

Our Actions, Our Estuary
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POSTER ABSTRACTS: Contaminants

Transport and fate of ammonium supply from a major urban wastewater treatment facility in the Sacramento River, CA.

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Effluent from wastewater treatment plants (WWTP) represent a major source of anthropogenic nitrogen to coastal and estuarine waters. In the Sacramento River, ammonium (NH₄) loading from WWTP's has increased three-fold since the 1980's and represents 90% of the river's total NH₄ load. Despite the large WWTP influence on river nitrogen, little is known about how riverine phytoplankton may respond to nutrient enrichment or the potential consequences of elevated NH₄ downstream in the San Francisco Estuary and Delta. Recent studies in the northern San Francisco Estuary suggests that elevated NH₄ may contribute to the documented decline in estuarine primary production and phytoplankton standing stocks by limiting diatom growth. Working with the regional water quality control board, we evaluated the potential for perturbations in primary production as a result of wastewater discharge in the Sacramento River using data from long-term monitoring programs and focused experimental manipulations. Our goals were to characterize nutrients, primary production and phytoplankton standing stocks along a 75 km riverine transects near the sewage outfall and to assess the capacity of the Sacramento River phytoplankton to process NH₄, and reduce NH₄ loading to estuarine receiving waters. These results may be used to guide current wastewater permitting, test future loading scenarios, and provide the basis for assessing downstream impacts of changing wastewater practices.

Key Words - *Wastewater; NH₄; ammonium; phytoplankton; Sacramento River; Delta*

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