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Geoduck as indicators of environmental change

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The Pacific geoduck (*Panopea generosa*) is the largest clam native to the Pacific Northwest and is a burgeoning aquaculture species due to growing export demands from Asia. In Washington State, geoduck support important commercial fisheries via farmed and wild populations in Puget Sound. As a sedentary, calcifying bivalve occupying mostly subtidal sediment, geoduck are likely to be impacted by climate stressors, which have already been documented as trending towards warmer, more acidic marine conditions. In summer 2016 we performed two trials in which sibling juvenile geoduck were out-planted in five sites throughout Washington State, each site containing cohorts placed inside and outside eelgrass beds. Geoduck were enclosed to minimize predation, water chemistry was continuously monitored, and after four weeks of exposure geoduck gill tissue was taken for proteomic analysis. The gill proteome was sequenced using tandem mass spectrometry to reveal expression pattern associated with local conditions. Together these results demonstrate that protein profiles can provide valuable information on local conditions including how environmental change can influence bivalve physiology.