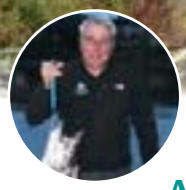

Al Martin HCTF Conservation Scholarship
Recipient 2025

Grace Melchers

Grace Melchers is a Master's student in the Institute for the Oceans and Fisheries at the University of British Columbia, supervised by Dr. Brian Hunt of the Pelagic Ecosystems Lab. Grace's research examines the impacts of coastal urbanization and development on nearshore fish communities of the Pacific Northwest, with a focus on juvenile Pacific salmonids that use these habitats during the outmigration phase, an understudied period of high mortality.

Ecologically, economically, and culturally, Pacific salmon are a keystone species in British Columbia. They support marine, freshwater and terrestrial ecosystems throughout their various life stages, and as such, are impacted by the threats facing each system. Coastal development and urbanization produce an amalgamation of threats that affect each of these ecosystems. Untangling these impacts is required to understand the key stressors for Pacific salmon and how conservation actions can best be implemented to improve their survival.

Grace works in partnership with the Tsleil-Waututh Nation's Treaty, Lands and Resources department in their traditional and ancestral waters of səlilwət, Burrard Inlet. Burrard Inlet has been heavily impacted by colonial development, resulting in the extensive loss of nearshore habitats that act as nurseries for many juvenile fish species. Grace is studying these remaining nearshore habitats and the urban coastlines that have replaced them with consideration for their importance as migration paths for juvenile salmonids, predominantly pink and chum salmon from the xʔəl̓ilwətaʔɬ, or Indian River Watershed. To answer these questions, Grace is employing a cutting-edge, non-invasive technique called environmental DNA, or eDNA, that uses water samples collected from different habitats around the inlet to detect the presence of salmon and other fish they may be interacting with throughout the course of their outmigration period.

Young salmon need healthy habitat for hiding, eating, and resting, and the development of our coastlines threatens that. Through this project, the team is hoping to better understand how juvenile salmon migrate through urbanized waters during this difficult life stage. The insights generated will allow for better decision-making regarding which shorelines to protect and restore to improve Burrard Inlet's salmon populations and the overarching health of the inlet, which supports Tsleil-Waututh objectives for stewardship of their lands and waters. The project also aims to extend the application of these insights along other developed coastlines that juvenile salmon depend on for their survival to improve Pacific salmon conservation on a larger scale.