2024 Analysis of Grain Size and Total Organic Content Analysis of Bed Sediment from Bellingham Bay, Salish Sea, Washington

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What's up with sediments? The sediments in question are located at the bottom of Bellingham Bay and composed of clay, silt, and sand deposits. Bed sediments are vital to characterizing the environmental conditions of urban waters. This longitudinal study by Puget Sound Ecosystem Monitoring Program and partners provides rich temporal data on urban bays within the Puget Sound region. Previous research suggests the relationship between sediment grain size and total organic content (TOC) is inverted. Finer grain size relates to higher TOC. In June 2024, the Washington State Department of Ecology Sediment Monitoring Team collected 29 samples within Bellingham Bay. Particle size analysis was conducted using a Beckman-Coulter LS 13 320 Laser Diffractometer. TOC was analyzed using the loss on ignition technique to determine percentage organic content. Average grain sizes ranged from about 37% clay, 58% silt, and 6% sand across all stations. TOC (wet) was about 4% and TOC (dry) was about 9% across all locations. These percentages help illustrate the environmental conditions at the bottom of Bellingham Bay as low production and rich in fine sediments indicating a low energy environment. This data can help define the environmental conditions to correlate the presence of microplastics, harmful dinoflagellates, and chlorophyll concentration.