

Land Management of the Santa Lucia Conservancy

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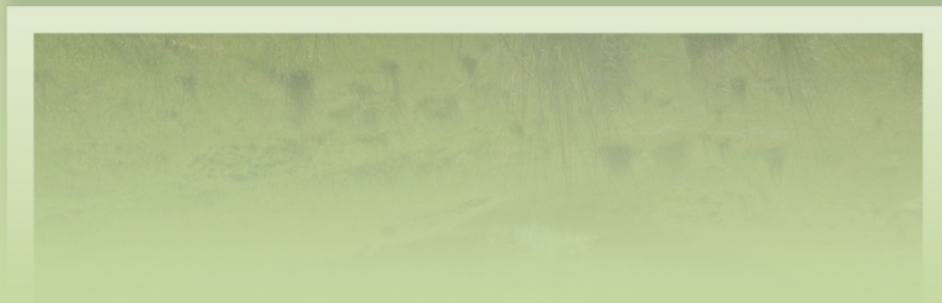


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Executive Summary:

This experiential internship involved learning what it takes to manage 18,000 acres of preserved wildlands. There were many projects involved such as native plant and frog surveying, invasive weed mowing, conservation grazing, restoration planting, and avian nest box analyzing. Through this land management internship, I learned many skills necessary to reach my goal of becoming a part of the USDA Forest Services Agency or Natural Resources Conservation Service Agency.

Project Objectives:

My internship project involved working on a wide range of land management projects with the Santa Lucia Conservancy of Carmel, CA. This project assisted me in developing scientific and communication skills that aid in reaching my future career

goal working of USDA Agency of Forest Services or Natural Resources Conservation. The main goal of this project was to conserve the ecological systems of the Santa Lucia Preserve and keep it's land in its most natural state. As a steward of 18,000 acres of pristine wildlands, I was involved in many research projects and tasks. Numerous team projects included: rare plant surveying, red-legged frog surveying, bay tree removing, rare insect collecting, conservation grazing, native seed collecting, and restoration planting. I also was responsible for many tasks independently such as: GPS mapping, invasive weed mowing, GIS map making, wildlife camera monitoring, nest box removing, tree removing, and photographing specific areas.

A major project I was involved in during this internship was conservation grazing. To help preserve endemic organisms, such as Pacific Grove Clover and California tiger salamander, cattle and sheep were brought in to graze grasslands. This project involved many different tasks such as: building pastures and grazing exclosures, bringing in large water troughs, checking on fencing electricity, and mapping grazing pastures. A study was incorporated in this project, on how large of an impact grazing is with helping native plants flourish. Exclosure transects were built in each grazing pasture to compare untouched plant life and livestock impacted plant life. Tasks involved in this study included: building exclosures, floristic surveying, and entering floral data on transects.

An independent project performed during this internship involved studying unmaintained avian nest boxes. The study analyzed nest boxes that had been unmaintained for at least five years and compared them to nest boxes that had been maintained on an annual basis. This goal of this study was to estimate whether unmaintained avian nest boxes are usable for birds each year. If not, how many years does it take before they become "unusable" to nesting birds.

Project Approach:

In order to achieve land management tasks, multiple steps were taken. Surveying plants involved going out in the field with an expert and recording specific species in one area or different species in a particular transect. Collecting data on California red-legged frog abundance involved catching, documenting, and releasing frogs in various ponds at nighttime and netting for tadpoles during the daytime.

To keep oak trees from risk of getting Sudden Oak Death Disease from leaves of Bay trees, sections known to have the disease were removed of Bay trees. This was done by drilling holes in Bay trees and injecting herbicide.

Rare milkweed insects, such as milkweed beetles and tarantula hawk wasp, were collected and pinned. This task of pinning the bugs to an insect board involved learning skills that it takes to keep a scientific insect collection.

A multiple day project of GPS mapping involved using a GPS Kindle to map grasslands that had been mowed of shrubs. This involved walking around the perimeter of mowed areas to log areas of mowed grasslands. After logging areas in the GPS, it was then taken back and transferred to ArcGIS mapping software to create maps of mowed areas.

Invasive weed mowing was also a multiple day process. During flowering season, Conium (Poison Hemlock) was mowed with a tractor in many specific grassland areas. After many areas were tractor mowed, loppers were then taken to the sprouts that were missed by the tractor.

After reviewing how to use wildlife cameras, sites were strategically selected in order to monitor wildlife on the preserve; this was done by wrapping cameras around bushes, trees, and poles to take pictures while away from sites.

I was able to contribute to the grazing program by helping achieve numerous tasks to attain effective grazing environments. In order to build several grazing pastures, temporary fencing was put up at each pasture using pickets, wrapping wire around them, and connecting electric charges to the wires. In order to achieve optimal studying environments to research the effects of grazing on native grassland species, exclosures were built inside each grazing field using temporary fencing, (pickets and wire). There were 12 quadrats laid out in each exclosure to

survey plant species within. The found species were recorded for each grazing enclosure and entered into excel sheets.

In order to study avian nest boxes, they were removed from trees and posts with an electric drill and then opened. Contents inside were recorded along with the residing habitat.

Project Outcomes:

Since many of the ecological projects involved in this internship were long-term based, the results of them are still in process. Mowing the invasive weed Conium is an ongoing project to eradicate it in grasslands on the preserve. The 40 plus hours of mowing and clipping put into this project were devoted to eradicating the presence of it specific grassland areas and decreasing it's seed growth success rate for next years growing season. Something that can be concluded as of now is that many grasslands were removed of all mature conium plants.

Things such as surveying plant species and frog species are also ongoing projects that compare different seasons in which certain species are present or not present. From the data taken so far, it was observed that Course frogs are thriving in many ponds on the preserve as well as Bullfrogs. Rare plants such as Gairdners Yampah and Pacific Grove Clover were also observed to be blooming during spring and fall seasons.

Exterminating bay trees was to help Oak Trees from catching a disease in years to come.

For the ongoing grazing project, impacts on native plant abundance will be counted during the upcoming spring season. During this project it was discovered that different cattle herds have a liking toward different types of plants as well as sheep also eat different plant species than cattle. This shows that different animals can have distinctive grazing impacts on grasslands.

Unveiling contents of approximately 36 unmaintained avian nest boxes showed that after a certain amount of years unmaintained, nest boxes were unusable to birds. There were many boxes with two to three bird nests stacked on

top of each other. This indicated that every year, blue birds build a new nest over the previous one. The maximum number of nests stacked was four nests. Out of the 36 nest boxes studied, 14 were found to be unusable, before looking at the contents inside. Many of the unusable nest boxes were built with velcro to hold the lid on and were reported unusable because the lid had fallen off or been broken. All nest boxes with in grasslands that could be analyzed for its content were found to have signs of the last resident being a bird. 8 out of 11 woodland nest boxes were found to have rodents being the last resident in them. If I were to suggest a new project on avian nest boxing, I would suggest having nest boxes built with screwed on lids, be placed in grassland habitats, and be managed on an annual basis.

Conclusions:

This experiential learning internship helped me attain many skills necessary to reach my career goal of being a part of the USDA Agency of Forest Services or Natural Resource Conservation. Through working on a variety of projects such as: conservation grazing, restoration planting, tree removing, plant and frog abundance counting, GPS and GIS map managing, I was able to develop these skills necessary to be a scientist, land steward, and conservationist. Many of these projects worked on I plan to revisit and find out detailed results.