Monitoring Landscape and Vegetation Change in Ventura River Watershed, California Using Remote Sensing
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The Penn Undergraduate Climate Action Grant funded my summer research trip to Ventura, California for a week of field sampling. The Ventura River Watershed in California has changed dramatically in the last century and a half due to both natural and anthropogenic forces, including grazing, urbanization, the introduction of the Matilija and Casitas Dams, periodic droughts, and changes in climate. In order to enhance our understanding of these changes and contribute to the analysis of the potential Matilija Dam removal and watershed recovery, I am conducting a comprehensive assessment of vegetation and landscape change over time (1853 to present) using an array of historical and current records, aerial imagery, Landsat remote sensing data and field analysis.

While in Ventura, I collected over one hundred ground coordinates and associated land use and vegetation classifications. I also collected various vegetation samples. While there, I had the opportunity to tour the Matilija Dam site with the General Manager of the Ventura River Water District, Bert J. Rapp and Sam Jenniches, of the California Coastal Conservancy and the Surfrider foundation. The two offered incredible insight into the problems the watershed faces and the progress made towards the removal of the Matilija Dam. In addition, I spent time at the Research Library at the Museum of Ventura County collecting primary source maps and photographs.

Under the mentorship of Professor Jane Dmochowski in the Earth and Environmental Science department, I will write my senior thesis based in part on the field research I was able to do this summer. The synthesis of my research methods will allow me to (1) present a useful profile of ecological change; (2) provide a time-series analysis of vegetation and landscape change pre- and post-dam construction; and (3) offer a tool for ongoing vegetation monitoring. This interdisciplinary research project offers an exciting opportunity to contribute to resolving challenging landscape evolution and water-use issues.

Previously, I had only studied my research site through the analysis of satellite imagery. The opportunity to visit my research site in person was incredibly important to me because it allowed me to gain a deeper understanding of the area. Additionally, during the time I spent with Professor Dmochowski I learned how to conduct a remote sensing ground survey and gathered great advice

on how to continue with research after graduating from Penn. Professor Dmochowski has been an incredibly important mentor to me. My time working in the field has confirmed that environmental interdisciplinary research is something I want to continue to do in the future.