Herbert Inlet Clayoquot Sound Phytoplankton and Water Properties
2014-2024 Comparison

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University of Washington Tacoma researchers have been studying the marine ecosystem in Clayoquot Sound on the west coast of Vancouver Island, BC, Canada annually in the fall since 2001. In 2014, the Northeast Pacific Ocean, including the Pacific Northwest coast, experienced the first of a series of marine heatwaves (MHW). This study will examine the estuarine conditions in Herbert Inlet, one of five inlets in Clayoquot Sound, in 2024 and compare water properties and phytoplankton abundance and diversity in this inlet with data collected in 2014. Water properties and phytoplankton will also be compared with nearby Herbert Inlet for 2024.

Continuous profiles of temperature, salinity, density, dissolved oxygen, fluorescence, and transmissivity with depth were recorded with a CTD and discrete water samples were collected at the surface and pycnocline, along with a 10-meter vertical net tow for phytoplankton identification and enumeration. The Simpson Index was used to calculate phytoplankton diversity.

No *A. catenella* was found in 2014; in 2024, the concentration was significantly higher. In 2024, Herbert Inlet was warmer, saltier, denser, slightly less anoxic (though there is an oxygen minimum at mid-depth at the head of the inlet in 2024), had greater fluorescence, and lower transmissivity relative to 2014. This suggests that the inlet was slightly more stagnant in 2024, which resulted in higher stratification and longer residence times. Relative to Bedwell, Herbert is colder, saltier, denser, more stratified and has less oxygen, indicating less mixing and flushing across the sill.