San Bernardino County Flood Control Aerial Photo Project

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Acknowledgements

This project was supported by Agriculture and Food Research Initiative Competitive Grant no. 2011-38422-31204 from the USDA National Institute of Food and Agriculture. This project was successful with the help and patience of CSUSB staff including Suzie Earp (archives manager), Rob Carlson (Dean Emeritus for the College of Natural Sciences), and campus photographers Robert Whitehead and Corinne Jamieson, as well as the other interns working on this project here at CSUSB: Victoria Banegas and Carlos Almaguer.
Executive Summary

The purpose of this project was to digitize photos provided by the San Bernardino County Flood Control. These photos spanned all across San Bernardino County and dated as far back as the 1920s. To digitize these photos, a high resolution camera was used to take a picture of the hard copy while it was being held in place by a vacuum box. The photos were then transferred to a computer where they were cropped and metadata/captions were added to each individual photo. The programs that were used in order to do this were Photoshop and Photo Mechanic. These photos were then uploaded to the school’s website where anyone could search and view every photo. At this point in time, we have approximately 20,000 photos that have been digitized and added to CSUSB’s website. The work that I have put into this project will be of great value to researchers, allowing them to track the progression of land and water over the years for San Bernardino County. I have gained so much experience through this internship that I know will continue to be a benefit for my future career.

Project Objectives

The aerial photos that we have to digitize are all managed by CSUSB and contain thousands of pictures that span all across San Bernardino County, dating from the 1920s to present day. These photos will be a huge resource for researchers, agencies and water resources since they can be used for evaluation of natural and agricultural resources, land-use planning, and environmental studies, among other important utilities. Since the photos have been digitized, this makes it easier for people to have access to them and locate specific photos for a specific area.

The whole goal of this project was to take photographs of already existing photos for the Santa Ana Watershed and San Bernardino Valley and digitize them. Following this, we wanted to make the photos easily manageable and searchable by putting them into an online database. With my help and that of the other interns and staff working on this project, we have completed a large amount of work and continue to finish digitizing the final photos at an amazing pace. With our hard work and dedication, we have left a lasting impact on how researchers will gather information related to these and San Bernardino County.

The specific tasks set out for this internship project include:

1. Taking photos of aerial shots of various locations of the Santa Ana Watershed
2. Uploading each photo taken onto a hard drive
3. Cropping and adjusting the lighting of the picture via Photoshop
4. Captioning and labeling each photograph to its assigned number and group
5. Create a database containing metadata about each photo for captioning
6. General organization of database and photos for use
7. Collaborate with university photographer for studio time and training
Being the first in my family to attend college, I was uncertain of my career path when I began this internship. When I found out that this project was funded by the USDA, I began to research the various careers that the USDA offers. During my progression through this internship, I learned that the career path that I had in mind was to be a statistician in any of their departments. Though my particular internship did not fully reflect the duties and responsibilities that a statistician must have, the classes that I took in order to meet the requirements for that career pathway increased my interest and certainty of wanting to go into that field. With the combination of courses in my major (Health Science—Public Health Education) and the required courses for this internship, I have found a more specific career path whose foundations are heavily anchored in statistics—an epidemiologist. The reason that I chose this path is because I am very interested in diseases, their origin, how they spread, the rate at which they spread, how to stop or cure them, and mapping out their prevalence across the nation with the use of statistics. Although the internship was not directly related to a statistician career, the programs that I had to use for this internship were a great benefit in that it allowed me to familiarize myself with just a few programs that I would be required to know as an epidemiologist. Additionally this internship introduced and taught me the planning, organization and operation of the process of collecting, verifying, adjusting, processing, summarizing and presenting data, which is very applicable to the job responsibilities of a USDA statistician.

Project Approach

There were many steps to this project to ensure that a high quality product was produced. In the process of taking the actual photos, we first made sure that we took every measure to keep the photos in their preserved state. To do this, we used cotton gloves while handling the photos and to hold the photos in place while they were being photographed, a vacuum board was used. The vacuum board is the best method for holding up the pictures because the use of tape or magnets would warp or damage the photos—it ensures the best quality and does not distort the image. When photographing each picture, three different shots are taken—the only change being the f-stop or aperture. As the photos are being taken, a USB cable connecting to the computer automatically transfers the images to a hard drive where they will then be cropped and captioned.

To caption the photos, a database containing the metadata for each individual photo is needed. This is done with the use of Microsoft Excel where one of the interns enters in all of the data for the photos which is provided by the Santa Ana Watershed. Once this is complete, the spreadsheets and photos are opened up into a program called Photo Mechanic. This program allows captions to be added to a photo with a short key stroke specific to any given photo that will automatically import the long string of information that must be on each photo.
One of the three photos that were shot of the same picture is selected to be captioned based on which aperture looks better for the given photo—shadows, lighting, focus, etc. Once the photo has been captioned, it is then opened in Photoshop where it will be cropped and any white balance adjustments are made. The finished product is then saved onto another hard drive where Dean Carlson then organizes and categorizes all the photos and loads them onto the Water Resources Institute page.

Project Outcomes

The start of this project started out rocky. Some of the problems we faced included how slow it was when making the databases for the captions. This was later solved by one of the other interns who knew a way to input all the data in massive chunks, thus significantly speeding up the process. We also discovered how to use shorthand codes to input the captions for each photo which also was largely attributed to the fast pace of this project. Another obstacle we faced was the time that each intern needed to fully understand and memorize all of the steps to this project. The only solution to this was through repetition and trial and error. Despite these setbacks, we finally landed on a system that works efficiently. From the beginning I knew that a lot of work was needed in order to complete this project but I never knew exactly how big this project was. From around January to present, our team was able to put up nearly 20,000 photos online for the public to access with many more still needed to be finished. The photos can be found at [http://wri.csusb.edu/archives/HistoricalAerialPhotos.html](http://wri.csusb.edu/archives/HistoricalAerialPhotos.html). To see a sample of the photos, refer to the appendix of this paper.

One of the most valuable things that I was able to take away from this project was the learning and mastering of the various programs that we worked with, including Photoshop, Microsoft Excel, Photo Mechanic, EOS Utility, and Text Wrangler. The knowledge I gained from learning these programs, along with the other needed equipment such as the high resolution camera, and a Mac computer, has given me the confidence that I can successfully learn a diverse discipline of programs and equipment and I can carry that experience along with me on my career path.

The approach that I took in order to better familiarize myself with my chosen career pathway was mainly through taking the suggested courses recommended by the USDA as well as learning more about the USDA and its various departments. By following the recommended courses from the USDA, I was able to realize that I was confident and content in my career path that I had chosen. I discovered that I was satisfied with the thought that I would have to work with statistics and general math on a daily basis. Once I realized this, I made sure to do heavy research on the USDA website in order to meet the necessary requirements and to see which department would best suit me for this specific career path as well as which departments had job openings and internships available. Another way that I was able to learn more about the
USDA was by participating in a live and interactive webinar presented by the USDA. This webinar allowed me to have the opportunity to speak one on one with various representatives of the USDA and learn more about their objectives for their perspective employees and interns.

Conclusions

The importance of this project will continue to have a great impact in future years. As the land continues to undergo dramatic changes, more people will realize the value of the work that we have done so far in preserving the past to see how we can make better decisions about the water and land for the future. This project is vast and will continually grow over the years with the addition of new photos to our university’s already massive collection. This internship has given me preparation for my career in that all of the programs that I have used for this project are heavily utilized in my major and field of work. Learning how to use these programs properly has enabled me to feel at ease and excel further beyond other students in my courses needed for my USDA career pathway. This internship has also given me the confidence and experience that I need in order to participate in other internships that are more specific to my major and the USDA.
This is an example of the finished work that all of the interns on this project have produced and it can be found on the CSUSB website under the Historical Aerial Photos tab on the Water Resources Institute page at http://wri.csusb.edu/archives/HistoricalAerialPhotos.html. This photo is a great example of how land has changed over time. For example, there are a number
of buildings that do not show on this photo since they are recent editions to the campus and much of the land surrounding the campus in this photo is undeveloped.