GRADUATE THESIS DEFENSE
AND LECTURE SERIES
of the
Environmental Studies Department
Presents Rebecca Sloan
Investigations of a Fish Kill in Pescadero Lagoon, California

When: Tuesday May 16, 2006, 4:30pm to 6:00pm
Where: Boccardo Business Building, Room 126

The importance of Rebecca's work has been recognized via project funding provided by the Department of California State Parks and Recreation, the Charles and Inez Burdick Scholarship, a Department of Social Sciences Research Grant and the Graduate Equity Fellowship. Additional equipment and logistical support has been provided by Moss Landing Marine Laboratories and Elkhorn Slough National Estuarine Research Reserve.

Abstract: Many watersheds on the California coast terminate in a lagoon, a small water body separated from the ocean for at least part of the year by a reef, sandbar or sand spit. For seven of the last eleven years, Pescadero lagoon, on the San Mateo County coast of California, has experienced a fish and crab kill in association with the breach of the annual sandbar. Federally threatened juvenile steelhead and economically important Dungeness crab are among the carcasses exposed during the first 24 hours after sandbar breaching. A 16-month study monitored 8 marsh sites for water quality, including dissolved oxygen (DO), salinity, temperature, hydrogen sulfide, ammonia, nitrate, phosphate and nitrite, vegetation and phytoplankton production, surface wind speed and sediment characteristics. Sites were analyzed to characterize water quality conditions that could contribute to fish kills. Low dissolved oxygen concentrations in bottom water were found to be pervasive in the marsh complex during sandbar closure and throughout the water column in the days following the sandbar breach. Low DO is strongly related to density stratification when the sandbar is closed. Hydrogen sulfide and ammonia concentrations also increased significantly after sandbar closure. Post breach dissolved oxygen data does not conclusively show that low oxygen is the only mode of mortality operating in Pescadero marsh.