

## Macroalgal Abundance in a Pacific Northwest Estuary – Evidence of Poor Eutrophic Condition?

David Young, Patrick Clinton, David Specht, Richard Caldwell, Janet Lamberson

### Abstract

A proposed European Union (EU) framework for assessing eutrophication condition, based upon macroalgal abundance (cover and biomass), was applied to the results of a 5-year benthic macroalgal study in Yaquina estuary, Oregon. Approximately 400 low-tide surveys were conducted within three intertidal bathymetric zones of six band transects covering the range of native eelgrass habitat. During the 4-month period of maximum macroalgal abundance, 85 percent of the surveys in the areas supporting most of the native eelgrass yielded abundance values corresponding to poor or bad eutrophic condition. This assessment system did not reflect the radically different levels of pore water sulfides measured within the sites, nor the fact that no relationship between macroalgal and eelgrass biomass was observed. Yaquina estuary also is a major supplier of crabs and clams to the recreational fishery. Further, a number of studies have shown that coastal upwelling, not the watershed, is the major source of nutrients to the estuaries during the growing season. These results raise serious questions regarding the applicability of the EU macroalgal framework for assessing eutrophication condition in Pacific Northwest coastal estuaries.