



Urban Estuary Restoration

Salmonids Impacted: Chinook, Chum, Coho, Pink, and Steelhead



Can Urban Habitat Restoration Create Functional Estuaries for Salmon?

Long Live the Kings is leading a partnership with Vigor and the University of Washington's Wetland Ecosystem Team to evaluate the effectiveness of restoring habitat along the Harbor Island shoreline within the Duwamish estuary. The partnership exemplifies collaboration across sectors to support the economy and environment. Lessons learned from this project have the potential to support future restoration projects within urban waterways.

An Essential Waterway and a Damaged Ecosystem

Working waterfronts and waterways are essential components of our economy and are fundamental to our regional identity, but we must develop better ways to integrate these needs with those of our natural environment. Long Live the King's Salish Sea Marine Survival Project showed that without functional estuary habitat, young Chinook salmon are less likely to survive to adulthood.

Over the past century of industrialization, the Duwamish estuary has lost 97% of the habitat it used to provide these fish. Wild salmon – including Chinook and steelhead – are listed as threatened under the Endangered Species Act, making salmon recovery a priority throughout Puget Sound.

To mitigate the impacts of a working shoreline, Vigor sought to create much-needed functional estuary habitat for juvenile salmon. The structure and dock that previously existed at Vigor were demolished in 2021 and restoration was completed in 2023. Vigor engaged Long Live the Kings and UW's Wetland Ecosystem Team to better understand the benefits of the habitat restoration for salmon and other fish.

The team is already seeing fish, birds, and seals use the new habitat. We are measuring post-restoration improvements in habitat function, showing before-after comparisons of shoreline vegetation, insect abundance, and presence and feeding of fish in the newly-restored intertidal area.

Project Impact

2.64

Acres modified

5

Species of salmon
using habitat

3

Types of
habitats created





“We work on and around the water everyday... Our employees share the environmental ethic of Pacific Northwest. We see the complexities of salmon recovery and we can't think of anybody better than Long Live the Kings to work on this effort.”

Alan Sprott, Vice President of Environmental Services at Vigor



Monitoring Habitat Before and After Restoration

To measure the effectiveness of restoring this working shoreline habitat, our teams developed a before-restoration baseline by sampling fish and insects at the restoration site and a nearby “reference site” with natural shoreline. Monthly sampling occurred in 2021, throughout the juvenile salmon outmigration, when estuary habitat plays an essential role in their survival.

Since the restoration work was completed, scientists are replicating those same sampling techniques to measure improvements in habitat function, showing before-after comparisons of shoreline vegetation, insect abundance, and presence and feeding of fish in the newly-restored intertidal area relative to the reference site. Results of an effective habitat restoration will show increased numbers of juvenile salmon at the site, more insects and benthic invertebrates in their diets, and an increase in insects sampled in the restored vegetation.

Before

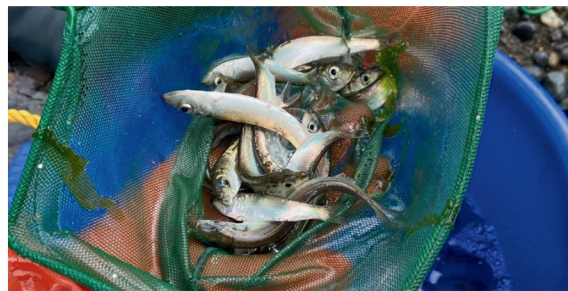


After



Fish Monitoring

To evaluate fish use, scientists record fish counts by species, weigh and measure fish to assess their condition, and investigate what they are eating. Research has shown that the diet, size, and condition of juvenile salmon greatly impact their marine survival.



Insect Monitoring


Insects are an important food for juvenile salmon and are used as indicators of ecosystem health. Scientists identify and count insects at each site throughout the salmon outmigration period to understand the food resources available to juvenile salmon.



Project Partners



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