

**Acorns as a Driver of Food System Resilience in Native
American Communities in Sonoma County, CA**

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Introduction

Food is an essential component of daily life. Because of this it is important that the food that we consume is healthy, accessible, and culturally appropriate. For Native Americans in Sonoma County acorns were the staple food source that provided reliable nutrition to tribes for generations.¹ Due to colonization, displacement, and many forms of oppression at the policy level, the ability of the tribes to cultivate oak trees and subsequently harvest acorns has been severely diminished.² High levels of food insecurity and food related illnesses due to factors such as high rates of poverty and lack of access to healthy food are critical issues that Native communities are forced to contend with.³ This paper aims to examine how reimplementation of acorns as a staple food source can contribute to food system resilience in Indigenous communities in Northern California.

This paper will explore topics such as food system resilience, Native American food sovereignty, food insecurity, wildtending, the role of acorns in these communities, both historic and present. This paper will also report on the findings of interviews with experts in forestry, food system resilience, and wildtending. Ultimately, I hope to be able to provide useful and equitable policy recommendations that promote food system resilience in Indigenous communities in Northern California.

¹ Smith, Kathleen Rose. 2008. *Enough For All: Foods of My Dry Creek Pomo and Bodega Miwuk People*. 1st Edition. Berkeley, CA.

² Whyte, Kyle Powys. 2015. *Indigenous Food Systems, Environmental Justice, and Settler-Industrial States In Global Food, Global Justice: Essays on Eating under Globalization*. Cambridge Scholars Publishing.

³ Warne, Donald. Scott, Siobhan. 2019 "Social Determinants of American Indian Nutritional Health". American Society for Nutrition.

Background

Sonoma County Context

Sonoma County is a relatively small, 1,768 square mile county 82 miles north of San Francisco.⁴ Sonoma County is geographically unique in that it boasts forests, valleys, mountaintops, riverbeds, and ocean cliffs creating many microclimates that support a biodiverse ecosystem.⁵ Sonoma County alone supports the growth of 10 different species of oak trees including Black Oak, Blue Oak, Tanoaks, and Coastal Live Oaks which grow in and amongst each other, leading to most of the oak stands in the area being classified as “mixed stands”.⁶ Sonoma County is one of the most developed counties in the region, 20% of oak woodlands have already been developed and 10% more are at risk.⁷ Sonoma County Regional Parks, the Bureau of Land Management, and the U.S. Forest Service are the official organizations currently responsible for managing, maintaining, and protecting most of the oak stands found on public land in Sonoma County.⁸ There are also many oak stands found on private land owned by the wine, cattle, and timber industries.⁹

⁴ Google Maps.

Sonoma County City Data. Sonoma County, California (CA). https://www.city-data.com/county/Sonoma_County-CA.html Accessed December 5th, 2021

⁵ Sonoma County Vintners. Geography & Climate. <https://sonomawine.com/climate-geography/>. Accessed December 5th, 2021

⁶ Melanie Parker. The Wild Diversity of Sonoma County’s Oaks. Sonoma County Regional Parks. August 2016. <https://parks.sonomacounty.ca.gov/Learn/Blog/Articles/The-Wild-Diversity-of-Sonoma-County-Oaks/> Accessed December 5th, 2021

⁷ Firman, Jeffrey, and Tom Gaman. Rep. *Oaks 2040 The Status and Future of Oaks in California*. California Oaks Foundation, n.d.

⁸ Melanie Parker. The Wild Diversity of Sonoma County’s Oaks. Sonoma County Regional Parks. August 2016.

<https://parks.sonomacounty.ca.gov/Learn/Blog/Articles/The-Wild-Diversity-of-Sonoma-County-Oaks/> Accessed December 5th, 2021

⁹ Rep. *Ma P’hidin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

Table 1: Acres of Oaks by Type in Sonoma County

| | Black Oak | Blue Oak | Canyon Live Oak | Coast Live Oak | Mixed Oak | Oregon White Oak | Tan Oak | Valley Oak | Interior Live Oak |
|---------------------------------|-----------|----------|-----------------|----------------|-----------|------------------|---------|------------|-------------------|
| Acres of Cover in Sonoma County | 3,212 | 524 | 7,354 | 21,601 | 176,852 | 41,124 | 30,402 | 524 | 1,484 |

(Source: Firman, 2006)

What is now recognized as Sonoma County, California, is home to many tribes who have deep connections to the local oaks and acorns.¹⁰ Sonoma County is made up of 494,336 residents.¹¹ According to the U.S. Census for 2019, the vast majority of Sonoma County residents are white, comprising 86.8% of the population. The Native American demographic makes up 2.2% of the population, about 13,300 people representing the Pomo, Miwok, Wappo and Kashaya tribes.¹² There are five federally recognized tribes in Sonoma County: Cloverdale Rancheria of Pomo Indians, Dry Creek Rancheria of Pomo Indians, Federated Tribes of Graton Rancheria, Lytton Rancheria of Pomo Indians and Stewarts Point Rancheria. The official members of these tribes' number about 3,300, comprising about a quarter of the total Native American population in Sonoma County.¹³ Although the Pomo communities are separate

¹⁰ "Past and Present Acorn use in Native California" Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

¹¹ U.S Census Bureau. www.census.gov/quickfacts/sonomacountycalifornia. Generated by Lily Hue

¹² U.S Census Bureau. www.census.gov/quickfacts/sonomacountycalifornia. Generated by Lily Hue

Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

¹³ Rep. *Cuh:Uyaw: Increasing Tribal Family Access to Healthy and Traditional Food Resources Food Sovereignty and Security Assessment Findings*. Santa Rosa, CA, n.d.

sovereign nations, today they are related inter-tribally through marriage, social connections, language and cultural traditions.

Sonoma County is a relatively affluent county with a median income of \$81,018 which is significantly higher than the national.¹⁴ That being said, in 2018 about 1/3 of the total county population could not afford to purchase enough food for their families.¹⁵ In a recent survey of Sonoma County Native people, conducted by the California Indian Museum and Cultural Center (CIMCC), that 32% of respondents did not have access to enough food.¹⁶ The respondents who answered “no” were then asked what the reasons for their food shortage were. The answers to this subsequent question were “46% could not afford enough food, 6% did not have access to the foods they wanted, 6% did not have enough time to buy food, and 42% answered other”.¹⁷ The fact that almost a third of the people surveyed indicated some level of food insecurity shows that it is, in fact, a significant issue among the Native community in Sonoma County.

Wildtending

The process used by tribes to cultivate oaks is known as wild-tending.¹⁸ It centers around the idea that in order to be in right relationship with the land one must be giving as much as taking. In short, the heart of this relationship is an attitude of reciprocity. Christina Fowler put it succinctly saying, “an attitude of benign neglect is not enough”, we must have a positive impact on the ecosystem to be successful players in it¹⁹. In practice, this looks like refraining from

¹⁴ U.S Census Bureau. www.census.gov/quickfacts/sonomacountycalifornia. Generated by Lily Hue

¹⁵ County of Sonoma. Annual Sonoma County Hunger Index Reports that 1/3 of Residents Went Hungry in 2018. Sonoma County, CA. 2020. <https://libguides.wvu.edu/c.php?g=418946&p=2855160> Accessed December 5th, 2021

¹⁶ Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

¹⁷ Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

¹⁸ Sonnenblume, Kollibri Terre. *The Failures of Farming and the Necessity of Wildtending*. Portland, Oregon. Macska Moksha Press. 2018.

¹⁹ Fowler, Christina S. “We Live By Them: Native Knowledge of Biodiversity in the Great Basin of Western North America”. *Biodiversity & Native America*. Norman, Oklahoma. University of Oklahoma Press. 2000.

harvesting from certain areas during times of shortage, controlled burns, and making sure that the plants are harvested when they are abundantly available in a way that replenishes rather than depletes them.²⁰ This process is sometimes called the “Honorable Harvest”.²¹ Robin Wall Kimmerer writes the honorable harvest is “to take only what is given, to use it well, to be grateful for the gift, and to reciprocate the gift”²²

Controlled and cultural burns are some of the most important parts of Oak wild tending. This is the practice of strategically lighting fires around the oaks to clear competing plants, in order to promote the overall health of the oaks.²³ Typically, these burns take place in the Fall and Winter months to ensure optimal temperature and moisture levels.²⁴ Jonathan Long writes, “frequent fires create openings that give shade-intolerant black oak the space and resources needed to thrive within conifer-dominated forests”.²⁵ This burning was so important that it essentially had the same effect as a weather pattern and was responsible for shaping a large part of the ecosystem ecology.²⁶ These practices helped to maintain a healthy ecosystem and increased productivity and prosperity of the Oaks themselves.²⁷ Without the fires, the Oaks begin to disappear.

Wildtending necessitates an intimate knowledge of the plants and their specific requirements and needs. This requires a willingness to work in the cycles and rhythms of the plants and animals rather than manipulating the natural world to fit the needs of the tender. The

²⁰ Sonnenblume, Kollibri Terre. *The Failures of Farming and the Necessity of Wildtending*. Portland, Oregon. Macska Moksha Press. 2018.

²¹ Kimmerer, Robin Wall. 2015. *Braiding Sweetgrass*. Minneapolis, MN: Milkweed Editions.

²² Kimmerer, Robin Wall. 2015. *Braiding Sweetgrass*. Minneapolis, MN: Milkweed Editions.

²³ Long, Jonathan W. et al. “Restoring California Black Oak to Support Tribal Values and Wildlife” en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

²⁴ Long, Jonathan W. et al. “Restoring California Black Oak to Support Tribal Values and Wildlife” en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

²⁵ Long, Jonathan W. et al. “Restoring California Black Oak to Support Tribal Values and Wildlife” en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

²⁶ Martin, Glen. “Keepers of the Oaks” *Discover*. July 31, 1996

²⁷ Long, Jonathan W. et al. “Restoring California Black Oak to Support Tribal Values and Wildlife” en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

task of shifting a system that manipulates and abuses the land to fit our demands is daunting, but as we continue to recognize that we cannot go on with the system as it is, lessons from this type of mutualistic relationship can provide guidance as to where we should go next.

Acorns

Historically, acorns were eaten by 75% of California Indians and comprised and estimated 50% of the diet.²⁸ In Sonoma County today, because of factors such as colonization and systematic displacement, acorns are no longer able to be cultivated as a staple food source and are mostly only consumed on special occasions.²⁹ In the survey conducted by the CIMCC, when asked about the importance of traditional foods 50% of respondents identified acorns as “very important” and 18.92% identified them as “important”.³⁰ Acorns were ranked the most important traditional food in this survey.³¹ The gap between desire and availability is highlighted by the difference in importance ranking and availability ranking. When asked if traditional foods were available in the community only 15% of respondents put highly agree and 25% put agree.³² These results show that acorns are still very important but because of existing barriers, they are not incorporated into the daily diet at the desired level.

Acorns themselves are a deeply nutritious and durable food. The USDA writes, “it had all of the characteristics of a diet staple: it was abundant, widespread, carbohydrate-rich, and

²⁸ Rep. Cuh:Uyaw: *Increasing Tribal Family Access to Healthy and Traditional Food Resources Food Sovereignty and Security Assessment Findings*. Santa Rosa, CA, n.d.

²⁹ Rep. Ma P^hidin: *Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

³⁰ Rep. Ma P^hidin: *Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

³¹ Rep. Ma P^hidin: *Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

³² Rep. Ma P^hidin: *Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

trustworthy”.³³ They are also a good source of vitamins and minerals, being particularly high in vitamins A and C.³⁴ Acorns are a high fiber, low carbohydrate food which slows sugar absorption into the bloodstream which protects against diseases such as diabetes.³⁵ They have a good balance of nutritional components including fat, carbohydrates, and protein, making them a reliable staple.³⁶ Acorns are a versatile ingredient and can be ground into flour, acorn mush, or incorporated into soups.³⁷

During the time when Oak trees were an everyday resource, every part of the oak trees was used in a myriad of ways including medicine, basketry, building materials, regalia, and food sustenance in the form of the acorn.³⁸ In return, the trees were tended to and cared for, although they were never domesticated in the way that is typical of agriculture, today.³⁹ In return for sustaining them, as well as being a horticultural tool, Indigenous people would employ controlled and strategic low-level burns to clear space taken up by competing grasses and brush as well as rid the trees of pests such as weevils and worms.⁴⁰ Another example of the symbiotic relationship occurred during harvesting season the people would use a knocking stick to get the acorns out of the trees. The knocking action, while being an effective harvesting mechanism,

³³ “Indigenous Uses, Management, and Restoration of Oaks of the Far Western United States” USDA, NCRS. Technical Note #2. September 2007

³⁴ “Past and Present Acorn use in Native California” Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

³⁵ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

³⁶ “Past and Present Acorn use in Native California” Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

³⁷ “Past and Present Acorn use in Native California” Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

³⁸ “Indigenous Uses, Management, and Restoration of Oaks of the Far Western United States” USDA, NCRS. Technical Note #2. September 2007

³⁹ Martin, Glen. “Keepers of the Oaks” Discover. July 31, 1996

⁴⁰ Martin, Glen. “Keepers of the Oaks” Discover. July 31, 1996

stimulated new growth as well as dislodged dead or sickly bits of bark and branch, promoting the health of the tree while simultaneously providing ample harvest.⁴¹

One challenge is that acorns, once harvested, require a time and labor-intensive process to turn them into edible food.⁴² In their raw state, acorns are high in tannic acid which makes them bitter and unpalatable to humans without going through a substantial leaching process.⁴³ Traditionally, mortar and pestles, and winnowing baskets were used to complete the processing but nowadays newer technologies such as blenders and food processors are utilized to make the process a little less labor intensive. The process has three main steps: first acorns are dried and then either shelled or stored for future use, second the nuts are pounded into flour, and lastly, flushed with hot and cold water to remove the tannic acid.⁴⁴ Although it is a labor-intensive process, the continued use through generations shows that the benefits made it well worth the trouble.

There are several barriers to incorporating acorns into the Native food systems in Sonoma County whose solutions will be explored throughout the course of this project. Some of these issues are policy related and some are rooted in the values of a hegemonic food system that values efficiency and appearance over nutritional value and careful land and resource management. Oak trees and the production of acorns cannot simply be plugged into the current system as a fresh new crop. They require a fully different form of cultivation that has deep ties to spirituality, ritual, and culture. They are slow to bear acorns, often taking 20 and sometimes up to 80 years to produce a harvest.⁴⁵ There are also important considerations with regards to the

⁴¹ Martin, Glen. "Keepers of the Oaks" Discover. July 31, 1996

⁴² "Past and Present Acorn use in Native California" Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

⁴³ "Past and Present Acorn use in Native California" Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

⁴⁴ "Past and Present Acorn use in Native California" Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

⁴⁵ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

scalability of acorn production since, in order to be consistent with the tenants of reciprocity, acorns will only be harvested when it is deemed appropriate.⁴⁶ This would interrupt the entire supply chain system as it is designed now. Furthermore, distributing acorns through a market economy is not very viable since some Native people believe that traditional foods should not be commodified and sold in exchange for money at all.⁴⁷ Although there are significant barriers that Native people face with regards to acorn cultivation, the benefits of this nut culturally, nutritionally, specifically from a resilience perspective are significant and worth attention.

Policy Context

There has been a myriad of policies throughout the history of California that have significantly shaped how California Indians are able to interact with their ancestral lands. Some of these policies affect the relationship in broad strokes such as land access and some affect the finer details such as specific gathering policies. Overall, most of the policies have had detrimental effects on tribes but in recent years there has been an increased willingness to include Native perspectives in decision making, especially as more people recognize the benefits of tribal stewardship.⁴⁸

There have been several policies over the last three centuries that have systematically limited tribal land access and rights. California tribes have very little federally recognized land because between 1851 and 1852 the 18 treaties that were negotiated between tribes and the U.S. Indian Commissioner were never ratified, meaning that the land allotted to the tribes was never

⁴⁶ Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

⁴⁷ Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

⁴⁸ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

officially recognized as theirs.⁴⁹ Furthermore, fishing, hunting, and gathering rights were not recognized in the same way as “treaty tribes”.⁵⁰

Over the years there has been some land acquisition such as the Rancheria system in which the state of California acquired land to create 82 small reservations. This allotment of land was far less than what tribes were initially promised in their treaties. Although this program provided land for previously landless tribes the fragmented nature of these parcels created some further issues. The distance between reservations split up tribal communities and had negative effects on tribes' abilities to tend the land.⁵¹ The lack of substantial land has necessitated a significant reliance on public and privately owned land throughout California.⁵²

There are several other significant policies that further affected tribes access and ability to tend to the land. In 1841, Joseph Bidwell authored Senate Bill 54 that was meant to preserve the Indigenous tribe’s rights to “hunting, fishing, gathering seeds and acorns for the maintenance of themselves and families”.⁵³ Unfortunately, the right to tend oaks and gather acorns never made it into the final bill, leaving them vulnerable to future limiting legislation. In the 1920’s the Federal Forestry Agencies launched an aggressive fire prevention policy that banned controlled burns, severely limiting the ability of the Native people to tend to the Oaks, although some groups continued discreetly until the 1960’s.⁵⁴ Unable to properly tend to the Oaks, the well-being of both the humans and Oaks have suffered. The people lost crucial access to a major

⁴⁹ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵⁰ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵¹ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵² Rep. *Ma P’idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

⁵³ “Past and Present Acorn use in Native California” Anthropology Museum, California State University, Sacramento.

⁵⁴ www.csus.edu/anth/museum September 9th, 2011

⁵⁴ Martin, Glen. “Keepers of the Oaks” Discover. July 31, 1996

food source and the health of the Oaks also suffered greatly with an upsurge in pests, competing plants, and sudden oak death.⁵⁵

In more recent years there has been more that aims to support tribes in tending and gathering as well as include Native voices in decision making. The most significant of these being CA Senate Bill 18 (2004) and CA Senate Bill 52 (2013-2014).⁵⁶ CA SB18, in essence, mandates that cities and counties consult with tribes before amending their general plans and allows recognized tribes in California to hold conservation easements.⁵⁷ CA SB54 which is a guideline update to the California Environmental Quality Act (CEQA) “requires entities developing projects that could disturb culturally and archaeologically significant sites to notify and consult with tribes and to develop appropriate corrective measures to mitigate potential disturbances”.⁵⁸ These bills are important steps towards recognizing the importance of tribal input and collaboration although some view the collaboration as more of a formality than a meaningful opportunity for tribes to make a true impact on development strategy.⁵⁹

There is some local policy work being done in Sonoma County to address general issues of food insecurity in the county. Sonoma County is currently working on a Food Action Plan that incorporates the findings of the Community Food Assessment and Sonoma County Food Forum Report into a comprehensive community vision and goal for the local food system.⁶⁰

⁵⁵ Martin, Glen. “Keepers of the Oaks” Discover. July 31, 1996

⁵⁶ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵⁷ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵⁸ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁵⁹ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁶⁰ Sonoma County Food Systems Alliance. Food Action Plan. <https://sonomacofsa.wordpress.com/food-action-plan/> Accessed December 5th, 2021

Sonoma County Food Systems Alliance. Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/fap_summary.pdf Accessed December 5th, 2021

Among the pillars of the plan, goals 5 and 6 are especially relevant to this research. Goal 5 states a plan to increase access to “increase equitable access to healthy, affordable, safe, culturally appropriate food & beverage choices”.⁶¹ The plan to achieve this goal includes steps to decreasing unhealthy foods and assessing the health outcomes of all future projects that involve food.⁶² The steps of this plan do not discuss specifics about making culturally appropriate foods more equitably accessible. The second relevant goal, goal 6, discusses “connecting the food insecure with food and nutrition assistance programs”.⁶³ This part of the plan lays out steps such as “connecting surplus food with need” and “promoting awareness and enrollment in food assistance programs”.⁶⁴

recently put forth a comprehensive tree ordinance which works to further existing ordinances to further protect the local oak trees which are under more stress than ever, due to factors such as sudden oak death, wildfires, and climate.⁶⁵ The ordinance cites the role of oak trees in contributing to the “resiliency and sustainability of Sonoma County” due to the many ecosystem services they provide.⁶⁶

Existing policy related to Sonoma County oak trees is addressed through the municipal code. The most relevant of these policies include “The Tree Protection Ordinance (1989)”, “The

⁶¹ Sonoma County Food Systems Alliance. Food Action Plan. <https://sonomacofsa.wordpress.com/food-action-plan/> Accessed December 5th, 2021

Sonoma County Food Systems Alliance. Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/fap_summary.pdf Accessed December 5th, 2021

⁶² Sonoma County Food Systems Alliance. Food Action Plan. <https://sonomacofsa.wordpress.com/food-action-plan/> Accessed December 5th, 2021

Sonoma County Food Systems Alliance. Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/fap_summary.pdf Accessed December 5th, 2021

⁶³ Sonoma County Food Systems Alliance. Food Action Plan. <https://sonomacofsa.wordpress.com/food-action-plan/> Accessed December 5th, 2021
Sonoma County Food Systems Alliance. Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/fap_summary.pdf Accessed December 5th, 2021

⁶⁴ Sonoma County Food Systems Alliance. Food Action Plan. <https://sonomacofsa.wordpress.com/food-action-plan/> Accessed December 5th, 2021
Sonoma County Food Systems Alliance. Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/fap_summary.pdf Accessed December 5th, 2021

⁶⁵ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁶⁶ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

Heritage and Landmark Tree Ordinance (1986)”, “Valley Oak Habitat Combining Zone (1996), and the “Oak Woodland CEQA Requirement”.⁶⁷ The Tree Protection Ordinance “requires that applicants for discretionary development permits identify trees proposed for removal and trees proposed for protection”.⁶⁸ This ordinance provides protection to 7 different species of oak trees.⁶⁹ The Heritage and Landmark Tree Ordinance allows for trees meeting special requirements of size, shape, etc. to be nominated for special protection.⁷⁰ The Valley Oak Habitat Combining Zone is designed to protect the valley oak through rules that prohibit developers from cutting down Valley Oak that are above a certain size without a permit.⁷¹ Finally, The CEQA requirements, although not technically a policy, requires avoidance, minimization and mitigation of impacts to oak woodlands in certain cases.⁷² Although none of the policies relate specifically to Native American use of oak woodlands, it is clear that protecting oak trees is part of the discussion in local Sonoma County Policy, which is a start.

There are also some agencies and organizations that have been working with tribes on issues of land access and gathering rights. Organizations such as the Natural Resource Conservation Service (NRCS), Sonoma County Agricultural Preservation and Open Space District (SCAPOS), and the Resource Conservation District (RCDs) provide support in the form grants and funding for collaborative projects and initiatives. There are also organizations, such as the Sonoma County Land Trust that have consistent although informal practices of

⁶⁷ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁶⁸ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁶⁹ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁷⁰ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁷¹ Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

⁷² Doug Bush. Sonoma County Tree Ordinance Update. County of Sonoma. <https://sonomacounty.ca.gov/PRMD/Regulations/Comprehensive-Tree-Ordinance/> Accessed December 5th, 2021

consulting with tribes on projects that may impact Native communities.⁷³ An example of this is Graton Rancheria working in collaboration with Sonoma County Regional Parks to co-plan a park that would focus on exploring indigenous culture and food restoration.⁷⁴ Many of these informal collaborations are beneficial but somewhat tenuous because these relationships are at risk of being lost when staff members leave the agency. A potential solution, which several tribes have expressed interest in, would be making co-management agreements which would create a more formal stable version of the previously mentioned informal relationships.⁷⁵

Gathering and land access policies are also very impactful for tribes in Sonoma County. Some 95% of the respondents in the CIMCC survey reported that they gather on public land which shows just how important functional gathering policy is.⁷⁶ Currently, tribes have the right to gather “non-timber” plants on the Bureau of Land Management (BLM) lands without a permit, but this is not the case with many other agencies.⁷⁷ There have been many complications with creating effective gathering policies because many people mistakenly think that gathering is a onetime occurrence rather than the year-round process that it is.⁷⁸ This misunderstanding has led to the permitting process taking a long time and the permits, once issued, often do not line up with ideal gathering times creating further barriers.⁷⁹ The permitting process, as it stands now, is

⁷³ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁷⁴ Rep. *Ma P'idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

⁷⁵ Rep. *Cuh:Uyaw: Increasing Tribal Family Access to Healthy and Traditional Food Resources Food Sovereignty and Security Assessment Findings*. Santa Rosa, CA, n.d.

⁷⁶ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁷⁷ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁷⁸ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁷⁹ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

a lengthy and complicated process that requires tribal identification and fees for eligibility which creates problems for many applicants.⁸⁰

⁸⁰ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

Methods

In order to understand what role acorns and oak trees can play in building a more resilient food system in Northern California, I used a qualitative research method that gathered data from a series of long form interviews with experts who shared their many different perspectives. These people ran the gamut from Native community members to some of the leading thinkers of the food system resilience movement to forestry service managers. By interviewing people who would look at this issue from very different perspectives, I created a comprehensive, multi-faceted report that ultimately guided me towards making appropriate recommendations.

In the interviews, I wanted to gain insight into how acorns could build resilience, what that process would look like, and what barriers there are or could be foreseen should acorn cultivation be reimplemented as a major food source. The eleven interviews completed took place between December 2021 and January 2022. All the interviews were conducted virtually via either zoom or phone calls. The people interviewed fell into four categories, which included Native people, advocates for Tribal rights, food system experts, and government employees from the forest service and local Sonoma County governmental agencies. It is important to note that Sonoma County is home to many tribes, both officially recognized and not, and that each maintains unique and distinct relationships with oaks. The data collected for this analysis represents only a small portion of the many unique perspectives pertaining to oaks held by different tribes throughout Sonoma County.

Table 2: Interviewees

| <i>(1) Food System Experts</i> | <i>(2) Government Workers</i> | <i>(3) Tribal Advocates</i> | <i>(4) Native Community Members</i> |
|---|--|--|-------------------------------------|
| Author & Professor of Food System Resilience Theory | Director of Sonoma County Regional Parks | Consulting fire ecologist at Fire Forward | Naturalist from Wappo tribe |
| Foraging Expert and Chef | Sonoma County Project Planner | Intertribal Agriculture Council Technical Assistant Specialist | |
| | USDA Tribal Relations Specialist | Founder of the Oak Granary | |
| | Ecologist at U.S Forest Service | Representative from Together Bay Area | |

After the interview process was complete the themes and patterns that emerged were analyzed. In the interviews, my questions centered around the issues within the current food system, resilience, the beneficial properties of acorns, and the potential scalability barriers that may be encountered. There were some limitations to this research, including access to interviewees, and the inherent challenge of representing an incredibly diverse array of perspectives with only a few voices.

Literature Review

In the past few years there has been new research and activism that points to the importance of acorns as sustenance as well as the overall cultural significance of Native people's relationship with the oaks.⁸¹ The benefits of incorporating more acorn consumption into the food system could potentially be seen across many indicators of resilience including increased system robustness, redundancies, flexibility, and resourcefulness. This literature review examines the current research on the topics of food system resilience, acorn cultivation, the intricate relationship between Oak trees and Native communities, and the reasons, such as high levels of food insecurity, that this shift is so crucial.

Food Insecurity and Food Sovereignty in Native Communities in the United States

Native American communities suffer from food insecurity and the subsequent health issues that result from poor nutrition at rates far greater than the national average.⁸² These disparities include factors such as decreased access to nutritious foods, high rates of poverty that further limit purchasing power, since healthy foods are typically more expensive than government subsidized foods, and increased rates of diet related diseases such as obesity, diabetes, and cancer.⁸³ According to the CIMCC, nutrition related chronic disease is an extremely large issue in the Pomo community in Sonoma County.⁸⁴ The sources of these disparities include historical trauma from colonization, displacement from ancestral lands, the poor nutrition quality in government rations, and the barring of access to traditional food cultivation practices and systems. Many Native people are still dependent on government

⁸¹ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

⁸² Warne, Donald. Scott, Siobhan. 2019 "Social Determinants of American Indian Nutritional Health". American Society for Nutrition.

⁸³ Warne, Donald. Scott, Siobhan. 2019 "Social Determinants of American Indian Nutritional Health". American Society for Nutrition.

⁸⁴ Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

subsidized foods which are high in carbohydrates and sugar and have little nutritional value.⁸⁵ In his article, “Indigenous Food Systems, Environmental Justice, and Settler-Industrial States in Global Food, Global Justice: Essays on Eating under Globalization,” Kyle Powys-White discusses the ways in which meta scale forces, which are high impact forces such as climate change and economic drivers, inhibit the ability of Native American communities to self-determine because they exacerbate existing disparities.⁸⁶ Powys-Whyte writes that “the structure of injustices created by the settler-colonial state specifically targets the adaptability and scalability of indigenous food systems,” creating more dependence on subsidized food sources and further perpetuating the cycle of poor nutrition and bad health outcomes.⁸⁷

To combat the drivers that perpetuate food insecurity in Native American communities, scholars and activists have discussed Native American food sovereignty as part of the potential solution.⁸⁸ Although this is still a developing field of research and literature is limited, the core principles of food sovereignty center around developing a food system in which Indigenous people have the power to create and define the standards, practices, and mechanisms of the food that they produce and consume.⁸⁹ Valarie BlueBird Jernigan writes about the ways in which food sovereignty is not only a community’s right but also a “relational responsibility” which upholds traditional relationships and practices with the land.⁹⁰ In some capacity food sovereignty would look like a return to an at least partially subsistence-based diet.⁹¹ Research suggests that Native people who consume diets with more traditional foods are less likely to develop these chronic

⁸⁵ Warne, Donald. Scott, Siobhan. 2019 “Social Determinants of American Indian Nutritional Health”. American Society for Nutrition.

⁸⁶ Whyte, Kyle Powys. 2015. Indigenous Food Systems, Environmental Justice, and Settler-Industrial States In Global Food, Global Justice: Essays on Eating under Globalization. Cambridge Scholars Publishing.

⁸⁷ Whyte, Kyle Powys. 2015. Indigenous Food Systems, Environmental Justice, and Settler-Industrial States In Global Food, Global Justice: Essays on Eating under Globalization. Cambridge Scholars Publishing.

⁸⁸ Warne, Donald. Scott, Siobhan. 2019 “Social Determinants of American Indian Nutritional Health”. American Society for Nutrition.

⁸⁹ Warne, Donald. Scott, Siobhan. 2019 “Social Determinants of American Indian Nutritional Health”. American Society for Nutrition.

⁹⁰ Valarie Blue Bird et al. “Food Sovereignty Indicators for Indigenous Community Capacity Building and Health” Front. Sustain. Food Syst., 25 August 2021.

⁹¹ Rep. *Ma P’idin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

diseases because there are specific nutrients in traditional Native foods that protect against them.⁹²

Jernigan writes that, in practice, this would not necessarily look like growing all food within the community but rather having the ability to decide what is allowed into a community and what is not.⁹³ The process itself of restoring Native food systems is viewed by some as a form of healing. In a report on traditional gathering and harvesting practices members of the CIMCC write about the importance of access to ancestral cultural knowledge saying, “restoration and access to cultural information and food sources is our primary path to wellbeing”.⁹⁴ As a large part of Native American food sovereignty focuses on reviving relationships with traditional foods, acorns fit seamlessly into this framework.

Food System Resilience

Food system resilience is a burgeoning framework that encompasses a set of ideal criteria within a food system. In their piece “Food System Resilience: Defining the Concept”, D.M. Tendall, defines food system resilience as the ability of a food system to contend with shocks and stressors from influences such as geopolitical, economic, and climate change disruptions.⁹⁵ Resilience is a complementary concept to sustainability which Tendall defines as “the capacity to achieve today's goals without compromising the future capacity to achieve them” which is a measure of a system’s performance while

⁹² Rep. *Restoring Tribal Stewardship on the North Coast: Tribal-Vineyard Partnerships in Sonoma, Mendocino, and Lake Counties*. Santa Rosa, CA, n.d.

⁹³ Valarie Blue Bird et al. “Food Sovereignty Indicators for Indigenous Community Capacity Building and Health” *Front. Sustain. Food Syst.*, 25 August 2021.

⁹⁴ Rep. *Cuh:Uyaw: Increasing Tribal Family Access to Healthy and Traditional Food Resources Food Sovereignty and Security Assessment Findings*. Santa Rosa, CA, n.d.

⁹⁵ Tendall, D. M., et al. (2015). Food system resilience: defining the concept. *Global Food Security*, 1st Edition. ScienceDirect Journal.

resilience thinking is a way to achieve it.⁹⁶ By using sustainability to provide context for resilience thinking we are better able to understand the importance of resilience as a means to achieve sustainability.⁹⁷

The literature shows that incorporating resilience thinking, particularly into food systems that have been historically downtrodden, similar to the Indigenous Food System in Northern California, is specifically important because they tend to have low indicators of resilience and are forced to contend with increased disturbances and stressors.⁹⁸ Tendall defines the key indicators of resilience as, “(1) robustness (the system’s ability to withstand disturbances before food security is lost); (2) redundancy (the degree to which the system’s elements are replaceable); (3) flexibility and rapidity (food system reactivity) in which any lost food security is recovered; (4) resourcefulness and adaptability (determines just how much of the lost food security is recovered)”.⁹⁹

Acorns have many characteristics that prove them to be a resilient food source. They are durable, meaning that they can be stored during the winter and times of shortage, creating a buffer that lessens the effect of stressors and a useful redundancy if other sources of food are not available.¹⁰⁰ The acorn, at its peak, was able to support dense populations, and one researcher even suggested that acorns could support populations 50-60 times denser than ones that have been historically recorded.¹⁰¹ Even during peak consumption, and accounting for competition from deer, bears, rodents, and birds, there were still enough resources to exceed subsistence

⁹⁶ Tendall, D. M., et al. (2015). Food system resilience: defining the concept. *Global Food Security*, 1st Edition. ScienceDirect Journal.

⁹⁷ Tendall, D. M., et al. (2015). Food system resilience: defining the concept. *Global Food Security*, 1st Edition. ScienceDirect Journal.

⁹⁸ Tendall, D. M., et al. (2015). Food system resilience: defining the concept. *Global Food Security*, 1st Edition. ScienceDirect Journal.

⁹⁹ Tendall, D. M., et al. (2015). Food system resilience: defining the concept. *Global Food Security*, 1st Edition. ScienceDirect Journal.

¹⁰⁰ Long, Jonathan W. et al. “Restoring California Black Oak to Support Tribal Values and Wildlife” en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

¹⁰¹ “Past and Present Acorn use in Native California” Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

levels of production.¹⁰² This shows that acorns are also a robust source of nutrition, therefore displaying another one of Tendall's characteristics of a resilient food system.

Additionally, reclaiming the oak stands that have not been tended to in the past several decades would promote resilience in the forests by mitigating the effects of drought, fire, and disease by decreasing the likelihood of losing mature trees.¹⁰³ In keeping with the mutualistic relationship between the trees and their caretakers, "restoration of California Black Oak lies at the heart of broader discussions of how to promote socio ecological resilience."¹⁰⁴ In short, acorns contribute many of the key elements necessary to build resilience into a food system.

A more specific line of resilience thinking focuses on how regional food networks and entrepreneurial strategies enhance food system resilience. Similarly, the piece by D.M. Tendall and Patricia Allen's "Realizing Justice in Local Food Systems" discuss the benefits of addressing social justice issues in food systems through a localized approach.¹⁰⁵ Similarly, Sally Duncan's piece "Can Regional Food Networks and Entrepreneurial Strategies Enhance Food System Resilience" shows that using a regional and local lens is important with topics of agriculture since they tend to be so place-specific (i.e., water availability, topography, crop options etc.)¹⁰⁶ This perspective fits particularly well with the topic of acorn cultivation since it is so specific to where oak trees grow endemically. Looking at resilience through a regional and local lens creates

¹⁰² "Past and Present Acorn use in Native California" Anthropology Museum, California State University, Sacramento. www.csus.edu/anth/museum September 9th, 2011

¹⁰³ Long, Jonathan W. et al. "Restoring California Black Oak to Support Tribal Values and Wildlife" en.

¹⁰⁴ Long, Jonathan W. et al. "Restoring California Black Oak to Support Tribal Values and Wildlife" en. Tech. Rep. PSW GTR-252. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 110 p. 2016.

¹⁰⁵ Allen, Patricia. 2010. Realizing justice in local food systems. 1st Edition. Cambridge.

¹⁰⁶ Duncan, Sally et. al. "Can Regional Food Networks and Entrepreneurial Strategies Enhance Food System Resilience?" Agriculture and Applied Economics Association. Vol. 33, 2nd Quarter, pp. 1-10. 2018.

potential for distinctly tailored policy approaches that address the specific needs of a certain region.¹⁰⁷ For regional resilience to succeed, it is important to have an interconnected network of entrepreneurs that, in conjunction, form a web of systems that create multi-functional businesses that can support and build upon each other.¹⁰⁸

Wildtending: A Reciprocal Relationship with the Land

The process of cultivating acorns by tending to oak trees does not resemble the neat and orderly rows of crops that one usually associates with agriculture. On the contrary, oak cultivation is more about caring for the trees in their natural ecosystem.¹⁰⁹ At first glance tended oak stands may look like any other forest but if one is to look closely it is clear that certain trees have been closely tended due to their growth patterns and spacing.¹¹⁰ Martin Glen, in his piece “Keepers of the Oaks”, presents the idea that the California landscape was actually a vast nut orchard flips the whole perspective of what growing and cultivating food means.¹¹¹ One of the main points hit upon by several researchers is that the people who were tending the oaks were able to actively participate in the ecosystem in a symbiotic way without needing to domesticate and bend the land to their will.¹¹² Kimmerer’s “honorably harvest”, in practice, looks like only harvesting when the land is freely giving its gifts. This is determined by the health of the plants, the density of the available harvest, and an intuition and understanding that a tender develops

¹⁰⁷ Duncan, Sally et. al. “Can Regional Food Networks and Entrepreneurial Strategies Enhance Food System Resilience?” Agriculture and Applied Economics Association. Vol. 33, 2nd Quarter, pp. 1-10. 2018.

¹⁰⁸ Duncan, Sally et. al. “Can Regional Food Networks and Entrepreneurial Strategies Enhance Food System Resilience?” Agriculture and Applied Economics Association. Vol. 33, 2nd Quarter, pp. 1-10. 2018.

¹⁰⁹ Martin, Glen. 1996. Keepers of the Oaks. Discover.

¹¹⁰ Rep. *Ma P'hidin: Protecting Our Ground Traditional Gathering & Harvesting Policies: Analysis and Action*. Santa Rosa, CA, n.d.

¹¹¹ Martin, Glen. 1996. Keepers of the Oaks. Discover.

¹¹² Past and Present Acorn use in Native California. Sacramento, CA.

2007. Indigenous Uses, Management, and Restoration of Oaks of the Far Western United States. USDA, NCRS. Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

over a lifetime.¹¹³ Research by Kollibri Sonnenblume shows that this form of horticulture, while ideal in many ways, comes with some challenges of its own. One of the main roadblocks is the vast amount of time and energy required to develop and maintain this relationship.¹¹⁴ Sonnenblume also raises an additional challenge which is that knowledge that has been traditionally passed down through generations is disappearing more with each subsequent generation.¹¹⁵

The relationship with the wild tenders is crucial for the health of the trees. Some of the main tools employed by Native people to tend to Oaks include fire, selective weeding, and shaking of the trees during harvest.¹¹⁶ If left to their own patterns, Oak seedlings will grow in thick stands that make it challenging for them to grow strong and healthy.¹¹⁷ They are also relatively easily outcompeted by grasses and shade-tolerant, fire-susceptible conifers.¹¹⁸ The role of human-made fires and weeding practices creates a growth pattern that allows the little Oaks to grow bigger and healthier thus yielding larger harvests that support the humans who tend to them, further perpetuating the symbiotic relationship between human and tree.¹¹⁹ Another important component of Oak tending is the process of harvesting which includes shaking the acorns down from the tree with a stick. While yielding acorns, the shaking method serves the dual purpose of removing diseased bark as well as pests such as weevils and worms.¹²⁰

¹¹³ Kimmerer, Robin Wall. 2015. Braiding Sweetgrass. Minneapolis, MN: Milkweed Editions.

¹¹⁴ Sonnenblume, Kollibri Terre. 2018 The Failures of Farming and the Necessity of Wildtending. Portland, Oregon.

¹¹⁵ Sonnenblume, Kollibri Terre. 2018 The Failures of Farming and the Necessity of Wildtending. Portland, Oregon.

¹¹⁶ Past and Present Acorn use in Native California. Sacramento, CA. 2007. Indigenous Uses, Management, and Restoration of Oaks of the Far Western United States. USDA, NCRS. Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

¹¹⁷ Martin, Glen. 1996. Keepers of the Oaks. Discover.

¹¹⁸ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

¹¹⁹ Martin, Glen. 1996. Keepers of the Oaks. Discover. Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA.

¹²⁰ Martin, Glen. 1996. Keepers of the Oaks. Discover.

In California today, Oak trees are threatened by habitat degradation, competition, and devastating diseases such as sudden Oak Death.¹²¹ Studies show that Oak population density is decreasing and are projected to continue decreasing if nothing is done to protect them.¹²² Fire suppression laws have banned the practice of controlled burns in much of California, making it illegal to tend to the land in the traditional ways.¹²³ Furthermore, displacement of Native communities from their ancestral land has made it even more difficult to enact the methods of wildtending that had been practiced for generations.¹²⁴ Restoration of Oaks would promote resilience both in the ecosystem and the food system by working to repair a relationship that has been degraded by years of displacement, colonization, and harmful policy.¹²⁵

Gaps in the Literature

There is a plethora of existing literature on food system resilience, disparities in the effects of food insecurity on Native communities, and the importance and cultural significance of acorns in these communities, but there is little to no literature that links them all together. The research on the role that acorns could play in a contemporary food system that still honors the practices of the past and brings them into the present is also lacking. The purpose of this research

¹²¹ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA. Keuppers, Lara. M. et. al. "Modeled regional climate change and California endemic oak ranges" Proceedings of the National Academy of Sciences Nov 2005, 102 (45) 16281-16286; DOI: 10.1073/pnas.0501427102

¹²² Keuppers, Lara. M. et. al. "Modeled regional climate change and California endemic oak ranges" Proceedings of the National Academy of Sciences Nov 2005, 102 (45) 16281-16286; DOI: 10.1073/pnas.0501427102

¹²³ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife. Albany, CA. Martin, Glen. 1996. Keepers of the Oaks. Discover. 011. Past and Present Acorn use in Native California. Sacramento, CA.

¹²⁴ Past and Present Acorn use in Native California. Sacramento, CA.

¹²⁵ Long, Jonathan W. et al. 2016. Restoring California Black Oak to Support Tribal Values and Wildlife.

is to address this gap by examining how acorns and oak trees can contribute to food security in Native communities in Northern California.

Findings

The main finding that came out of this process of data collection was that there is a possibility that acorns could significantly contribute to food system resilience in Native communities in Sonoma County but there are still too many barriers to be able to definitively say as things stand now. Several themes emerged with regards to these barriers that are stifling the ability of Native people to tend to the oaks in the traditional way. The following four themes were the most common across the interviews: Fire is an Essential Component of Tending Oaks, Access to Land and Information is Limited, Oak Tending Exists in an Antithetical Paradigm to Western Farming, and there is a Lack of True Collaboration Between Local Government and Tribes.

Fire is an Essential Component of Tending Oaks

The topic of fire came up in almost every single interview since it is an essential component of tending oaks. Interviewees from each different category all acknowledged a recent shift away from the fire suppression methods historically towards more acceptance of using fire as a tool to manage and maintain the land in Sonoma County. Many individuals cited the devastation of the Northern California wildfires of recent years as being the reason that people are more open to different methods of management. Although almost everyone shared the opinion that the attitudes towards fire are shifting, it was also evident that there is still a long way to go in the process of accepting that, in the right context, fire can be a strong ally in maintaining the health of the land.

Although fire is starting to become a more ubiquitous tool for the Forest Service which shows gradual acceptance of fire there is an important distinction to be made between controlled burning and cultural burning. The U.S. Forest Service and CalFire use controlled burns as a management tool to clear dead brush, keep the growth of shade tolerant conifers under control, and reduce the fuel load if a fire does occur. They perform these burns as a forest management tactic to reduce the severity of wildfires, in accordance with their data and science. Cultural burns, on the other hand, have been employed by tribes for thousands of years to promote diverse habitats and the health of the overall ecosystem through the process of reciprocity with the land. The newfound openness to fire has not necessarily included an acceptance of the cultural burns necessary to tend oaks. One interviewee from the Intertribal Agriculture council highlighted this disparity saying “Calfire offers funds for prescribed burning but not particularly for cultural burning.” The same interviewee further elaborated on the inconsistency saying, “the governments are interested in supporting tribes with their cultural burning but then nationally there is still a conversation of fire suppression and so it doesn’t align.”

Furthermore, there are several policy obstacles in place that make it difficult for Native people to carry out cultural burns. For the most part, Native people cannot conduct cultural burns without a federally recognized burn boss present at the burn sight. Burn boss qualifications, as described by a representative of Fire Forward, are very difficult to obtain, requiring an intensive process over the course of several years before certification. There is beginning to be a shift towards allowing tribes to conduct cultural burns, under certain circumstances, without a burn boss present if they abide by the guidelines set by the Forest Service and CalFire. Even this was seen as a huge step. One representative of the Forest Service expressed her surprise saying, “it’s a start, I never thought the Forest Service would do that.” Although this is certainly a step, the

Forest Service still puts many restrictions on these cultural burns and these shifts in policy seem to be viewed as permission given rather than brought about through egalitarian partnership.

It was agreed upon across the board that there has been a significant shift and that more people are turning to Native voices to learn about the practice of using fire as a tool. There is still work to be done surrounding supporting tribes in their traditional practices of cultural burning. The policies surrounding fire practices are entirely dictated by the forest service and handed down to tribes instead of created collaboratively and in cooperation with one another. Hopefully this positive trend in fire acceptance will be furthered in the coming years through further support of cultural burning.

Access to Land and Information is Limited

Another barrier and overarching theme throughout all the interviews turned out to be access. Over the course of the data collection process the interviewees pointed out several different types of access that had proven difficult for tribes with regards to tending oaks. These included access to both public and private land and access to knowledge and information that pertained to plans and regulations set by various government agencies.

As one interviewee from the Forest Service pointed out, there is not much federally recognized tribal land in Sonoma County and because of this, tribes must depend on working with public lands, the Park Service, and The Bureau of Land Management in order to have access to the land. The lack of recognized land, in conjunction with the way that oaks are cultivated through methods of agroforestry makes it impossible to confine oaks to certain parcels of land thwarting the agency of tribes with regards to tending in the ways that they want to. This

also presents a conflict with regards to private land since some families who have been tending specific oak stands for generations no longer have access to these lands due to new private ownership. A further issue, highlighted by a Wappo man, is “even when access is granted, we’re still not able to steward to the land according to our way so at this point it’s led to a lot of our indigenous community not seeking those traditional foods anymore. They’ve pretty much given up on it.” This sentiment highlights that even when access to land may technically be available it is still not easily accessible or feasible for many Native people in their daily lives.

The second issue within this theme is access to information. In some cases, tribes do have agreements to be able to forage and gather in forests. However, what sometimes happens is that the Forest Service will come in and spray herbicides and pesticides on the plants even though the Native people will be gathering plants for things such as medicines and ceremonies and will not know that there are toxic chemicals on the materials they are gathering. This example highlights the need for more inclusion in decision making and access to information so that people are not unknowingly being harmed in the process of tending and gathering.

Oak Tending Exists in an Antithetical Paradigm to Western Farming

Wildtending and traditional western farming practices exist on completely different paradigms. As several interviewees pointed out, the main goal of the hegemonic food system is to produce food at a scale at which farming will be profitable. That is not the main goal of wildtending. The hegemonic form of farming, as discussed previously in this paper, often deeply exploits the land, depleting nutrients from the soil and generally degrading the land. Wildtending on the other hand takes the entire ecosystem into account to promote the health and well-being of

the land, animals, and plants alike. The Native people interviewed in this process stressed how their respective communities' relationship with the land is reciprocal rather than transactional. One Wappo tribe member stated "it really has a much deeper meaning for us than just food. It's a reciprocal relationship that we can do for the tree and not only how the tree repays us but all the members of our natural environment." The most telling part of this quote is that the stewarding and care for the land comes first and the gifts from the trees are secondary. This relationship is a complete departure from typical farming in which the only reason to care for the land is based on what you can get out of it.

The reciprocal nature of these relationships means that they will only harvest from the land when the time is right and there is an abundance being freely given by the land. This presents a barrier when thinking about scaling acorn consumption up in a significant way since it is not necessarily commodifiable or economically viable in a way that would entice people to try and make a living off it. A food system resilience expert noted "traditional agriculture is just not going to give you a return on investment that allows you to be competitive in a globalized marketplace that externalizes the social cost of production." Several food system experts did note that they see a resurgence in localized food systems like what acorns would require and predict that there will be more of a need for them as factors like climate change disrupt the global food system.

If it were to be re-implemented as a main food source, the food system surrounding acorn production would need to exist separate from the hegemonic food system to maintain the integrity of the relationship between the tender and oak. This difference in cultural worldview makes it challenging to definitively quantify the impact that implementing acorns as a staple into the diets of tribal people in Sonoma County would have. The process of evaluating the potential

impact of acorns as a food source is further complicated by the fact that each tribe has different practices, customs and relationships with oaks meaning that bolstering of acorns into the diet would have a different impact on each tribe.

Lack of True Collaboration Between Local Government and Tribes

Throughout the process of data collection, it became evident that in order to move issues like fire and land access along, in a way that actually benefits the tribes, it is important that true collaboration takes place. Speaking with people from several different government agencies there were varied responses as to the current extent of what the current collaboration looks like. In many cases people were vaguely aware of some cooperation between local governments and tribal federations such as Graton Rancheria but could not speak to the exact structure of the collaboration or exactly what they were working on. Furthermore, a lot of the language used gave the impression that an attitude of permission granting and gatekeeping persists which creates a hierarchical structure that denigrates the possibility of true collaboration.

Organizations such as Together Bay Area, Intertribal Agriculture Council, as well as individual tribal liaisons within the government are working to bridge this gap and advocate for tribal people to have seats at the tables where decisions are made rather than being informed of plans after the fact. Everyone, at least on the surface, seemed open and enthusiastic about the prospect of including more Native voices and knowledge into decision making but at the same time those types of changes deserve to be prioritized through action and advocacy rather than passing enthusiasm.

Policy Recommendations

The data collected from the interviews that were conducted for this project shows that acorns are not yet feasible as a staple food source because there are still too many barriers in place that prevent Native people from being able to tend and gather them with ease. The following policy recommendations include *Increase Land and Gathering Access for Native People, Shift Fire Policy to Make Space Cultural Burns, and Meaningful Collaboration Between Government and Tribes.*

Increase Land and Gathering Access for Native People

As identified in the interviews, since there is little officially recognized tribal land, tribes must rely on public land or relationships with private landowners to access the oaks in order to tend to them and gather acorns. Removing barriers with regards to land access as well as specific access to oaks once land access is achieved will be a crucial component of improving tribal people's ability to tend oaks and gather acorns. Additionally, access to information about the Forest Service's activities and burn plans should be made readily available since Forest Service burn plans sometimes have significant effects on the ecosystem, potentially interfering with gathering and tending cycles. Access to information regarding plans would make it simpler for Native people to tend and gather without having to worry about potential hazards such as pesticides.

This specific land access policy should include ubiquitous access for tribal people to public and private land that has pre-existing oak stands. Access includes the ability to come and go freely, to tend, which includes clearing of other materials such as grasses, and other plants that may outcompete young oaks, as well as fire, under certain conditions and to gather freely. This type of blanket, all-encompassing approach would make it simple to implement and carry out and make oaks tending and acorn gathering as simple as possible. This would likely bolster Native participation in the tending of the Oaks as well as facilitate health for the surrounding ecosystems.

Shift Fire Policy to Make Space for Cultural Burns

In order to make tending oaks as easy and accessible as possible, it is important that tribes can carry out all aspects of tending, this includes the use of fire for cultural burns. The acceptance of the use of fire as a tool has come a long way in the last decade but there is still a long way to go with regards to creating space for tribes to carry out cultural burns without having to wade through a myriad of restrictions. The distinction between controlled burns, which have been much more widely accepted, and cultural burns needs to be reflected in the policy.

One subtle policy that could have a significant impact would be creating a program that funds and allows Native people to achieve Burn Boss status without having to go through the regular process which takes many years, is expensive, and likely would deter many people from pursuing Burn Boss status. This could look like an abridged training process or simply making space for tribes to assess who is qualified to carry out cultural burns. This type of policy would create space for tribes to exercise their agency in terms of decision making with regards to fire

while still working in tandem with the Forest Service and Calfire to ensure that all standards of safety are met.

Increase Meaningful Collaboration Between Government and Tribes

In order to ensure that oak tending goes in a direction that truly benefits the food security and goals of Native people in Sonoma County, it is crucial that Native voices are a part of making those decisions. Informing tribes of plans or perfunctory consultations are not enough. There needs to be true collaboration in which tribal voices get an equal amount of say in decision making with regards to their ability to tend their ancestral land.

There are many possible forms that this collaboration could take. It could be creating positions within existing structures that must be filled by Native people. It could also look like the creation of a council with representatives from different tribes from Sonoma County who, as a collective, collaborate with entities such as Cal Fire, the Forest Service, and Sonoma County Parks and Recreation to make decisions with regards to land access, fire, and gathering. There are some existing entities, such as the Intertribal Agriculture Council, that should be given more support and more decision-making power in order to increase advocacy for tribes. It is also important that public agencies develop standard operating procedures that build relationships with tribes into their structure so that connections extend beyond the employment of specific individuals with pre-existing relationships with tribes. Whatever form it takes, this type of policy would create more seats at the table for Native people so that the needs and desires of tribes are not secondary and instead are taken care of in collaboration with the entities that currently make the decisions.

Conclusion

This paper explores the current state of acorn use by Indigenous communities in Sonoma County and the potential for reimplementing acorns as a staple food source. In Sonoma County, Indigenous communities face high rates of food insecurity, chronic diseases related to nutrition. Research suggests that eating a traditional diet has a significant effect on preventing these diseases as well as many other positive impacts on culture and spirituality in the community. As the interviews and literature review uncovered, there is great potential for acorns to serve as a nutritious staple food source that builds resilience within Native communities, but there are still too many barriers in place to be able to quantify or confidently say exactly what that would look like. Because the process of cultivating acorns and tending oaks takes so long and holds so much more cultural and spiritual significance than a typical agricultural endeavor, implementing acorns as a food source requires a deeply nuanced and multifaceted policy approach that should be created with significant input from tribal members.

There is great potential for further research and study in this field as outside attitudes towards fire and indigenous knowledge continue to shift. Further research into the topics of cultural burning, indigenous foodways, and traditional foods as a contributor to food system resilience could be beneficial to further fleshing out the role of traditional foods, specifically acorns, in Indigenous communities. The research also shed light on the ways in which Indigenous food systems exist in a different paradigm than typical western food systems, meaning that the ultimate goals of these respective systems are often in direct conflict with one another. Further research into ways in which the two systems could work in harmony, or become one, could be very beneficial in furthering this conversation.

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