

# **Intertidal Eelgrass Response to Benthic Macroalgal Accumulation in a Pacific Northwest Estuary**

by

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## **ABSTRACT**

High accumulations of benthic macroalgae from excessive nutrient inputs to estuaries is commonly cited as a major cause of seagrass decline. Two measures of macroalgal abundance, biomass and percent cover, have been used in an assessment framework for estuarine condition proposed by the European Union's Water Framework Directive. Here we examined the relationship between biomass and cover of the macroalga *Ulva*, and above-ground biomass and cover of the native eelgrass *Zostera marina*, in Yaquina Estuary on the central Oregon coast, USA. Random samples of macroalgae and eelgrass were collected during exposed conditions from 1000 m<sup>2</sup> intertidal monitoring zones over five peak growth (~summer) seasons. A comparison of macroalgal and eelgrass cover from annual aerial photo surveys of the entire lower estuary over a twelve year period also was made. An eight fold variation of average macroalgal peak season biomass (54-430 gdw m<sup>-2</sup>) during the five year ground survey was obtained at one site. However, there was no relationship between the average macroalgal biomass there during one summer season, and the average above-ground biomass of eelgrass at that site the following summer. Also, from the photo surveys conducted between 1997 and 2009 there was no relationship between the aerial extent of eelgrass and macroalgae in the lower estuary, and no temporal change in the percent cover measurement of either taxon. Therefore, our results suggest that benthic macroalgae do not have clear negative effects on native eelgrass in Yaquina Estuary.