Washington Shellfish Production & Restoration - Environmental & Economic Benefits & Costs

Summary of Research

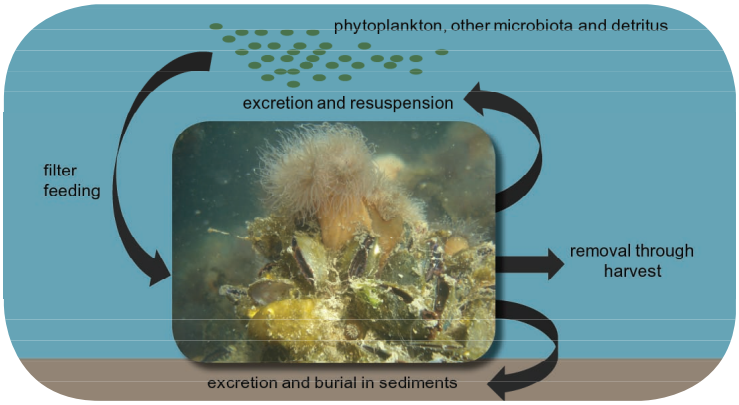
Monetary benefit of nitrogen removal by shellfish

Shellfish nitrogen (N) concentrations were experimentally derived at 1% of the whole shellfish weight. Using the best available records for commercial harvest, a low-end estimate of 25,787 lbs N are removed from Oakland Bay annually. Using replacement cost method and data from regional waste water treatment facilities, the monetary benefit of this N removal is estimated at:

N removal value based on LOTT 2017 upgrade	N removal value based on City of Shelton 2010 upgrade
25,787 lbs N/year x	25,787 lbs N/year x
$25.24 life cycle cost of N removal technology =	$ 2.99 life cycle cost of N removal technology =
$650,863 annual water quality benefit	$77,100 annual water quality benefit

Life cycle costs for both calculations are based on capital costs only, annualized and assuming a 6% discount rate of a 20 year life. The annualized capital was divided by the lbs of N removed to obtain the per unit capital. Life cycle costs usually include operation and maintenance costs, which would increase the annual water quality benefit figure, but these costs were not yet available.

Simplified representation of nitrogen cycling by shellfish



Ecosystem services provided by shellfish

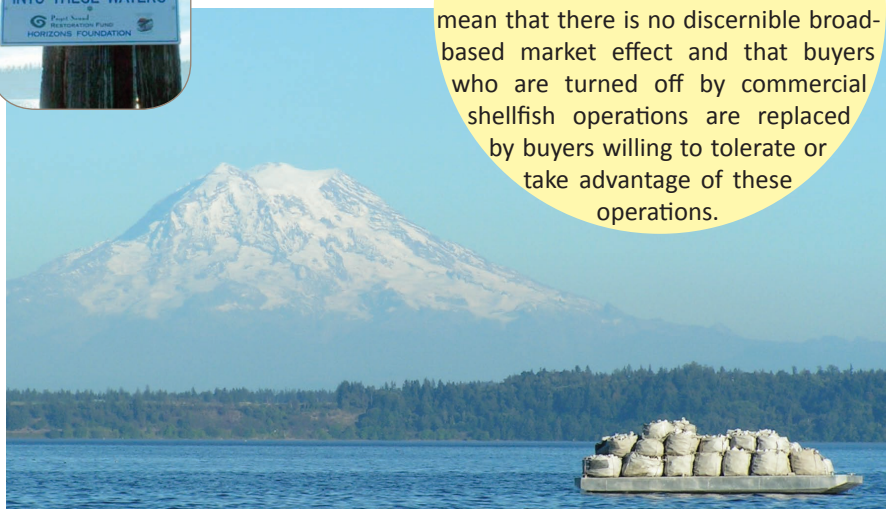
Provisioning	Commercial, recreational & subsistence fisheries
	Aquaculture
	Fertilizer and building materials (lime)
	Jewelry and other decoration (shells)
Regulating	Water quality maintenance
	Protection of coastlines from storm surges & waves
	Reduction of marsh shoreline erosion
	Stabilization of submerged land trapping sediments
Supporting	Cycling of nutrients
	Nursery habitats
Cultural	Tourism and recreation
	Symbolic of coastal heritage

Shellfish Restoration Benefits

More than 100 acres of Drayton Harbor were once utilized for shellfish production. If water quality were improved to re-open commercial shellfish operations the economic impact could be as high as ***$1,235,000 annually*** based on per-acre revenue generated by the Drayton Harbor Community Oyster Farm (DHCOF) plus $535,000 in regional ripple effects. Public investment in volunteer activities like the DHCOF also buys more than shellfish production, habitat and human health benefits— it provides social capital necessary for effective government.

Waterfront Property Costs

A survey of realtors revealed the potential for a quantitative effect on property values. The fact that so few interviewees noted a market effect could mean that there is no discernible broad-based market effect and that buyers who are turned off by commercial shellfish operations are replaced by buyers willing to tolerate or take advantage of these operations.



Full reports and references available at:
www.pacshell.org/projects/econNMAI.htm

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Pacific Shellfish Institute · Northern Economics · Puget Sound Restoration Fund · ENTRIX · Herrera