[EPA Region 10 Dive Team]

Scuba-based Protocol for Community Assessments of Soft-bottom Sea Floors in Puget Sound, 1992-1993

What: The EPA Region 10 Dive Team and the University of Washington Fisheries Research Institute cooperated in the development of a SCUBA-based protocol for the assessment of benthic communities in silty and sandy sea floors in Puget Sound, WA.

Why: EPA divers often assess environmental degradation by observing the general appearance of the sea floor, sediments, and benthic marine life. These observations complement assessments of infaunal macroinvertebrates and sediment structure and chemistry. The Dive Team sought to develop a survey method which could quantify gross impacts quickly and accurately, producing quantitative data from diver observations.

Where: Alki Point, Seattle; Fay Bainbridge State Park, Bainbridge Island; Picnic Point, Everett; Global Aqua salmon net-pens, Clam Bay, Manchester; and Birding Seafoods salmon net-pens, Port Townsend.

When: December 1992 through July 1993.

How: SCUBA divers recorded observations on the numbers of different species of large, benthic organisms along 50 m transects at depths of 10 m, 20 m and 30 m. A 2 m PVC pipe was equipped with 4 wheels (5-gal bucket lids); two in the center that also supported a spool which held a 50 m transect line and two on the outer ends. Two divers, one on each side of the spool, push this Metric Underwater Transect Tool ("MUTT"), unwinding the transect line, making observations across the 1 m swath between the wheels, and recording their observations on mounted PVC slates for each five meters of the transect line. Divers are trained using a booklet of photographs of the target organisms which include sea stars, brittle stars, sea cucumbers, clams (siphons), snails, nudibranchs, anemones, and sea pens.

Results: The Metric Underwater Transect Tool served as a powerful asset in quantifying observations of the sea floor and its large, benthic communities by SCUBA divers. The MUTT provided both a non-permanent transect length marker (that did not require any set up time before surveys) and a clear boundary as used in quadrat sampling. The application of this protocol to soft-bottom sea floor assessment is limited by depth considerations (narcosis hampers quantification) and by the low densities, few species, and high variability in epibenthic communities of organisms observable by divers (large numbers of replicate observations are needed).

More Details: Miller, S., Miller, B., Jensen, G., and B. Hill, 1994. Development of a SCUBA-based protocol for the rapid evaluation of benthic degradation due to organic accumulation in the nearshore soft-bottom habitat of Puget Sound. University of Washington Fisheries Research Institute. FRI-US-9406. (90 pp, 10 MB pdf)

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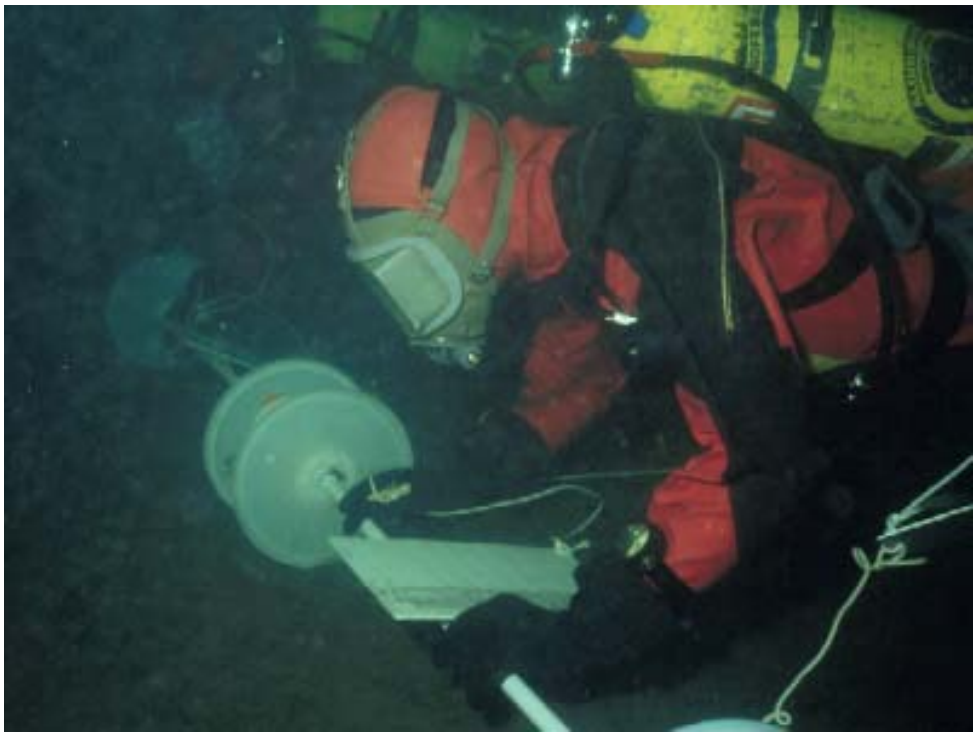
Photos:

Dive team members checking photos of organisms to identify during dive

Dive team deploying the MUTT



Dive team recording observations using the MUTT.

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