Increased urbanization in Puget Sound leads to elevated enzymatic activity in *Mytilus trossulus*

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Emerging and legacy chemicals, such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), in coastal ecosystems present many challenges for marine biota. To better understand the impact of these contaminants on marine life, the Washington Department of Fish and Wildlife (WDFW) implemented a community-based nearshore mussel monitoring program to assess coastal ecosystem health in Puget Sound. *Mytilus trossulus* mussels are ideal candidates for this work as they indiscriminately filter water and can accumulate contaminants within their tissues while also serving as critical ecosystem engineers. All mussels used in this study originated from Penn Cove Shellfish, they were dissected for individual tissues and assayed for cytochrome P450 (P450) and superoxide dismutase (SOD) activity as biomarkers of response. P450 is expressed when mussels encounter PAHs and PCB while SOD is an enzyme that catalyzes the dismutation of highly superoxide radicals to prevent cellular damage. This study follows 12 sites chosen based on varying degrees of urbanization to more pristine sites, with one being the reference site. A comparison of biomarker activity revealed that Elliot Bay, a more urbanized site, had the highest P450 and SOD activity. In contrast, Hood Canal had the lowest activity of both biomarkers. Through analysis of enzymatic responses in a key indicator species, this work seeks to develop sensitive biomonitoring tools that elucidate the implications of coastal contamination on marine ecosystem health in Puget Sound.