



## Russell L. Rustici Endowed Chair in Rangeland Watershed Science



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### ENDOWMENT PURPOSE

The Rustici Endowed Specialist in Cooperative Extension in Rangeland Watershed Sciences was established in 2008 by the late Russell L. Rustici to give special recognition to the holder and provide financial support for his or her teaching, research and outreach efforts. Mr. Rustici was particularly concerned with research that investigates the connections between range management, water quality, hydrology and related ecosystem processes towards the protection and enhancement of California's Central Valley rangeland landscape. The Specialist in Cooperative Extension is one of two endowed positions created through Mr. Rustici's giving.

### RESEARCH

The Rustici Endowed Chair funding has contributed to important research findings that support sustainable rangeland management practices in California. Research funding during the past year examined soil water dynamics and forage production on a 10 hectare topographically complex rangeland landscape on the Central Coast. The project in collaboration with UC Rangeland Advisor Royce Larsen examined how soil moisture and forage production are affected by landscape topography. The ultimate goal is to develop a predictive model to predict forage production on Central Coast rangelands as driven by precipitation and soil properties. Through collaborations with Dr. Yufang Jin's (UCD) remote sensing team, forage production on the research site was monitored using drone and satellite remote sensing techniques. The remotely sensed forage data provide an opportunity to develop real-time monitoring applications to provide land managers with an estimate of forage on the landscape at any point in time.



## TEACHING

The endowment partially funded the research of two graduate students working on rangeland hydrology and remote sensing of rangeland forage production. I continue to incorporate my research findings into both graduate and undergraduate courses that have a combined annual enrollment of about 400 students. Equipment supported by the endowment contributed to two offerings of an undergraduate group research project examining water quality sampling design, methodologies, quality control/quality assurance, and data interpretation. There is very high demand for undergraduate internships and the group internship approach provides an efficient and stimulating environment to provide real-world skills in addressing water quality issues.

## STUDENTS

The research of two graduate students (Han Liu & Scott Devine) was partially supported by the endowment this past year for their work on rangeland hydrology and remote sensing of rangeland forage production. Research supported by the endowment has also contributed to specialized training of several undergraduates working on various aspects of the research projects.

## OUTREACH

During the past year, I have presented research findings at various workshops and collaborated with several county advisors and stakeholders in the cattle ranching community to provide information concerning soil and water quality issues on California rangelands. Of particular impact was my invited presentation at the Society for Range Management workshop on rangeland soil health at Suisun City. I have also worked directly with water quality regulators to demonstrate how natural pollutant sources (e.g., nutrients & pathogens) can contribute to water quality impairment on California rangelands.

## FUTURE USE

The Rustici research funding has been especially important in fostering research collaborations and outreach opportunities between faculty, CE specialists and country advisors on important rangeland topics. I am especially excited to continue these collaborations in the upcoming year with several rangeland research projects and publications coming to fruition.



## THANKS

I am very thankful for the financial support provided by the Russell L. Rustici Endowed Chair in Rangeland Watershed Sciences. The support has allowed me to pursue research questions and extension activities that are typically not funded by other sources. It allows me to take research risks that have often resulted in "high" impact research findings that have leveraged additional support from extramural sources. I look forward to continuing research on California rangelands that Russell Rustici saw as a critical need for the sustainability of the California ranching community.

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