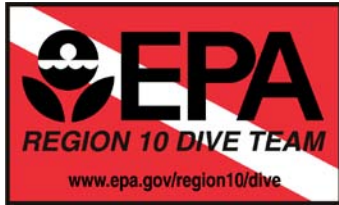


US EPA ARCHIVE DOCUMENT



[EPA Region 10 Dive Team](http://www.epa.gov/region10/dive)

Mussel Growth and Bioaccumulation Study, East and West Waterways of the Duwamish River, 1991-1992

What: The EPA Region 10 Dive Team deployed mussels to and retrieved them from the East and West Waterways of the lower Duwamish River, Puget Sound, WA, adjacent to the Harbor Island Superfund site.

Why: The project objectives were to answer the following 1) Did mussels accumulate contaminants associated with sediments? 2) Did stations differ with respect to bioaccumulation and growth? 3) Was there a relationship between sediment contamination, bioaccumulation, and growth?, and 4) Which sites and contaminants were of most concern?

Where: Lower Duwamish from Kellogg Island downstream into the East and West Waterways and the entrance to Elliott Bay, WA.

When: October 16, 1991 to January 7, 1992.

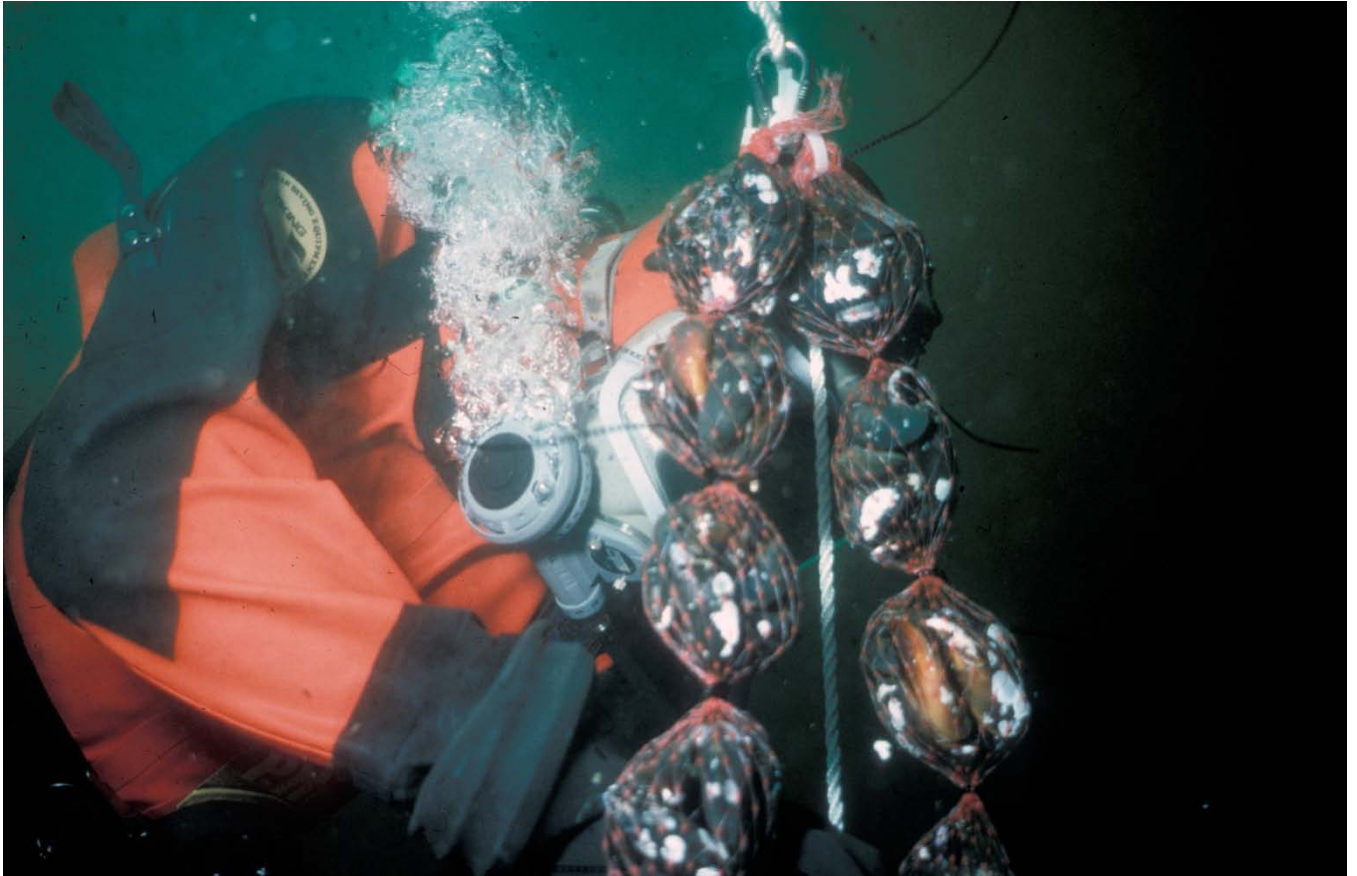
How: Juvenile and adult mussels were placed in mesh cages (trays and bags, respectively) at 12 sites around Harbor Island and at one control site (Carr Inlet), approximately 1 m off the substrate. Each juvenile mussel was measured and weighed before and after placement. Adult mussel tissues were combined for analysis. Tissue concentrations were normalized to water quality criteria. Sediment concentrations were normalized to NOAA's ERM's (effects range median; these are sediment concentrations associated with effects on organisms).

Results: Mussels from Harbor Island accumulated higher concentrations of contaminants and had significantly lower growth rates than the reference-site mussels. One site on Harbor Island had mussels with the lowest growth rates and highest contaminant concentrations. Tributyltin (TBT) and copper were the contaminants of greatest concern in both tissues and sediments; lead and zinc were also of concern in sediments. Growth rate was significantly reduced as a function of bioaccumulation and sediment contamination.

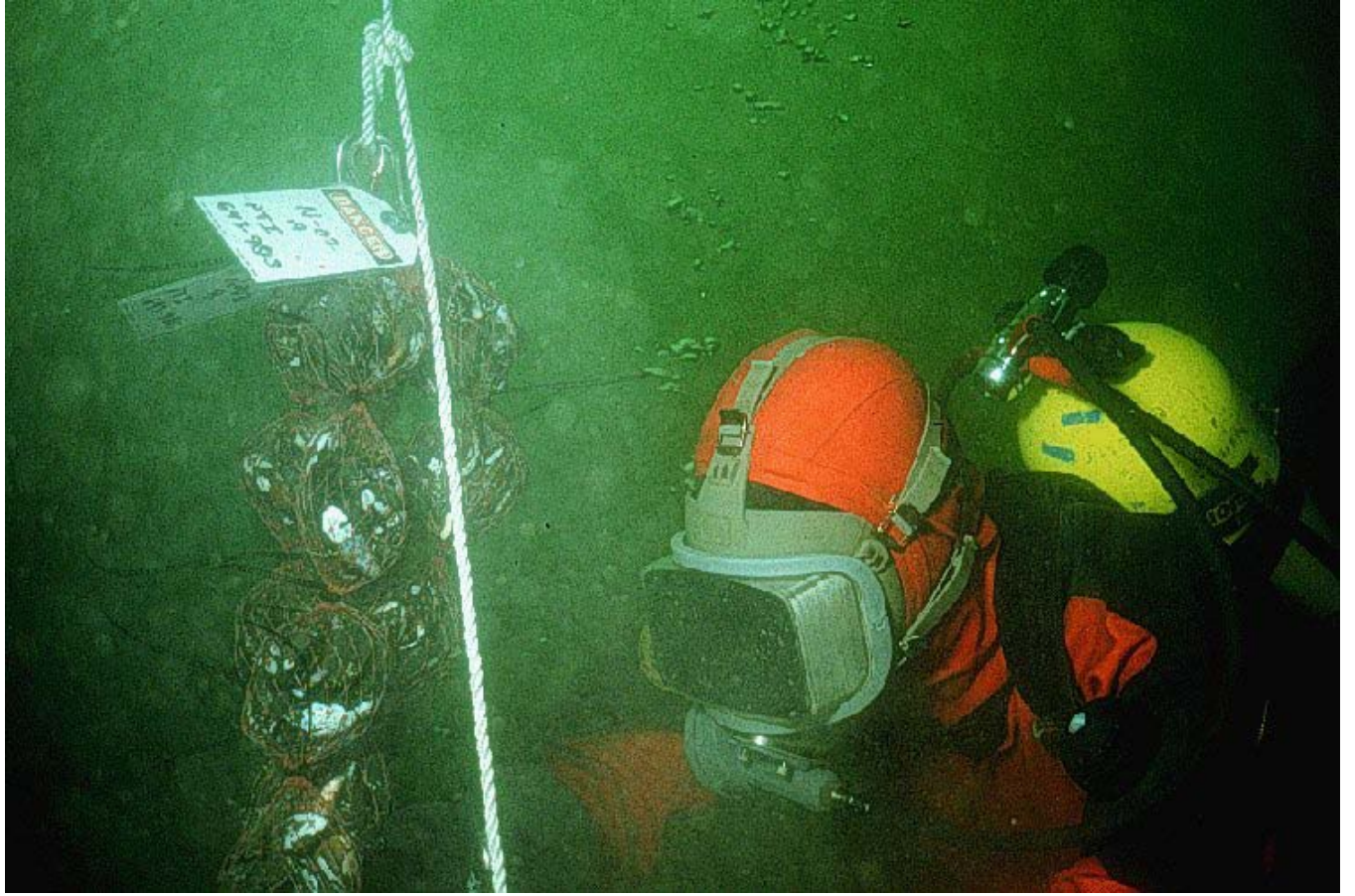
More Details: [Salazar, M.H., Duncan, P.B., Salazar, S.M., and K.A. Rose. 1995. In-situ bioassays using transplanted mussels: II. Assessing contaminated sediment at a Superfund site in Puget Sound. Environmental Toxicology and Risk Assessment - Third Volume, ASTM STP 1218, J.S. Hughes, G.R. Biddinger, and E. Mones, Eds., Amer. Soc. Test. Materials, Philadelphia.\(22 pp, 1 MB pdf\)](#)

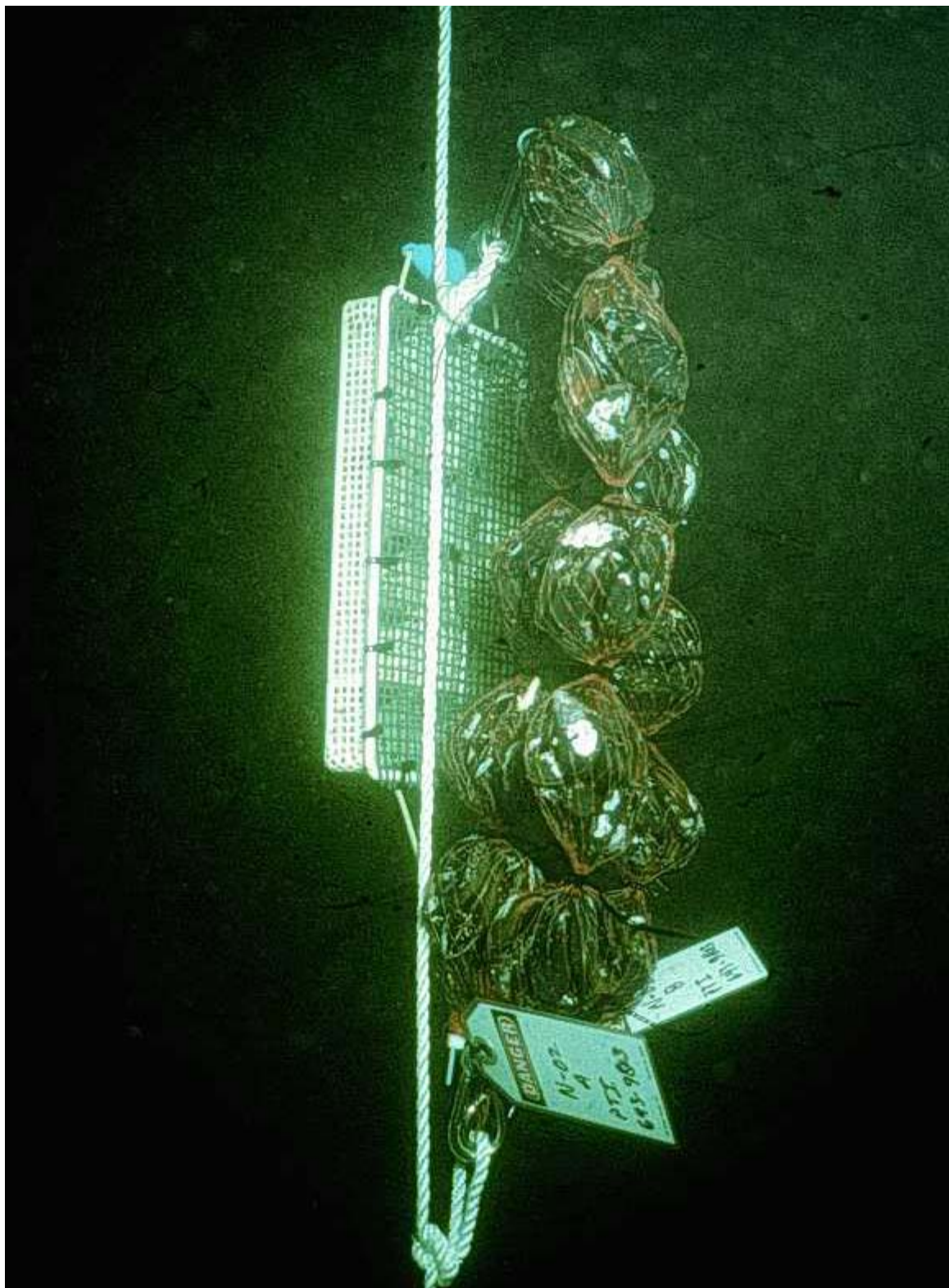
Contact: Bruce Duncan at duncan.bruce@epa.gov

Photos:



Diver ensuring proper placement of mussel cages





Duwamish Mussels, after placement

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