration** – Many of the ecosystems within which we manage cross state and international borders. We rely on strong relationships with Canada and our fellow West Coast and Pacific Northwest fisheries management agencies to accomplish our work. Washington is also unique in how we share the ecosystems and fisheries within our borders with the sovereign treaty tribes of the state. Support for co-management and collaboration through regional and international forums like the like Pacific and North Pacific regional fishery management councils and the Pacific Salmon Commission will only become more important as the climate changes.

Conclusion

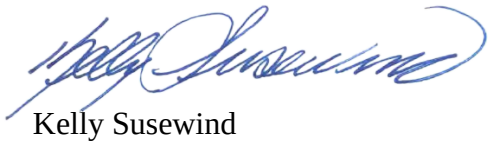
We want to acknowledge the vital importance of our partnership with your agency. The work of your agency and other federal support is fundamental to conservation and management in our state and region.

We also want to recognize what NOAA has accomplished in the realm of climate resilience. The work of NOAA's Pacific Marine Environmental Lab on ocean acidification is of course groundbreaking. Your agency has also begun laying solid foundations for the science needed to support climate resilience through efforts such as *The NOAA Fisheries Climate Strategy* and the *Regional Action Plans* for the Western and Alaskan regions and the integrated ecosystem assessments and related efforts. Those and other efforts have helped and will continue to help guide our efforts at evaluating climate risk and building resilience into our conservation and management work.

Lastly, as our comments above suggest, we believe the fundamental pieces for resilient fisheries and protected species management are in place now. An overhaul is not needed. The work that your agency supports on the basic programs for fishery and protected species monitoring, habitat restoration, hatchery production, co-management with the treaty tribes, and more are essential and contribute to resilience now. This is not to say that current efforts will be sufficient as conditions become more challenging. Increased investment and continual improvements of existing science and management frameworks will be needed to meet the challenge.

Thank you again for the opportunity to provide input on Section 216(c) of the Executive Order. Again, working toward resilient fisheries and protected species management will involve an ongoing dialogue across various partnerships. Many questions remain unanswered. WDFW is eager to join with your agency and other organizations in the development and deployment of adaptive strategies to increase fisheries and resource resilience.

Sincerely,



Kelly Susewind
Director