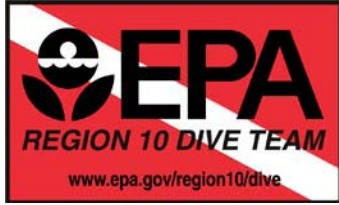


US EPA ARCHIVE DOCUMENT



[EPA Region 10 Dive Team](#) **Salmon Net-pen Study**

What: The EPA Region 10 Dive Team studied the benthic effects of five salmon net-pens in Puget Sound, WA.

Why: The culturing of salmon in marine net-pens results in the release of solid organic wastes (fish feces, unconsumed food, and carcasses) to the surrounding aquatic environment. Deposition of these organic materials may have effects ranging from none to biotic enrichment to an anoxic sea floor inhabited only by bacteria and nematodes. EPA's Dive Team was asked to study this range of impacts in support of the issuance of National Pollutant Discharge Elimination System (NPDES) permits to salmon net-pens in Puget Sound. The study objectives were: (1) assess the nature and extent of benthic impacts associated with net-pen operations and (2) recommend benthic survey requirements within NPDES permits for assessing such benthic impacts.

Where: Salmon net-pens were studied in Clam Bay, Rich Passage, Port Townsend, Port Angeles Harbor, and Cypress Island.

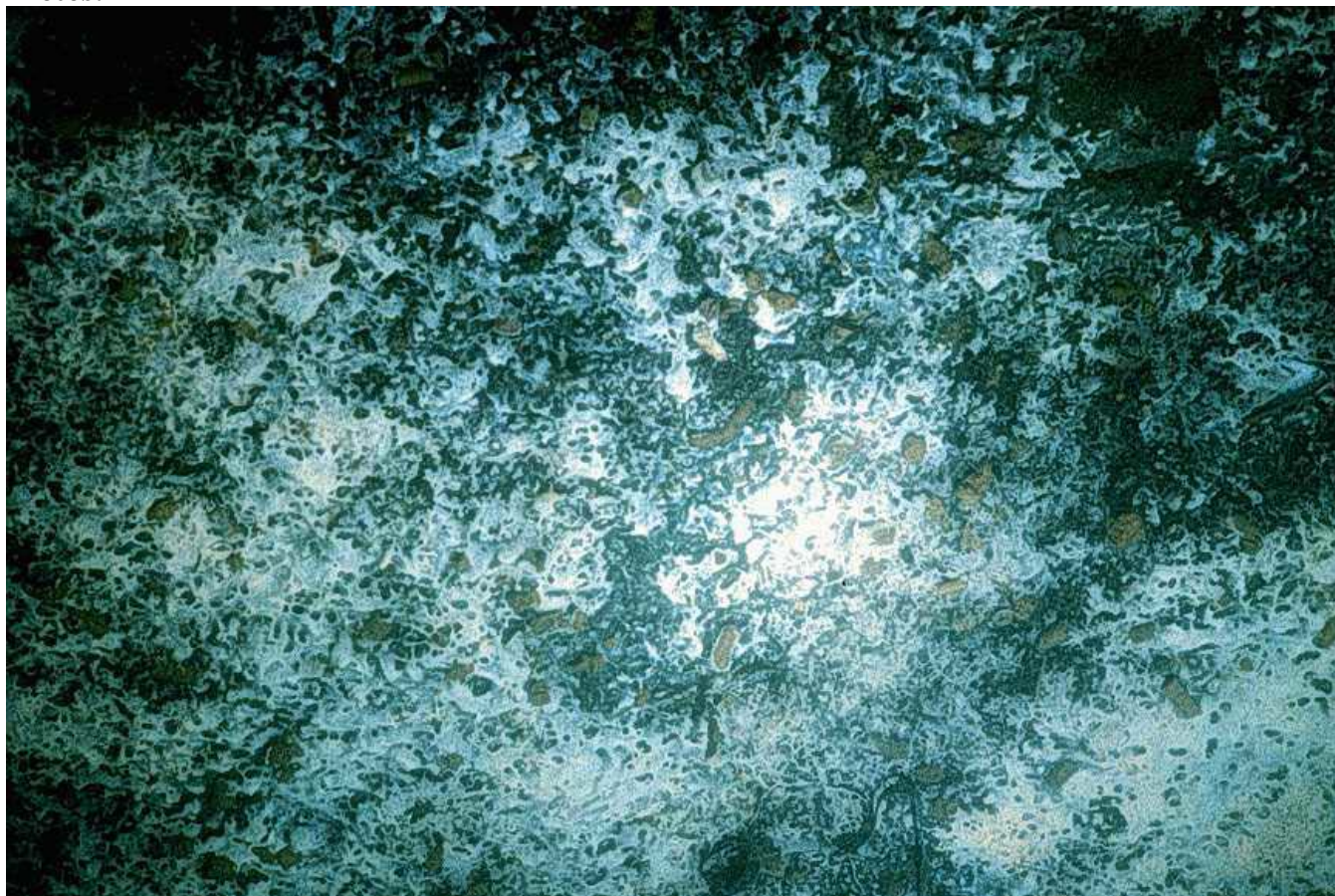
When: Spring, 1991

How: Observations were made, photographs taken, and core samples of sediment were collected along 200' transects extending away from the sides of the net-pens. Sediment cores were subdivided for the analysis of grain size, sediment chemistry, and infaunal macroinvertebrate communities.

Results: Benthic impacts, when present, were most intense under and immediately adjacent to the pens. The distance of the impact zone varied from zero to more than 200 feet. Scientific diving survey methods were developed and incorporated into NPDES permits for salmon marine net-pens in Puget Sound. These methods included transects, photography, and sediment sampling. Location of net-pens in areas of adequate depth (>50') and current speeds (> 0.2 knots) was important for ameliorating effects, particularly for large, high-production net-pens.

More Details: [PTI Environmental Services. 1991. Puget Sound Estuarine Studies, Procedures for Monitoring Salmon Marine Net-Pens. Data Report for U.S. EPA Region 10. EPA Cont. No. 68-D8-0089, 35 p. + 8 App. \(35 pp, 2 MB pdf to start\)](#)

Photos:



Typical view of fish waste below a net pen



Aerial photo of typical net pens.

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