un-executive summaries

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DDCSP 2019-2020

below is the full text of the executive summary from the 2019 Duwamish floating wetlands report, followed by an erasure recentering the River, followed by an erasure recentering community. the River poem emerges from fragmented words, echoing scientific dissolution of the whole into data points, individual organisms, measurements, etc.

the community poem emerges from an assembly of whole, unbroken words, just as collaborative work necessarily emerges at the confluence of all of our whole, authentic selves.

This report summarizes the results of the 2018-2019 Duwamish River Floating Wetlands research and community science program. Constructed floating wetlands (CFWs) are an innovative form of green infrastructure that may be used to enhance water quality and provide a range of other ecosystem services. In this project, an interdisciplinary team designed, built, and deployed four towable research platforms called "BioBarges", each containing four CFWs. These were monitored at two field study sites from April to July 2019 in the Lower Duwamish River, located in Seattle, Washington.

The goal of Duwamish Floating Wetlands project is to determine if constructed floating wetlands can increase salmon habitat and improve water quality to support the survival of outmigrating juvenile salmon. The scientific objectives of the monitoring program were to gather information about juvenile salmon interactions with the BioBarges, invertebrate production, plant growth, and water quality. The social objectives of the program were to encourage collaboration between student and community scientists to perform the field research and engage community scientists in the project.

The results from the 2019 monitoring season included observations of juvenile salmon interacting with the BioBarges. The constructed floating wetlands supported the growth of both terrestrial and aquatic invertebrates, including chironomids and other dipteran flies which are a known food for juvenile salmon smolts. All four species of native bulrush survived the growing season although only saltmarsh bulrush (Bolboschoenus maritimus) and hardstem bulrush (Schoenoplectus acutus) flowered. All plants declined over the study period as the salinity of the Duwamish River increased as freshwater inputs from the Green River and regional stormwater decreased with the onset of the dry season.

In general, juvenile salmon were found in lower numbers at the Biobarges compared to natural shorelines with intertidal wetlands and riparian plant communities. Invertebrate densities and diversity, plant diversity and cover were also lower at the BioBarges than natural shorelines. Water quality field measurements showed that temperature, dissolved oxygen, and light were within tolerable ranges for juvenile salmon. However, it was not clear whether the BioBarges reduced or improved these water quality measures. Laboratory analysis of the rooting substrates of the CFW's revealed the accumulation of certain metals (e.g. copper, lead, zinc) and nitrogen. Several other metals yielded inconclusive results because concentrations in controls and treatments were below analytical detection limits (arsenic, cadmium, chromium).

As a core element of the project, the community science program involved over 13 individuals in weekly field monitoring, and more participants through other community science activities. In addition, the team led and joined several outreach and education endeavors, participated in community events, and fostered independent projects for early career researchers.

The project demonstrated that CFWs can provide habitat for juvenile salmon by producing food items including aquatic and terrestrial invertebrates. Recommendations for 2020 include 1) locating the BioBarges further upstream in the transition zone with a lower salinity level of the Lower Duwamish River; 2) increasing the access to and the total area of CFW's by attaching more of them to the outside of the BioBarges; and 3) testing new CFW designs.

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Recommendations for 2020

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for Recommendations for 2020.

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