California: Native Plant Diversity Haven - A Short Report

Prepared by Anya Meave - July 2021

Introduction

From the oceans, mountains, and deserts, California is a collection of ecosystems with a vast array of species diversity due to temperate climates found throughout the region. Considered to be a state rich in plant diversity, California has 6,500 plant species that are native to the state (California Department of Fish and Wildlife, n.d.) making it a haven for flora diversity. However, due to ongoing human activity, about 30% of plant taxa that exist in the region are labeled as threatened, rare, and endangered (California Department of Fish and Wildlife, n.d.) which could eventually strip the state's prized title as a biodiversity hotspot in the United States if the trend continues.

To further understand the basis of California as a diversity hotspot, this report will briefly discuss the state's rich plant diversity and highlight different regions within the state that contain an array of plant species. In addition, threats to the existence of hotspots and viable solutions are also examined for a concise understanding of experiences plant taxa face in the state.

Plant Hotspots

Along with thirty-three locations around the globe, California was identified as a biodiversity hotspot in 1996 with much of the state's landscape falling within the California Floristic Hotspot due to the high number of diverse flora (California Academy of Science 2005, 2). Of the various plant associations (plant species groups) within the United States, more than 2,000 plant associations may be found in California which is about half of all plant association in the

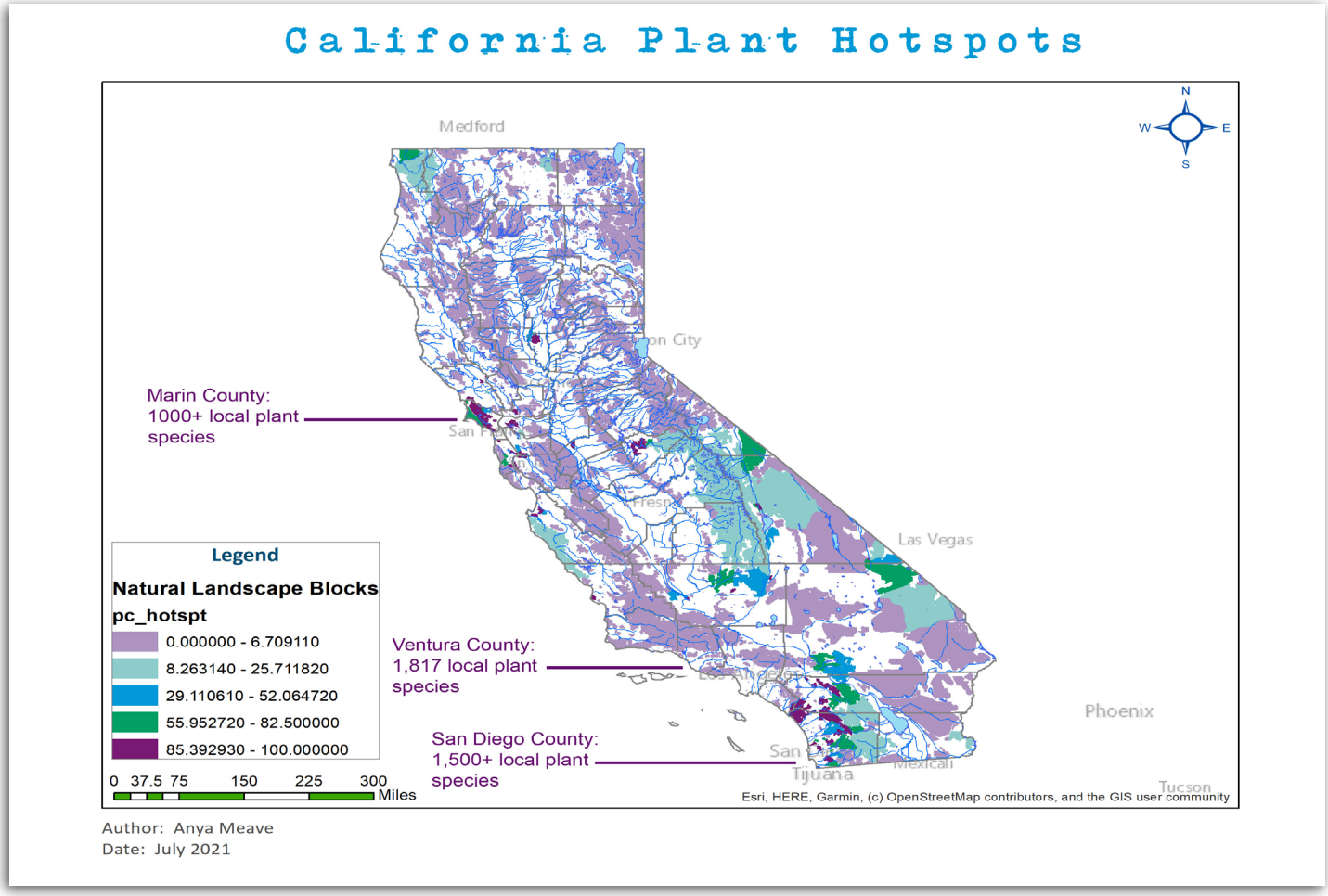

Figure 1. California plant hotspots map. Dark purple sections on the map indicate areas with the highest number of plant diversity in the state. Author: Anya Meave.

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nation (Brown and Magney 2011). As noted on the California Fauna Map (Figure 1), species hotspots in forested regions in the Sierra Nevada range are considered to be up to 52% diverse. In comparison, areas located closer to the coast such as Marin, Ventura, and San Diego are considered to be up to 100% diverse. The increase in percentage appears to be attributed to changes in temperature. As temperatures go up, so do the number of plant species. However, climate change may very well alter the correlation between warmer climates and high biodiversity rates since rising temperatures can negatively impact ecosystems not meant to withstand heat.

Regions - A Closer Look

Marin County

In Marin County, a costal range situated near San Francisco, there are more than 1,000 native plant species that inhabit the area (UC Marin Master Gardeners). Marin's geographic landscape includes mountains, chaparral, beaches, and marshland permitting for a diverse range of plant species to reside in numerous ecosystems throughout the county. Native plant species found in Marin include the coast live oak, sticky monkeyflower, sage, currant, and wester sword fern (UC Marin Master Gardeners).

Ventura County

Ventura County, located south of Marin and north of Los Angeles, sits in California's transverse ranges. Woodlands, beaches, islands, chaparral, and wetlands produce various ecosystems for the estimated 1,817 plant species to inhabit to which eleven plant types are particular to the region (Brown and Magney 2011). Several trees and plants are local to Ventura such as the honey mesquite, coast dudleya, red sand verbena, sweet bush, and coastal cholla (Calscape, n.d.).

San Diego County

Much like Marin and Ventura, San Diego County is also considered to be a biodiverse hotspot with more than 1,500 plant species in the region. With mountain, deserts, beaches and marshlands, plants are present within the range of ecosystems that exist in this peninsular region of the state. However, threats to local species still exist as 140 species are facing extinction. Of the 1,500 plant types in San Diego, 368 plants are categorized as rare and unique to county (Saving Species 2018). Plants and trees native to San Diego include sea dahlia, Torrey pine, sticky gold-back fern, wild cucumber, and showy penstemon.

Purple Sage. Image: Anya Meave.

Showy Penstemon. Image Credit: Anya Meave

Threats

Like all life on the planet, many dangers remain that may reduce the presence of each plant within the state including a changing climate. However, the greatest threat to the existence of each plant is that of human presence.

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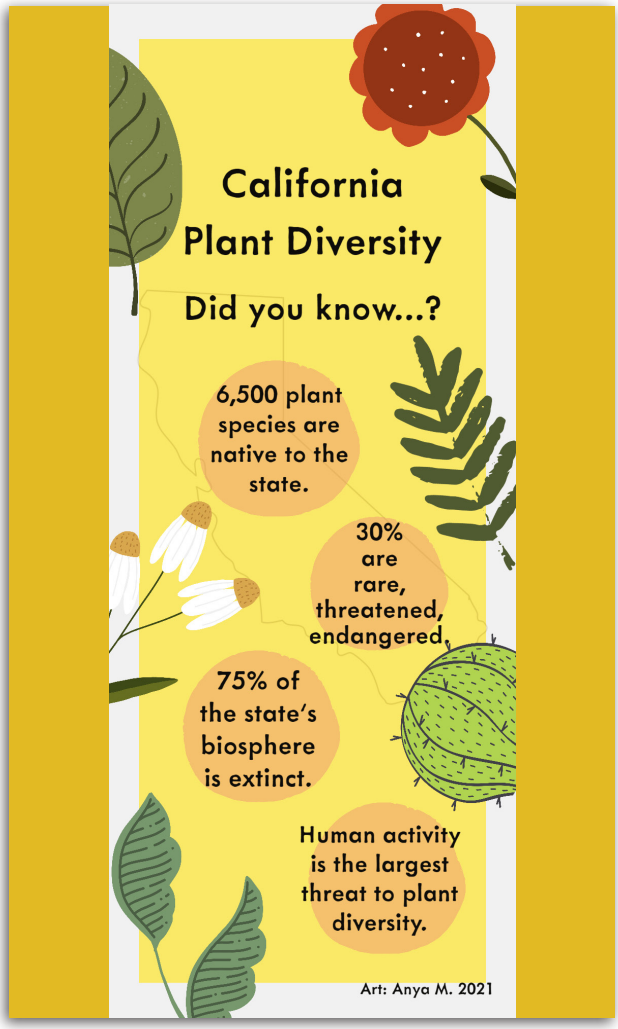
Consistent logging, land development, pollution of natural systems, and agricultural practices (Wilson et al. 2014) continue to occur as the state grows. Pesticide use and chemical pollution used to prevent native plants from growing also limit the lifespan of local flora.



Possible Solutions

Since 75% of California's biosphere is extinct (California Academy of Science 2005, 2), there are many steps the state can continue to take to preserve sensitive ecosystems. In addition to laws that protect waterways and encourage clean air standards, expanding protected areas where sensitive ecosystems are present (Wilson et al. 2014) is crucial.

Plant restoration in local landscapes can also help increase local plant species populations in each region (Dorner 2002, 5). Assigning tribal groups to manage natural landscapes is also a viable solution since native communities have more familiarity with natural systems that occur in the region and hold important knowledge on how wild spaces should be maintained (Flores and Russell 2020). Additionally, encouraging local governments, developers, and residents to plant native species may also be a viable solution to prevent California's endemic plant population from becoming extinct.

Conclusion

With the vast array of ecosystems present throughout California, it is no wonder the state is considered a hotspot and ideal home for flora diversity. The regions listed in this short report are a sample of the hotspots that exist throughout distinct range types in the state where substantial amounts of diverse plants are present. Although temperate climates in these areas make it suitable for various species to exist, they also make it an ideal place for humans to inhabit which may increase each plant's extinction rate.

Rising human activity such as logging, land development, natural resource pollution, and agricultural practices are just a few of the dangers native plants encounter due to habitat loss to accommodate human presence. Issues presented by climate change such as surging temperatures and increased fires in the state also negatively affect plant habitats, reducing their numbers across all range types.

Viable solutions do exist, however. Expanding sound laws that protect natural landscapes where biodiversity hotspots are present may ensure that taxa continue to thrive. Plant restoration may also serve to benefit California landscapes where plant hotspots are present while working with tribal members with primary knowledge about the state's geographic features is also important to preserving plant habitats. Lastly, working with city governments, developers, and community residents to incorporate local plants

into landscape designs may also prove beneficial across the state.

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