

A DESCRIPTION OF THE ECOLOGICAL CONDITION OF THE COLUMBIA RIVER ESTUARY USING EMAP DATA

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ABSTRACT

The Columbia River estuary is a unique and important ecological resource. EPA's National Estuary Program (NEP) was established by Congress in 1987 to improve the quality of estuaries of national importance. The Columbia River estuary is one of 28 estuaries in the NEP. In addition, the Columbia River Basin was identified as one of seven large aquatic ecosystems in EPA's 2006-2011 Strategic Plan.

EMAP (Environmental Monitoring and Assessment Program) was initiated by EPA's Office of Research and Development (ORD) to estimate the current status and trends in the condition of nation's ecological resources. EMAP also examines associations between these indicators and natural and human-caused stressors. The Columbia River estuary EMAP project was a cooperative effort between EPA Region 10, EPA ORD, Washington Department of Ecology (Ecology), Oregon Department of Environmental Quality (ODEQ), National Oceanographic and Atmospheric Administration (NOAA) and others. Sampling began during the summer of 1999, with small estuaries of the Columbia River. In 2000, sampling continued with the larger Columbia River Estuary. The boundary for the Columbia River estuary was head of tidal influence, so there were some freshwater components of this sampling effort. All sites from both states and for both years (79 sites) were combined for analysis.

The Ecology and ODEQ conducted all field sampling using the same methods for this project in 1999-2000 with assistance from EPA Region 10 and NOAA. Water column measurements were combined with information about sediment characteristics and chemistry, benthic organisms, and fish to describe the current estuarine condition.

To assess whether or not a specific metric indicates good or poor condition, a benchmark, standard or target is needed for comparison. Not all parameters or indicators have benchmarks developed. Therefore, we will only interpret and present those indicators that have benchmarks or targets developed that are relevant to the Columbia River estuary. We will also present the difficulties in developing biological and other indicators in a unique system like the Columbia River Estuary.

KEYWORDS

Columbia River Estuary, Estuarine, EMAP, monitoring, Washington, Oregon, indicators