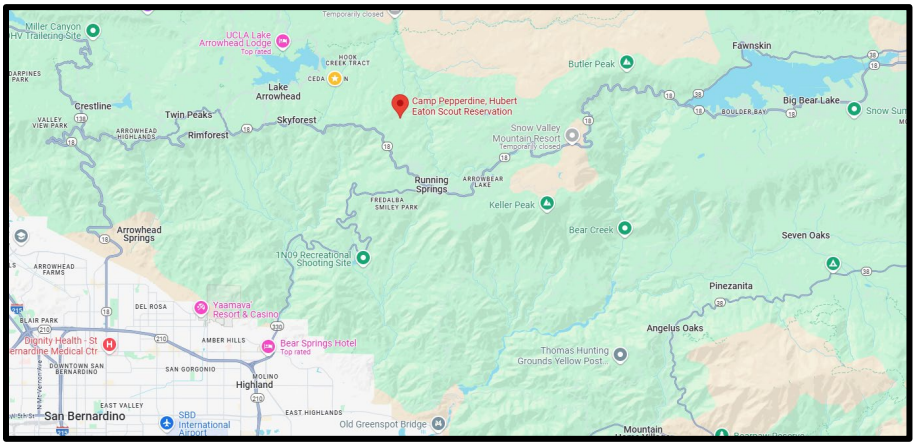
2024 SAN BERNARDINO FORESTRY CHALLENGE
FOCUS TOPIC QUESTION

Introduction:

The focus topic is ***Mixed Conifer-Oak Woodland Forest Restoration at Hubert Eaton Scout Reservation***. Students will collect data at the Big Horn Camp area to determine species composition and recommend areas of the property to replicate this forest community.

Location:

Hubert Eaton Scout Reservation (HESR) is a 1,824 acre property in San Bernardino County, about 3 miles southeast of Lake Arrowhead in the San Bernardino Mountains. Elevations range between 5,200 feet at the north end of the property to 6,400 feet at the south end.



Background Information:

Property History

Brookings Logging Company extensively logged what is now HESR and surrounding areas in the 1800's to early 1900's. Trees were harvested, often with few trees left behind, and without regard to protecting the environment, since the laws regulating timber harvest in place today were not in place back then. As harvesting declined in this area and the Los Angeles metropolitan area grew, the mountain setting with its cool temperatures became popular as an easily accessible retreat from the city. The focus changed from timber production to recreation. The majority (1,420 acres) of the property was donated to the Los Angeles Boy Scouts by the Los Angeles Turf Club, in 1946, while the other 580 acres were

purchased from Utah International, Inc., in 1983.
The most significant factors influencing the current condition of HESR are two high intensity fires occurring in the early 2000's. Most of the property was burned by the Old Fire in 2003 and the Slide Fire in 2007. Prior to these fires, a large area on the western portion of the property burned in 1922. Other major fires occurred in 1930, 1956, and 1991. According to U.S. Forest Service fire occurrence maps, several lightning fires have also occurred throughout the property's history. For this reason, any attempt to restore the forest must keep in mind the frequent occurrence of wildfire, as past attempts to restore the forest were followed by repeated fires. Replanting efforts have also had limited success due to drought conditions.

Vegetation Types at HESR

The existing forest structure is even-aged due to the stand-replacing fires that the camp has experienced in the past. The overall vegetative structure on the property consists of four vegetation types; a mixed conifer-oak woodland forest, oak woodland, riparian community, and chaparral. These vegetative structures cover the majority of the property.

The Mixed Conifer-Oak Woodland Forest Community is comprised of the following species: White fir, sugar pine, ponderosa pine, Jeffrey pine, Coulter pine, incense cedar, California black oak, and canyon live oak. Giant sequoia is not native to the area but was planted after the fires in the early 2000's. Intermixed with the conifers on the property is a brush component.

Forest Management Objectives

The Boy Scouts have three primary management objectives:

- Forest Health - Return the forest to conditions prior to the stand-altering fires and bark beetle impacts.
- Fire Protection - Reduce the fuel load throughout the forested areas so that when a fire does occur it is a lower intensity fire that can be controlled and perhaps be beneficial to overall forest health, as opposed to an uncontrollable, stand-replacing fire.
- Mitigation of Shrub Species - The growth of various shrub species such as ceanothus and manzanita in the aftermath of the recent fires is a concern. Because these species often dominate sites previously occupied by forest, there could potentially be a shift in vegetative type away from the mixed conifer plant community.

Forest Restoration

The California Department of Forestry and Fire Protection (Cal Fire) and the Natural Resources Conservation Service (NRCS) have conducted and/or funded numerous fuel reduction management projects on the property since the 2003 and 2007 wildfires, as a first step to restoring the mixed conifer plant community. These projects include the removal of dead and dying trees, mastication of brush and other ladder fuels, and use of herbicide on brush species. Some of these treatments were followed by planting of mixed conifer seedlings at a rate of 300-435 trees per acre.

The Boy Scouts primarily intend to use the property for recreational purposes, but also as a sustainable natural resource, promoting overall forest health as well as water and air quality. The Boy Scouts vision is to restore the forest to its original state before the catastrophic fires. The work must be ongoing, with frequent monitoring of treated areas and planning of more treatments to continue to work toward a restored forest.

Factors to Consider in Forest Restoration

Forest restoration funding and labor are limited due to the frequent and large megafires that have occurred in California over the past decade, so forest restoration efforts must be logically planned with targeted areas treated that have the best chance of success. Here are some factors to consider when deciding where and how to restore the mixed conifer plant community:

- Soil – Soils are a primary factor in the type of vegetation that exists in an area. There are three soil classifications or mapping units identified and mapped in the soil survey of the property. A table is provided in the Forest Management Plan that lists attributes of each type. Deep soils with a relatively high water-holding capacity will have the ability to provide adequate water to conifer trees.
- Topography - Topography, specifically slope and aspect, influence survival of restored areas. Slope influences vegetation composition and distribution by influencing wind speed, soil water and nutrient content, solar radiation intensity, seed dispersal distance, and more indirectly by influencing fire severity and frequency. Aspect (the direction the slope is facing) influences solar radiation, precipitation, and wind, which in turn impacts vegetation composition, structure, and growth.
- Planting composition and spacing – Using data from existing mature stands can guide decisions about the species to plant, their proportions, and tree spacing.

Field Trip: On Thursday afternoon, your team will be assigned a 1/10 acre plot for data collection, and you will determine:

- The number of trees in the plot with a diameter at breast height (DBH) of 4" or greater, species type, and an assessment of canopy overlap
- A tree count by genus of smaller diameter trees ranging from 2" to 3.9" DBH
- Percentage canopy cover using a densitometer on three equally separate transects
- Basal area using an angle gauge, which will be compared to the sum of the basal area of each tree calculated based on DBH
- A breakdown of basal area into two categories, hardwood and softwood

Items to be Addressed in Your Presentation:

1. The location, size, and history of the Hubert Eaton Scout Reservation
2. An overview of data collection techniques and a summary of the data collected
3. A determination of where to focus forest restoration efforts based on soils and topography, the appropriate species composition and planting density, and brush control
4. Recommended monitoring and follow up actions

Resources:

You will be given resources on a flash drive to load onto your team's computer, including the data set you generated. Additionally, you can use photos you take on Thursday and statements from the foresters you worked with and interview during Ask a Forester.

Final Product:

Your goal is to produce a 15-minute PowerPoint presentation that describes, in detail, the current forest conditions at HESR, your plan for where to focus forest restoration, and how to monitor it. You are encouraged to use photos and information collected on the fieldtrip, interviews with resource professionals during the Challenge, and the maps, tables, and information in the resources provided. Additionally, use the presentation score sheet as a checklist to make sure you cover the items on which you will be scored.