

The Department of Environmental Studies at San José State University is pleased to present a public MS thesis defense:

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## Effects of the Urban Edge on Soil Conditions, Stand Structure, and Understory Composition in a Coast Redwood Forest

**Abstract:** A wildland-urban interface (WUI) is an area where urban development and wildlands meet, resulting in impacts on forest ecosystems. Many forests in the WUI experience edge effects caused by human activities, such as timber harvest and urban development, which can influence the forest community by changing microclimate in the forest edge and altering vegetation composition and structure. These changes can be problematic, as forests contain many native plant species that depend on natural ecosystem functioning. Both the WUI and resulting edge effects are well studied in general; however, the influences of the urban edge on coast redwood forests specifically are not well understood. The goal of this study was to analyze soil characteristics, stand structure, and forest understory composition across a coast redwood wildland-urban interface. Twenty 300 m transects were established in the WUI with five circular ten-meter diameter sample plots set at distances of 0, 40, 80, 160, 300 m from the urban/forest edge in a coast redwood preserve in the Santa Cruz Mountains, California. An additional twenty transects were established as a control in a central part of the reserve, resulting in a total of 200 sample plots. Results reflected strong correlations between distance from the edge and soil temperature, duff depth, canopy cover, stand density, dominance, *Oxalis oregana* cover, non-native understory species richness, and coast redwood-associated understory species richness in the forest edge site. The edge plot differed from the control plot in soil properties, forest composition, and understory species as well. Findings suggest that urban development alters adjacent coast redwood forests in regard to soil conditions, stand structure, and understory composition. *Ms. Oba received her BS in Chemical and Biological Sciences from Japan Women's University in Tokyo, Japan. During her free time, she enjoys hiking, nature photography, gardening and crochet.*

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