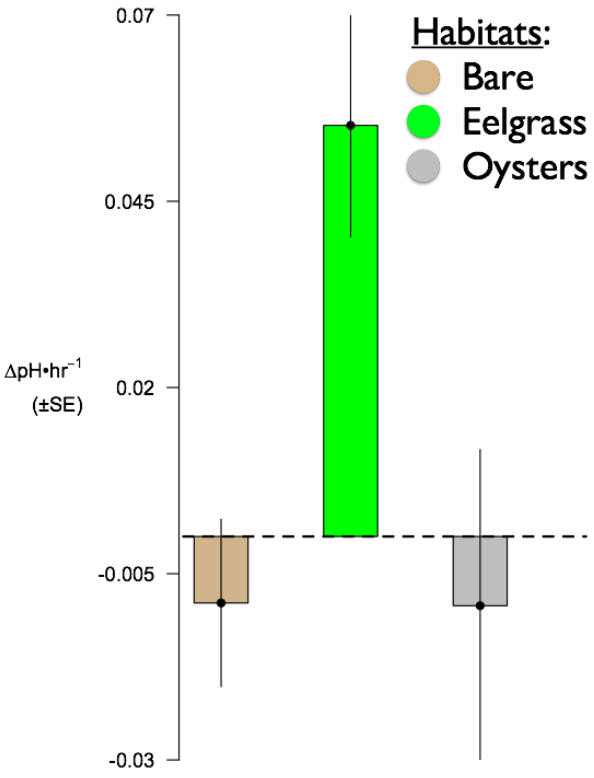
WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Eelgrass effects on local water chemistry

Drifters were used to track water movement.



Water passing over eelgrass decreased in acidity, whereas water passing over oysters or bare tideflats did not change.

Can eelgrass photosynthesis counteract ocean acidification?

Our oceans absorb roughly one-third of the carbon dioxide produced by humans, and this absorption is making marine waters more acidic. Eelgrass – like all plants – consumes carbon dioxide during photosynthesis. In 2014, WADNR partnered with the University of Washington to test whether eelgrass photosynthesis can locally counteract ocean acidification and provide a tool to protect natural resources from rapid environmental change.

AAMT selected five sites in Washington State: Samish Bay, Port Gamble Bay, Dabob Bay, Case Inlet, and Willapa Bay. At each site, eelgrass meadows, oyster reefs, and bare tideflats were identified. To track water movement across these habitats, buoyant 'drifters' were deployed and carried at the surface by tidal currents. In kayaks, AAMT collected snapshots of water chemistry by taking water samples just before a drifter passed over one habitat type, and again after the drifter passed off of that habitat. In the laboratory, before and after samples were compared to test for chemical change.

Water passing over oyster reefs and bare tideflats showed no change in acidity (pH) or corrosiveness (aragonite saturation state). Eelgrass, however, had a strong effect in the daylight, reducing both acidity and corrosiveness.

WDNR found that eelgrass photosynthesis pulls enough carbon dioxide out of nearshore waters to improve local chemistry. Eelgrass could improve water chemistry for shell-building animals, like oysters and geoduck; species known to be sensitive to ocean acidification.