



Written Testimony of Elaine Placido, Executive Director of the Lower Columbia Estuary Partnership

To the House Select Committee on the Climate Crisis

I am honored to share our climate resilience efforts in the lower Columbia. The Lower Columbia Estuary Partnership is currently in its 27th year as a National Estuary Program, one of 28 in the nation that recognizes designated estuaries of national significance. Our mission at the Estuary Partnership is *to restore and care for the waters and ecosystems of the Lower Columbia River, for current and future generations of fish, wildlife, and people*. To that end, we complete a wide variety of programming and projects that foster stewardship, provide objective scientific information, and facilitate consensus to protect the lower Columbia River and estuary. Along with our partners, we work to restore habitat while advancing science, improving river conditions while expanding our knowledge of the estuary, and increasing the knowledge and experience of the next generation of decision makers.

As with our fellow National Estuary Programs we appreciate the bipartisan support and leadership from members of Congress, including the work of the Congressional Estuary Caucus; thank you to Congresswoman Bonamici and Congressman Jared Huffman, two members who sit on the select committee as well. It is also important to recognize the critical and very real benefits that will be made throughout the basin by the significant investments made in the National Estuary Programs, geographic programs, and communities by the Bipartisan Infrastructure Law (BIL).

The lower Columbia River estuary stretches 146 miles from the Bonneville Dam to the mouth of the river. The Columbia is a working river, home to over eight million people in the four-state basin and nearly three million in the lower Columbia region. The Columbia River system is number one in the US for wheat exports, and number one on the west coast for wood, mineral, and auto exports.

The estuary is also of critical importance to Tribal, recreational, and commercial fishers. When Buoy 10 fishing season opens, you can practically walk across the river – not on the backs of salmon as the legend of historic salmon runs once told – but from boat to boat as fishers from all around the globe cast their line and are welcomed into the history of people who since time immemorial, have relied on a healthy Columbia River ecosystem. The river is not only an important economic driver but also home to wildlife, fish, and the people who rely on them for sustenance and recreation. Unfortunately, there are now thirty-two species of plants, fish, and wildlife living in the Columbia basin that are listed under the Endangered Species Act, including 13 species of salmon and steelhead. Where the river used to see an estimated 8 to 16 million wild salmonids returning annually, we now see fewer than 1 million returning for the annual migration up the Columbia River System.

The estuary has seen significant changes from dams, land development, diking, and a warming climate. Waterflow, thermal changes, and development along the river have resulted in one of our biggest challenges – lack of cold water refuge. Currently in the estuary, we have documented a stretch of 57 miles, from the mouth of the Lewis River to Eagle Creek, where summertime temperatures and a lack of cold water refuge could make the trip upriver lethal, particularly for steelhead and fall Chinook. We are working on multiple ways of integrating climate adaptation and mitigation into our work.



Integrating Climate Adaptation means adapting to the effects of climate change in our restoration projects, including using set-back levees, bigger bridges and culverts to accommodate sea level rise and higher flows from more frequent, intense storms; integrating living shorelines and nature-based solutions for increased flooding from these impacts; changing our native plant species mixes to integrate plants that might do better with longer, drier summers; and identifying pockets of cold water that could serve as thermal refuges to protect or restore. We currently are working on a pilot project on the mainstem Columbia that would fill that 57-mile spatial gap in thermal refuges between the Lewis River and Eagle Creek.

We are also actively considering Climate Mitigation (i.e., reducing greenhouse gases, sequestering carbon). One of our primarily BIL projects will complete an inventory of carbon and methane fluxes in tidal wetlands and help to quantify the impact restoring these wetlands can play in sequestering carbon. On our Steigerwald Restoration Project, we worked to identify the impact of our restoration work and created a plan to offset carbon releases from our restoration construction phases by increases in plantingⁱ.

The connection between our salmon and climate resiliency is this: what is good for our salmon is good for our communitiesⁱⁱ. Life is tough for salmon in the Columbia River basin. As juveniles, there are very few suitable places to rest, eat, and grow strong as they travel down the Columbia River to the ocean. Returning adult salmon face challenges of their own: the river is so warm that it can be lethal to adult salmon returning to spawn.

The solution? Restore habitat and create cold water refuge. We are in the final stages of the largest restoration project in the lower Columbia, restoring nearly 1,000 acres of floodplain and reconnecting it to the river. In restoring the Steigerwald Lake National Wildlife Refugeⁱⁱⁱ, we were able to reconnect a floodplain to the Columbia, decrease flood risk to important public infrastructure and the Port of Camas-Washougal, open hundreds of acres of fish and wildlife habitat, and increase the recreational amenities available to the public by nearly doubling the stretch of trails through and around the refuge. We were also able to continue important educational partnerships with local schools, bringing students to the refuge to learn about science firsthand. As the project is completed and we move into the future, we will be able to collect important data to identify environmental changes at the refuge, and using an installed monitoring system, we will be able to see how tagged fish move into and through the expanded channels of the refuge. And in the years to come, thanks again to the funding from the BIL, we will undertake a series of stormwater and riparian restoration projects upstream of the refuge that will improve water quality and reduce toxics from stormwater runoff, benefitting the long-term health of the refuge and the significant investment in restoration made there. This is a huge win for salmon, with increases in the quality and quantity of habitat, but also for people who enjoy the recreational opportunities of this urban wildlife refuge and who have increased flood protection.

We have identified many more areas on the lower Columbia that can be restored to provide flood resilience for people, and habitat and cold water refuge for salmon. With the significant investments in the National Estuary Program in recent years, we have the support to begin to develop those projects, work with local communities, and make real strides in water quality, habitat improvement, and increasing our understanding of the estuary.



Key to understanding the estuary is our monitoring work and the rich, publicly available mapping we have completed. The Estuary Partnership’s monitoring team focuses on ecosystem monitoring, watershed evaluation, and action effectiveness monitoring – studying how sites that have undergone habitat restoration fare over time. Our monitoring program works to establish important baseline data about a range of water quality, habitat, and ecosystems in the estuary. We can complete and present, for the public and researchers, data about the river, such as the analysis of cold water refuges, mapping of potential sea level rise, and land cover data sets^{iv}. This data is critical for communities and local policymakers as they take steps to improve watershed health. Last summer the Monitoring Team completed their fifth year of water quality monitoring in the local watersheds of Columbia County, Oregon, where increasing urbanization and agriculture are creating challenges for temperature and water quality. Their work in Columbia County, supported by the Oregon Watershed Enhancement Board (OWEB), with a partnership with the local Columbia Soil and Water Conservation District, the Lower Columbia River Watershed Council, and the Scappoose Bay Watershed Council to evaluate usability and increase watershed health. That work in Columbia County will result in a suite of steps to improve water quality for communities and the fish who use those watersheds, ranging from simple steps like placing signage to warn residents of potentially high concentrations of E. coli to more ambitious projects to increase riparian buffers to reduce turbidity and stream temperature.

Monitoring is foundational work, helping us to improve river conditions as we learn more. It is also the most challenging for which to secure consistent funding. Thanks to the unprecedented funding for National Estuary Programs in the Bipartisan Infrastructure Law, we intend to expand our research, mapping, and monitoring efforts. In late 2022, we will update our regional landcover data set, which identifies the types of habitats and land cover throughout the lower Columbia River. This update will be necessary for a multi-year assessment of carbon sequestration potential in the estuary. Working with our partners at Oregon Health and Science University (OHSU), we will place monitoring equipment that can capture and quantify methane and carbon release, giving us an accurate picture of what types of wetlands and habitats are sequestering carbon and where methane is being released. This information can be used by policymakers to better understand and identify habitats for conservation or restoration in the face of climate change.

Monitoring and research help us to create maps that are available to local communities, decision makers, and the public^v. Through our reference site studies and ongoing monitoring, we know how undisturbed wetlands in the estuary are faring in the face of climate change. We were able to quantify the loss of habitat over the last 130 years of development in the region and use that data to identify restoration targets. And we completed analyses and mapping to predict sea level rise in the estuary that are used by people and communities throughout the region.

The other action I want to highlight is environmental education, expanding the knowledge and experiences of current residents and the next generation of decision makers^{vi}. The Estuary Partnership works with approximately 4,000 students each year – providing classroom lessons and field trips that teach students about watershed health, water quality, stormwater, native plants, and other ecology topics. While none of these classroom lessons focus explicitly on climate change, educators weave climate change impacts and education through each lesson. Perhaps more importantly, however, is the fundamental ecological knowledge base that this education creates for students. We know that many students spend less time learning and exploring outside than previous generations. We also hear from



teachers that they lack adequate time to teach science due to the emphasis on math and language skills. This is why our free programs are so important – introducing kids to their watershed; how plants, animals, and humans rely on it; how our changing climate is affecting it; and how their actions can make a difference.

We also work with students, teachers, parents, and community volunteers to coordinate the planting of more than 10,000 riparian trees and shrubs each year. These trees and shrubs grow to shade local streams and rivers, helping to mitigate the impacts of increasing air temperatures. They will also eventually reconnect these streams with their floodplains, increasing groundwater recharge, and as they grow, they will capture and store carbon. Engaging students and communities in tree planting projects help to connect people to their local environment and provides education around the importance of tree planting for climate resilience.

Each year we work with 35-40 or more schools. Our own learning from these interactions is important, and our most recent student assessment report was completed for the 2019-20 school year. We saw a statistically significant difference in the average score from pre-program to post-program, indicating that students' knowledge improved significantly after the environmental education program they completed with us. Students were asked to respond to a measure to assess their attitudes toward nature and the environment both before and after the program. The students' attitudes improved over time, and there was a statistically significant increase in the average attitude total score from pre-program to post-program.

As the Estuary Partnership director and a parent, I was concerned about the impacts on education that our students would suffer from the pandemic. The environmental educators at the Estuary Partnership, like educators across the country, had to get creative and create new ways to engage students. Our environmental educators dug deep into principles of place-based education, creating lessons that students could engage with alongside their families in local watersheds, such as nature scavenger hunts and nature hike maps. They also created take-home science kits such as the extremely popular owl pellet dissection kits. All their materials were made available to everyone, free of charge, on our website^{vii}. And as the pandemic restrictions began to ease, they began to create ways to engage students in person outdoors – including fish dissection classes and field trips.

Our education program has two unique tools – two 27-foot canoes: we use these to take students, community members, partners, and policy makers out to see the estuary from on the water, deepening their understanding of and connection to the river. Through community partnership programs, we are currently working with 34 partner groups for paddle programs and restoration projects. In 2021, as students were struggling during their second school year impacted by the COVID pandemic, our educators took a group of summer school students from Rainier on a paddle on the mainstem from Goble Landing to Rainier. For all the students, it was the first time they had seen their community from the river, even though they all live within just a few miles of it. Not only was it, as one student said, “the best part of summer school,” it was an opportunity to paddle and connect with the Columbia, get away from the classroom and computer screen, and learn firsthand why clean water and a healthy Columbia River are so important.

Over the last twenty-seven years, the Estuary Partnership has been partnering with communities, Tribes, agencies, organizations, and individuals, to restore and care for the Columbia River estuary^{viii}. The



estuary is 146 miles of diverse habitat and communities – we strive to do the work that increases the resilience of the estuary and the people who depend on it for water, food, recreation, and spiritual connection. Thank you to the Select Committee for making this visit to the lower Columbia and for your support of policy and funding that will positively impact our work in the Columbia’s estuary as well as estuaries across the country.

ⁱ <https://www.estuarypartnership.org/sites/default/files/2022-08/Carbon%20Sequestration%20at%20Steigerwald%20Lake%20National%20Wildlife%20Refuge.pdf>

ⁱⁱ <https://www.estuarypartnership.org/our-work/research/climate-resiliency>

ⁱⁱⁱ <https://www.estuarypartnership.org/our-work/habitat-restoration/steigerwald-reconnection-project>

^{iv} <https://www.estuarypartnership.org/our-work/monitoring>

^v <https://www.estuarypartnership.org/our-work/monitoring/habitat-mapping>

^{vi} <https://www.estuarypartnership.org/our-work/education-programs>

^{viii} <https://www.estuarypartnership.org/who-we-are/mission-accomplishments>