



USDA Trails Strategy

WRI: ENGLISH PEAK SURVEY

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Executive Summary

Upon admittance to the Water Resources and Policy Initiatives (WRPI) internship program lead by California State San Bernardino University Enterprises Cooperation, I was sent to Salmon/ Scott River Ranger District under the United States Department of Agriculture in the Klamath National Forest. During the internship I was given the opportunity to gain experience in a number of different departments including forest rangers, river rangers, trail crew, invasive species biology as well as recreation.

For this project I will describe my experience working with the trail crew and my experience under the supervision of Sam Commarto in the recreation department. I will explain how the work became interrelated to provide an overall understanding of watershed monitoring and the effects on recreational trails. The majority of my project work involved surveying and data collection on recreational trails. Our primary purpose was to locate areas effected by erosion and sedimentation in order to provide information to be used for the implementation of future restoration projects.

Project Objectives

This internship provided valuable and relevant experience needed for my chosen career path of Environmental Engineering. The majority of my summer experience involved data collection and surveying which directly aligns with many potential career pathways with the USDA. With my experience in surveying and monitoring, I hope to soon gain experience in the next step of planning future projects on private and public lands. With a science and engineering background, one of my goals is to become involved in sustainable watershed management and habitat restoration.

The objective of the project was to gather data on a specific meadow site near a fire lookout on English Peak in the Marble Mountain Wilderness. Over the two-day trip, our goal was to gather as much information as possible at this site. Using a tablet with GPS and mapping capabilities we were to mark all seen points of the trail that were in need of maintenance. After each point was noted, it was labeled with a description, possible measurements and photographs. The most important part of the project was to discover the causes of erosion and possible solutions. The data gathered will be used with ARC map in order to gain insight on the area to plan future restoration projects. The final goal is to restore the meadow and thereby minimize labor and maintenance on a recreational trail which passes through it. These high altitude meadows are home to many species of plants and animals and restoring them is crucial in maintaining biodiversity within the area.

Project Approach

Trail Maintenance

Before our main project, I was first introduced to trail maintenance in order to better understand the feasibility of trail projects. Upon arrival to the Klamath national forest, I joined the trail crew for an 8 day job in Stanshaw within the Marble Mountain Wilderness area. In Stanshaw I gained experience in trail brushing, treading, and cross cut sawing. All work was done while keeping the effects of watersheds in mind. Creating and maintaining water bars and check dams were also part of the job in order to prevent erosion of the trails and to slow down the flow of water. These skills are needed to produce and maintain trails in areas such as these due to a ban on mechanized equipment within wilderness boundaries. Getting hands on experience in trail work was a necessary and valuable experience in order to gain insight on project planning. Without my experience in Stanshaw I feel that I would not be able to accurately produce reports on job estimations for future trail projects. As an avid hiker, camper and backpacker, I was able to gain a deep appreciation for the hard work that goes into maintaining these trails.

Surveying and Monitoring

Our main project was conducted in order to gather information on a meadow bowl in the Marble Mountain wilderness near English peak. The funneling of rain water and snow melt through this bowl has been eroding a meadow causing large runnels down the face of the mountain. The erosion destroys valuable plant life which can include rare species and habitat loss. The erosion has also caused continuous damage to the neighboring recreational trail. This type of problem is of interest particularly in the Klamath national forest due to the drastic changes in topography. Steep slopes such as these are common and of increasing concern. In order to better understand the ongoing problem, as well as develop insight for future restoration projects, my project partner and I used a mapping software to gather data on the region. This data was taken mostly off trail from the erosion starting points to the visible ending points. Way points were marked throughout each section as well as pictures and measurements corresponding to each segment. Possible manmade structures that could be contributing factors were also noted and marked. These factors would include prior decommissioned trails, water bars and check dams. For further insight to the region, GPS tracking was utilized for each runnel in order to visibly determine starting and ending points of degradation and possible contributing factors through GIS.

Project Outcomes

The data gathered would lead one to conclude that the snow melt and non-compacted soil are the main culprits for the large amount of erosion. My partner and I also discovered that an old trail running above and parallel to the current one had a few water bars that became starting points of some of the deepest runnels. Prior attempts were made by putting check dams above and below the trail to slow down the flow of water. We found that these attempts unfortunately did not succeed. Although the check dams may have temporarily improved conditions, they may now actually be speeding up the flow of water through small waterfalls causing more speed and faster erosion. My partner and I marked close to 50 way points with pictures and descriptions of each. We also tracked close to 8 large runnels from their starting points atop the ridge to their ending points. The ending points seemed to gather at another meadow we discovered that had formed below the trail. For now, this meadow seems to be slowing down the watershed flow and no degradation can currently be seen.

The waypoints, tracks, pictures, and recommendations were uploaded to google earth in order to organize the data. This data is now available to other people working for the forest service who are interested in the project. They will now be able to see the problems and potential solutions online without having to physically hike the trail. This data will also be used with GIS and will be the start to a new form of trail inventories for the forest service.

Conclusions

If one were to continue the project, further research should be done below the second meadow. One would need to similarly survey the area in order to see if similar damage is being done further down the mountain, or if the meadow is completely slowing down the flow of water. My personal recommendation would be to study and maintain the second meadow in order to not have a domino effect causing runnels down the next section of the mountain face. The plant species thriving in the second meadow as well as other nearby meadows would also be good information to have. If resources and time permits, a restoration project could put into place by planting the successful species in the eroding meadow. The successful species could potentially absorb more water and keep the soil intact. Old water bars and check dams that have proven unsuccessful should also be removed. Finally, research should be done on thriving meadows in the area in order to analyze the factors that contribute to their success.

This project tested my knowledge of watersheds and how they affect trails. I was able to think ahead of the possibilities to come, as well as think back to the first contributing factors. The internship gave me the knowledge and skills necessary to conduct field work in a back country setting. Furthermore, I was given the opportunity to challenge myself and grow in a professional work setting. Above all I was able to gain a deeper appreciation of nature as well as insight into its sensitivity. With the help of my mentors and coworkers I now feel confident to pursue a career in environmental engineering with the USDA.

Appendix



Picture 1: Water Bar on decommissioned trail causing large runnel



Picture 2: Large runnel and failed check dams

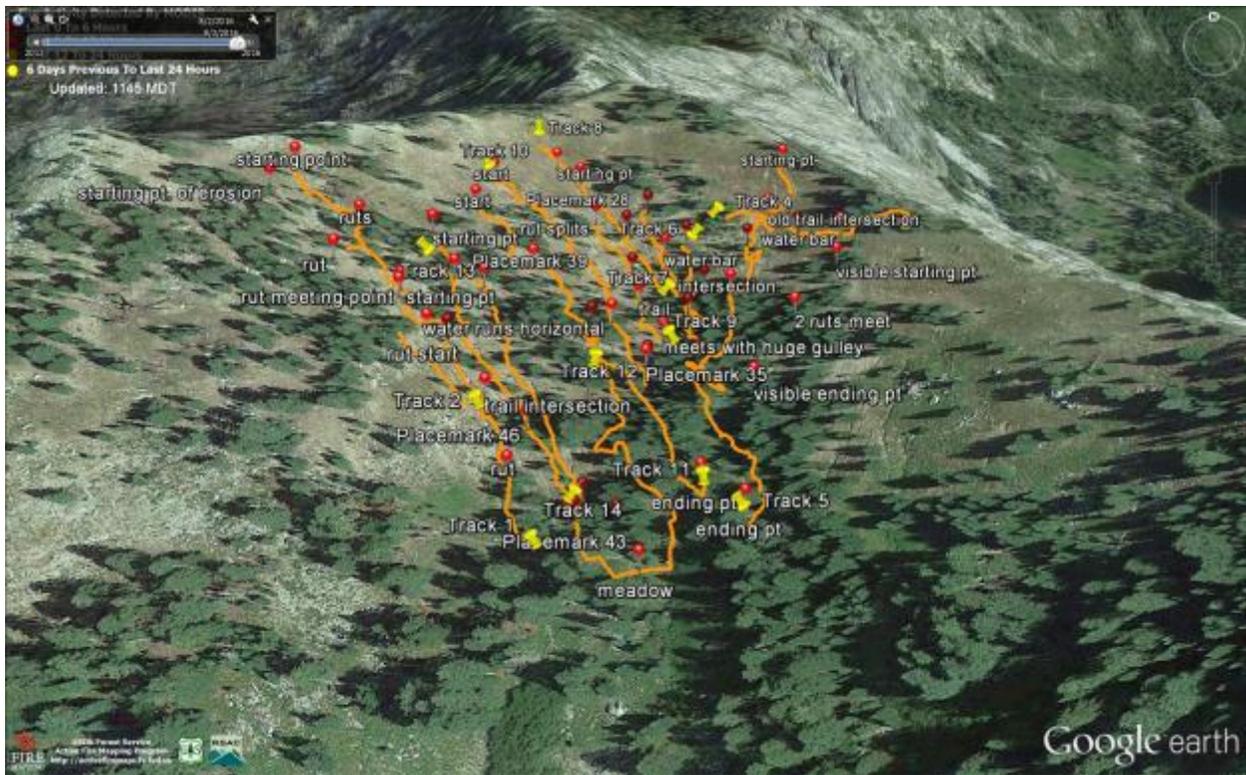


Picture 3: Wide runnel with large sediment loss



Picture 4: Second meadow gathering water from bowl

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Picture 5: Google Earth data gathered at site