

INVESTIGATING TRIBAL CO-MANAGEMENT OF CALIFORNIA'S PUBLIC  
LANDS

By

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A Thesis Presented to

The Faculty of California State Polytechnic University, Humboldt

In Partial Fulfillment of the Requirements for the Degree

Master of Science in Natural Resources: Forestry, Watershed, & Wildland Sciences

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July 2023

## ABSTRACT

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Collaborative management with Indigenous groups is becoming increasingly common as many Indigenous communities continue to assert their inherent rights to self-determination. Due to the removal from and dispossession of lands, tribes often rely on access to public properties for various uses including ceremonies and gathering of culturally important plants. Some believe that the absence of indigenous involvement has also led to a decline in both the quality and abundance of culturally important resources, as well as limited the intergenerational transfer of traditional ecological knowledge, or TEK. There is increasing momentum toward re-engaging tribes as stewards of their ancestral lands through collaborative management agreements. In California, USA, there is an ongoing effort to initiate this decentralized form of governance on state-owned lands but little research has investigated its implementation. Reflecting on this process can support both current and future co-management efforts.

This two-part study fills a research gap in co-management literature by providing both government and tribal perspectives on developing a co-management partnership. Chapter 1 utilizes qualitative research methods to understand the views and forest

management priorities of a Native American Tribe in a potential co-management partnership with a California State University. In Chapter 2, I further explore co-management in California by examining a state-directed co-management effort from the perspective of government employees. I interviewed 20 California Natural Resources Agency employees to identify whether co-management was occurring on public lands. We also explore the identified barriers and tools they utilized to overcome them viewed through the lens of Adaptive Co-Management Theory. These two studies provide a unique opportunity to gain early glimpses into efforts to engage with Native American tribes in the co-management of California's public lands from both the government and tribal perspectives.

## ACKNOWLEDGMENTS

This project was made possible by a team of friends, family, and each of the study participants. I am indebted to the Wiyot Tribe citizens, Natural Resources Department (Shawir Darrudaluduk), and the tribal council for approving and supporting this research. Adam Canter generously spent much time with me and gave valuable support and input at the early stages of the project; our walks in Goukd'in helped guide me and the project so much, thank you. Lonyx Landry who works with the Cal Poly Humboldt Indian Natural Resources, Science, and Engineering Program was essential in connecting me to interview participants and helping me tackle tough questions with talks and walks in the forest. I also am grateful for his support of claiming and honoring my Indigenous roots.

I appreciate all the contributions made by my committee. Kevin Boston conceptualized and designed the research, generously invested time and shared his knowledge inside and outside weekly meetings, and also helped guide and organize the written reporting. Mike Dockry invested time in me and made great contributions to the research and relationships built, including traveling from Minnesota to visit Humboldt and meet stakeholders. Pascal Berrill let me explore and follow my interests, while holding me to a high standard.

To all my family and friends, thank you for continuing to support me and inspire me every day. My partner Shayda was there for me through the highs and lows of this project. She never doubted me and put up with long days and longer nights at the computer. I would also like to acknowledge the sacrifices my parents, Heidi and Duane

Erickson, have made to create opportunities for myself and my two sisters, Mallory Garcia and Hailey Bolaños. To the next generation of family members, Karsyn, Collin, and Brewer, you keep me motivated to ensure that you will have a healthy social and physical environment to enjoy this journey we call life.

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## INTRODUCTION

Indigenous communities have lost access to and their ability to contribute to the management of natural resources within their ancestral lands. Two factors contributing to this loss are marginalization, and conflicting knowledge systems (Tipa & Welch, 2006). Some believe that the absence of indigenous involvement has led to a decline in both the quality and abundance of culturally important resources (Lynn et al., 2013; Vinyeta et al., 2015; Voggesser et al., 2013), as well as limited the intergenerational transfer of traditional ecological knowledge, or TEK (Berkes, 2009). Reasons for the decline of cultural resources include the suppression of wildfire and a reduction in Indigenous management practices such as cultural burning (Aldern & Goode, 2014; Eriksen & Hankins, 2014; Huntsinger & McCaffrey, 1995; Lake et al., 2017; Norgaard, 2014). It follows that by re-engaging tribes as stewards in their ancestral lands we can foster and develop TEK and improve culturally important resources. One such pathway involves developing collaborative management, or co-management, partnerships. In the United States, there is increasing momentum for the formation of these partnerships on public lands (Jacobs et al., 2022).

In the United States (USA), many Indigenous tribes have inherent and reserved rights, codified by federal law through the signing of treaties (Wilkinson & Miklas, 2004). Additionally, the State of California is home to the largest number of Native Americans (U.S. Census Bureau, 2020) with greater than 100 federally recognized tribes and over 70 tribal groups that are seeking federal recognition (California Courts,

n.d.). Tribal ancestral lands, or “Indian country” have been formally recognized since 1769 but by 1848 comprised only 1% of the then newly formed State of California (Wood, 2008). In this state alone, 18 treaties were negotiated but due to public pressure against the treaties, they were never ratified by the USA Senate (Castillo, 1999). During the 1850s, the treatment of tribes by California included the splitting of families (Johnston-Dodds, 2002), state-sanctioned murders (Madley, 2016a, 2016b), enslavement, and land theft (Heizer, 1993). Not until over a century of horrors and hardship would tribes begin to gain the state’s acknowledgment of their relationship to cultural resources contained on their ancestral lands. Since the 1970s, the State of California has moved from being essentially devoid of tribal involvement in management decisions on state-owned lands to now where the state is actively seeking to develop co-management agreements with tribes.

This study explores two case studies of current co-management efforts in the State of California. These two investigations occurred at different scales. Chapter 1 provides a fine scale view of a tribal partners perspectives on co-management in a potential relationship between a Native American tribe and a California State University. Semi-structured interviews with 13 Tribal citizens and representatives, revealed that there are expectations of respect for cultural values and the integration of TEK as a primary knowledge source. There was an expectation that the relationship would move beyond consultative toward shared decision-making authority. The study also highlighted the importance of accounting for culture when engaging with tribal youth and offering opportunities for employment in natural resource management.

In Chapter 2, we examine the state-wide efforts of the California Natural Resources Agency (CNRA) to develop co-management relationships. Through semi-structured interviews with 20 CNRA employees from four land management departments, we found that there are limitations to achieving co-management tied to capacity and the diversity of tribes within responsibility areas. Within the CNRA, there are potentially conflicting responsibilities and laws which can limit the integration of TEK into land management decisions. To overcome barriers, employees may require increased time and financial resources to seek informal, non-transactional gatherings which seek to build relationships between their departments and tribes. These perspectives provide insights into barriers but also tools and approaches to overcome these barriers to achieve co-management of California's public lands.

CHAPTER 1: LISTENING TO INDIGENOUS VOICES, INTERESTS, AND  
PRIORITIES THAT WOULD INFORM TRIBAL CO-MANAGEMENT OF  
NATURAL RESOURCES ON A CALIFORNIA STATE UNIVERSITY FOREST.

INTRODUCTION

Indigenous communities have lost access to and their ability to contribute to the management of natural resources within their ancestral lands. Two factors contributing to this loss are marginalization, and conflicting knowledge systems (Tipa & Welch, 2006). Some believe that the absence of indigenous involvement has led to a decline in both the quality and abundance of culturally important resources (Lynn et al., 2013; Vinyeta et al., 2015; Voggesser et al., 2013), as well as limited the intergenerational transfer of traditional ecological knowledge, or TEK (Berkes, 2009). Reasons for the decline of cultural resources include the suppression of wildfire and a reduction in cultural burning (Aldern & Goode, 2014; Eriksen & Hankins, 2014; Huntsinger & McCaffrey, 1995; Lake et al., 2017; Norgaard, 2014). It follows that by re-engaging tribes as stewards in their ancestral lands we can foster and develop TEK and improve culturally important resources. One such pathway involves developing collaborative management, or co-management, partnerships. In the United States, there is increasing momentum for the formation of these partnerships on public lands (Jacobs et al., 2022).

## Tribal Co-Management of Natural Resources

Though California has the largest population of Native American tribes in the United States (U.S. Census Bureau, 2020) it ranks among the lowest in terms of the amount of land under tribal control in comparison to other states (Long et al., 2020). A Statement of Administration Policy (Newsom, 2020b) recently released by the California Governor's Office uses explicit language supporting the co-management of lands under the ownership of the State of California. This statement is supported by a string of related Executive Orders that acknowledged past harms done to Native American tribes (Newsom, 2020a) and created a network of tribal liaisons in California's public land agencies (EXECUTIVE ORDER B-10-11 | Governor Edmund G. Brown Jr., n.d.) to facilitate consultation and collaboration. Further adding to the momentum of tribal co-management is California's "30 by 30" initiative effort which identifies TEK as an important tool and urges agencies to collaborate with Native American Tribes to "better understand our biodiversity and threats it faces" (Newsom, 2020a).

At present, there appears to be limited case study examination of university—tribal collaborative partnerships (Matson et al., 2021; Sowerwine et al., 2019). In the U.S.A., public universities are state agencies, but many individual universities have limited lands to manage. This fact, combined with the educational missions of universities, provides a unique opportunity and premise for the formation of tribal co-management partnerships.



The term co-management first arose during the late 1970s from USA treaty tribes describing their desire for shared decision-making authority and regulation of fisheries in the Columbia River Basin (Pinkerton, 2003) which resulted in the formation of the Columbia River Inter-Tribal Fish Commission in 1977 (Columbia River Inter-Tribal Fish Commission, 2009). Co-management has since been used to describe a variety of other collaborative arrangements and lacks a single definition (Armitage et al., 2008).

Researchers broadly define co-management as the sharing of decision-making authority and responsibility between government agencies and local resource users (Berkes et al., 1991). Early cases of co-management were largely formed around the decentralization of fisheries management (Berkes et al., 1991; Pinkerton, 1999). Co-management has since expanded to other common-pool resource management such as forestry (Diver, 2016; Hatcher et al., 2017) and wildlife (Berkes & Turner, 2006). This management arrangement has also been presented as an adaptive approach to addressing complex social-ecological issues such as the impacts of climate change (Colfer & Prabhu, 2008; Plummer & Baird, 2013).

To reach “complete co-management”, agencies and universities will need to reach a place of shared decision-making authority in the management of public lands with Native American tribal partners (Bene & Neiland, 2004; Pinkerton, 2003; Pomeroy, 1995) but in practice, this has rarely occurred (Nadasdy, 2003a; Pinel & Pecos, 2012). Since the emergence of the term, co-management has been described as having varying levels of participation (Berkes, 1994; Berkes et al., 1991; Pomeroy, 1995; Sen & Nielsen, 1996; Tipa & Welch, 2006) that can be likened to climbing rungs on a ladder (Arnstein,

2019). But complete co-management disregards the lower rungs of participation from tribal and citizen partners such as consultative (Arnstein, 2019; Pomeroy, 1995), instructive (Sen & Nielsen, 1996), and informing (Arnstein, 2019; Berkes, 1994; Berkes et al., 1991) relationships. These lower levels of participation have been described as tokenism (Arnstein, 2019). The upper rungs of this ladder are identified as partnerships (Arnstein, 2019; Pomeroy, 1995) and joint action (Pomeroy, 1995) which more closely resemble the type of relationship to which the term co-management was first applied.

According to researchers, co-management should be viewed as an exercise in building long-term relationships (Armitage et al., 2008; Cronin & Ostergren, 2007; Plummer, 2009) to improve management rather than a technique to simply manage natural resources (Berkes, 2009; Natcher et al., 2005). To this end, co-management has been viewed as building and maintaining trust (S. Singleton, 2000; S. G. Singleton, 1998), building social capital (Berkes, 2009; Plummer & Fitzgibbon, 2004; Pretty & Ward, 2001), and not as an end goal of the partnership (Leach, 2008; Pinel & Pecos, 2012).

Cases of co-management have been documented in the United States (Beck, 1999; Diver, 2016; Matson et al., 2021) and around the world (Ho et al., 2016a; Thondhlana et al., 2016; Ulvevadet, 2008). Components of successful co-management cases include developing informal relationships (Diver, 2016; Dockry et al., 2018), building trust (Davenport et al., 2007), accounting for colonial legacies (Diver, 2016; Matson et al., 2021; Sowerwine et al., 2019), identifying mutual benefits (Zachrisson, 2009), and mutual learning (Berkes & Turner, 2006; Bussey et al., 2016; Matson et al., 2021). There

are a few components of “tribal” co-management which make it distinct from research partnerships built with non-native partners. Sowerwine et al. (Sowerwine et al., 2019) highlight a few of these priorities which include a focus on whole ecosystem management and supporting youth empowerment. Researchers in education have noted that working effectively with tribal youth requires an understanding and consideration of their culture (Demmert et al., 2006; Gilliland, 1999; Klug & Whitfield, 2012; Reyhner, 1994; Rhodes, 1994).

### Adaptive Co-Management of Natural Resources

Adaptive co-management (ACM) includes elements of both adaptive management (Holling et al., 1978) and co-management (Berkes, 2009; Plummer, 2009). The definition of ACM broadens the scope of the co-management definition offered by Berkes (Berkes et al., 1991) to emphasize the importance of including an iterative process of reflection and the process of learning by doing (Folke et al., 2002). Researchers highlight that ACM should not be perceived as an end goal, but rather as a process of “negotiation, deliberation, knowledge generation, and joint learning” (Berkes, 2009). Co-management relationships where social learning does not occur are likely to fail (Berkes, 2009). While researchers recognize that ACM is not a panacea (Jentoft, 2000; Mikalsen et al., 2007; Plummer, 2009), it has proven to be a useful framework for tackling complex issues involving multiple stakeholders (Carlsson & Berkes, 2005; Colfer & Prabhu, 2008; Conley & Moote, 2003; Plummer & Baird, 2013).

Enabling environments, including both institutional and legislative, are considered bridges (Fabricius & Currie, 2015) and cornerstones to developing ACM partnerships (Armitage et al., 2009; Berkes, 2009; Wallis et al., 2013). Early stages in ACM are defined by the transition from stakeholders acting independently to entering dialogue and initiating learning processes (Colfer & Prabhu, 2008; Plummer, 2009). Working to ensure positive experiences at this formative stage of the partnership can yield financial and social dividends in the future (Jurney et al., 2017).

ACM relationships are based on the principles of social and institutional learning (Olsson et al., 2004; Olsson & Folke, 2001; Ruitenbeek & Cartier, 2001) that, within ACM, can encourage partners from different knowledge systems to co-generate new knowledge regarding natural resources management (Armitage et al., 2010; Berkes, 2009). While the integration of TEK into ACM and thus western ecological knowledge (WEK) has been receiving interest as a potential tool to face complex social-ecological management issues (Berkes & Turner, 2006; Bussey et al., 2016; Hoagland, 2017), several researchers have noted a shortfall of fruitful outcomes when integrating indigenous perspectives into management decisions (Fernandez-Gimenez et al., 2006; Nadasdy, 2003b; Peters, 2003; White, 2009) and coopting local knowledge from agency partners (S. Singleton, 2000). There are also issues tied to conflicting missions or values (Davenport et al., 2007; Dockry et al., 2018) and a bias toward WEK-derived plans over those that incorporate TEK (Diver, 2016; Dockry et al., 2018; Nadasdy, 2003b).

## Informing Co-Management of a University Forest

The Wiyot Tribe is a federally recognized tribe in northwest California whose ancestral lands stretch from Bear River Ridge to the south and Little River to the north *Figure 1*. Before European colonization, it is estimated that the region supported between 1500 and 2000 inhabitants (*History / Wiyot Tribe, CA, n.d.*). After a long history of genocide, relocation, and dispossession of their ancestral lands, the Wiyot Tribe was recognized by the federal government in 1908. In 1961, the Wiyot Tribe was terminated under the California Rancheria Act and did not regain federal recognition until 1981 through a federal lawsuit. By this time, they had limited access to their ancestral lands where the title was held predominately by private owners but included state and local government agencies (*History / Wiyot Tribe, CA, n.d.*)(*Figure 1*).

The forest provides cultural resources important to the Wiyot Tribe. The coast redwood (*Sequoia sempervirens*) is an integral resource for the construction of both canoes and houses (Loud, 1918). Understory plants such as the red huckleberry (*Vaccinium parvifolium*), evergreen huckleberry (*Vaccinium ovatum*) and beaked hazelnut (*Corylus cornuta*) are important foods gathered by the Wiyot Tribe. Beaked hazelnut stems are also used in the weaving of baskets as well as fishing equipment (Diver, 1939).

In 2018, the California Polytechnic State University Humboldt (CPH), located in Arcata, north coastal California, U.S.A. was deeded from R. H. Emmerson & Sons, an approximately 360-ha redwood-dominated forest located 12 km southeast of CPH

campus at the headwaters of Jacoby Creek, or Goukdi'n which is the indigenous Wiyot Tribe's name for that area of their ancestral lands (*Figure 1*).

Before university ownership, the Jacoby Creek (Goukdi'n) Forest was actively managed for timber production by Sierra Pacific Industries. The forest comprises a mix of conifer and hardwood tree species and age classes. The forest straddles Jacoby Creek, a fish-bearing stream, and contains remnant old-growth western red cedar (*Thuja plicata*). The property title is currently held by a public institution, the California State University Board of Trustees, and has stated goals of preservation and protection of the forest, improved wildlife habitat, and water quality, and providing opportunities for research and education (Humboldt County Recorder, 2019).

The Wiyot Tribe and CPH have collaborated through the development of the Sea Level Rise Institute (SLRI). The SLRI is an ongoing collaboration between university, tribal, non-governmental organizations, community, and agency partners to “reimagine the future of the California coast” in the face of rising ocean levels (n.d.). In 2020, CPH (known at the time as, Humboldt State University), developed a 5-year strategic plan which placed tribal collaboration and relationship building as one of its highest priorities (2020). With this decree to work with local Native American tribes combined with the recent acquisition of the Goukdi'n property, there was an opportunity for both CPH and the Wiyot Tribe to develop a co-management partnership. This partnership would provide benefits to the Wiyot Tribe and CPH including place-based education, training, and research into traditional and western ecological knowledge and practices, and forest management activities that incorporate tribal values.

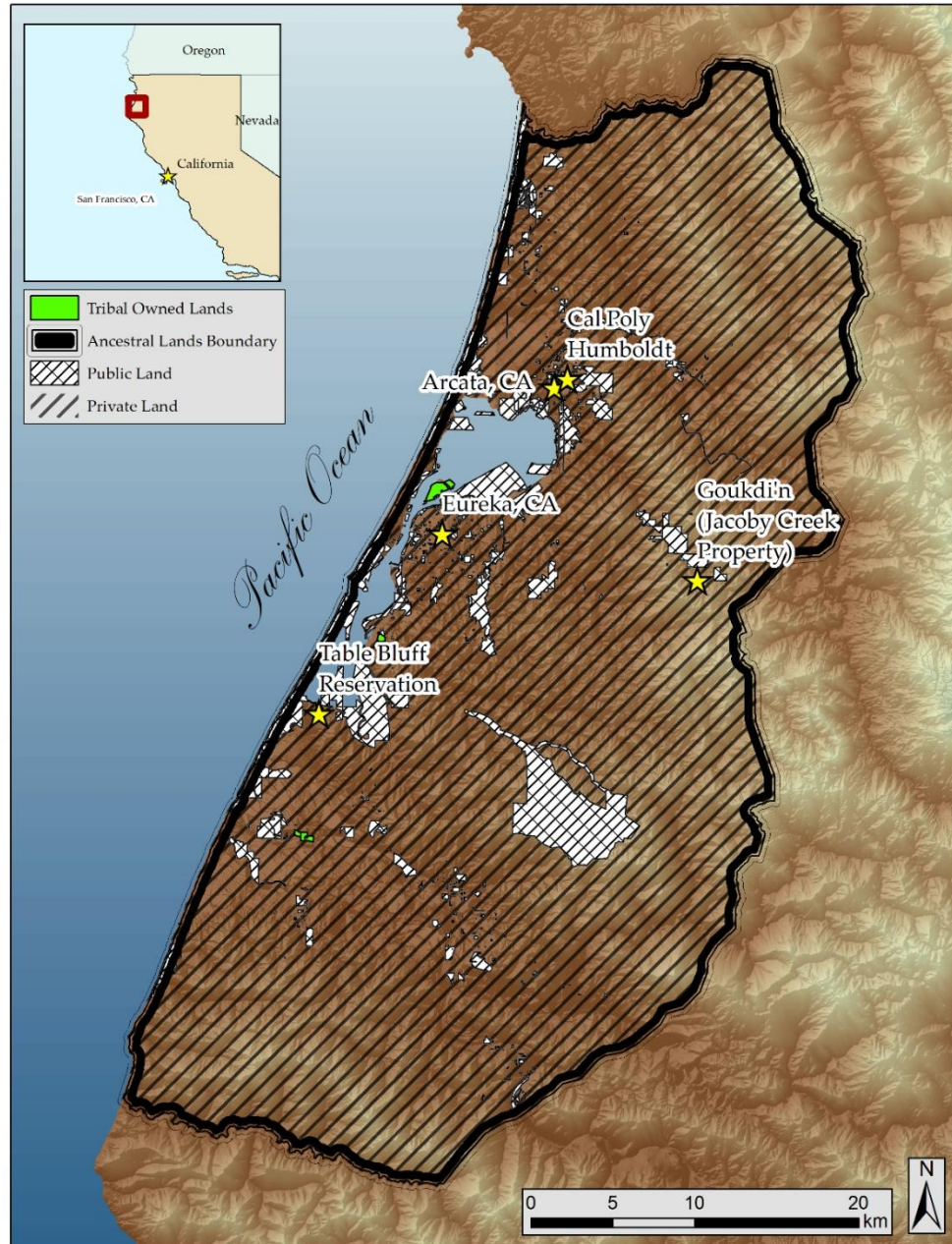


Figure 1. Wiyot Tribe ancestral lands in the northwest corner of California, USA (black border). Private lands (black stripes) within Wiyot Tribe's ancestral lands encompassing the vast majority of the area. Stars indicate two cities, Arcata and Eureka, as well as the Cal Poly Humboldt campus, Goukdi'n, and the Table Bluff Reservation. Green polygons indicate land owned by the Wiyot Tribe. Grey polygons with crosshatching indicate public lands within the Wiyot Tribe ancestral lands boundary. The inset map locates the Wiyot Tribe ancestral lands (red box) in the northwest corner of California.

The goal of our study was to elucidate the views of a tribal partner in the early stages of building a co-management relationship. To do this, we conducted semi-structured interviews to determine the goals that various tribal members would have for forest management. This method of data collection is used to highlight the importance of the individual without diminishing the prospect of community and collaboration (Seidman, 2013). This method of data collection has been utilized either in conjunction with other qualitative methods (Fernandez-Gimenez et al., 2006) or by itself (Bussey et al., 2016; Dockry et al., 2018; Jacobson et al., 2021; Leston et al., 2019). We chose this data collection method over other methods such as surveys or focus groups because we wanted to understand the views of individual tribal members as well as initiate dialogue between the university and the tribe. Our three research objectives were to understand members of the Wiyot Tribe's (i) views on co-management in general, and specifically (ii) their forest management goals in Goukdi'n, and (iii) the importance of engaging tribal youth in natural resource management. This investigation contributes information that can be used by CPH and also by similar institutions that are in the early stages of forming relationships with tribal partners for the co-management of natural resources and to support the future development of co-management theory by understanding why parties participate in collaborative processes (Pinel & Pecos, 2012).



## MATERIALS AND METHODS

This study uses applied-qualitative analysis which is research that contributes to the understanding of a contemporary issue (Ritchie et al., 2013) under the iterative and adaptive framework of Grounded Theory Analysis (Charmaz, 2014). We utilized semi-structured interviews (Dockry et al., 2018; Leston et al., 2019; Moorman et al., 2013; Thondhlana et al., 2016; Weiss et al., 2013) based on an interview guide (Appendix A) that contained open-ended questions seeking to understand participant's views on co-management, forest management goals in Goukdi'n, and the importance of engaging tribal youth in natural resource management.

Presenting the project proposal to Wiyot Tribal Council was the first step in this project. After obtaining approval from the council, the proposal was then submitted to the university's Institutional Review Board (IRB 20-124). To initiate dialogue between the university and the tribe about co-management, we attended meetings open to the public held by the Wiyot Tribe Natural Resources Department (NRD) where we were able to present methods and goals for the research and also recruit the first participants for the study. These interactions included two site visits to Goukdi'n to build the relationship and discuss the potential co-management partnership.

Following decolonized research methodologies (DRM) (Smith, 2021) and similar co-management case studies (Pinkerton, 2003; Sowerwine et al., 2019), this project sought Wiyot Tribal Council approval and worked to inform the tribe throughout the research process (Leston et al., 2019; Matson et al., 2021). Periodic up-dates were

provided to the tribe through tribal council meetings including alerting them to presentations and sharing current results. Before publication, this manuscript was presented and submitted to the tribal council for review. Research methods including participant confidentiality, participant recruitment, and sampling procedures were approved by the IRB (IRB 20-124). These procedures include the protection of participant identity through the coding of direct identifiers (Bussey et al., 2016) and codebooks stored in pass-word-protected locations.

Purposive sampling in conjunction with the snowball method (Patton, 1990; Warren & Karner, 2015) identified potential participants that could provide an opportunity for in-depth exploration of the project research questions (Creswell & Creswell, 2018; Ritchie et al., 2013). These participants were first identified through key informants with contacts within the Wiyot Tribe and by attending tribal meetings open to the public. With no previous relationships or contacts within the tribe, we anticipated that this would increase the variation in participants by reaching different families and social circles. Difficulties in participant recruitment were exacerbated by the various COVID-19 lockdowns from 2020–2022.

Interviews were conducted in person, over the phone, and through Zoom Inc. remote meeting software. Each interview was recorded and transcribed through the Otter.ai transcription software. Transcripts were verified and imported to Atlas.ti 9 qualitative data analysis software within 48 h of interview completion. Transcripts were read a minimum of three times utilizing line-by-line, axial, and focused coding [86] which used higher-order categories defined by the three research questions [52]. Code

occurrences were analyzed in two ways. First, we identified the number of participants that shared information on a theme or topic. Second, we normalized the absolute and relative frequency of responses to adjust for differences in transcript length. Once normalized, we then examined the code frequency occurrence based on our themes to identify codes and themes that emerged with greater frequency than others. This allowed for an establishment of a hierarchy of goals and expectations from participants. The participant sample size was considered adequate when no new themes or information relating to the research questions emerged (Glaser & Strauss, 2009).

## RESULTS

We interviewed 13 enrolled members and representatives of the Wiyot Tribe. Interviews took place from July 2021 to August 2022. The interview length ranged from approximately 30 min to over 120 min. Participant age ranged from 20 to 71 years old with an average age of 40. Mostly women were interviewed ( $n = 10$ ) and all but one participant were members of the Wiyot Tribe. The single non-tribal member held extensive knowledge of natural resource management and was employed by the Wiyot Tribe NRD. Of the participants interviewed, 37% had experience working in some form of natural resource management (*Table 1*), while none had specific professional forestry experience.

*Table 1. Demographic breakdown of interview participants.*

Average Age (Years)	Gender	Experience in Natural Resources?	Tribal Member?
40 (Min 20, Max 71)	Female (70%)	Yes (37%)	Yes (92%)
	Male (30%)	No (63%)	No (8%)

Although participants were asked only general research questions, important themes emerged that highlighted a need for understanding the history of the Wiyot Tribe and their relationship to their ancestral lands. The following subsections provide summaries of data collected through semi-structured interviews by theme and are accompanied by direct quotes to support each theme (Dockry et al., 2018).

## Regaining Access to Ancestral Forests Can Promote Cultural Knowledge and Reconnect

### Tribal Members as Stewards of the Land

We were severed from the forest. When people realized there was gold in the hills and that...the redwood trees were just as lucrative as gold... we were severed from that relationship without our permission, you know, without our input. And I think that being able to finally have a forest again could reclaim and revitalize that traditional cultural knowledge, the traditional ecological knowledge

### Tribal Capacity

Tribal capacity was a topic brought up by 92% of participants ( $n = 12$ ).

Participants shared that they viewed this co-management partnership as an opportunity to develop programs that could build tribal capacity in forestry and fisheries management.

Citing their forced disconnection from the land for over 100 years, participants also shared that they don't currently have expertise in forestry themselves. When discussing how being disconnected from the land has impacted tribal capacity one participant shared, "I don't know a lot of the cultural perspectives on that because...those things were taken away."

They shared that although they appreciate their non-Wiyot NRD employees, there is currently a lack of Wiyot Tribe citizens working in the department and they currently don't have trained foresters on staff. Participants suggested that the university could offer paid positions, stipends, or an endowment to ensure that the tribe could be involved in the co-management of Goukdi'n. When discussing these potential opportunities, one

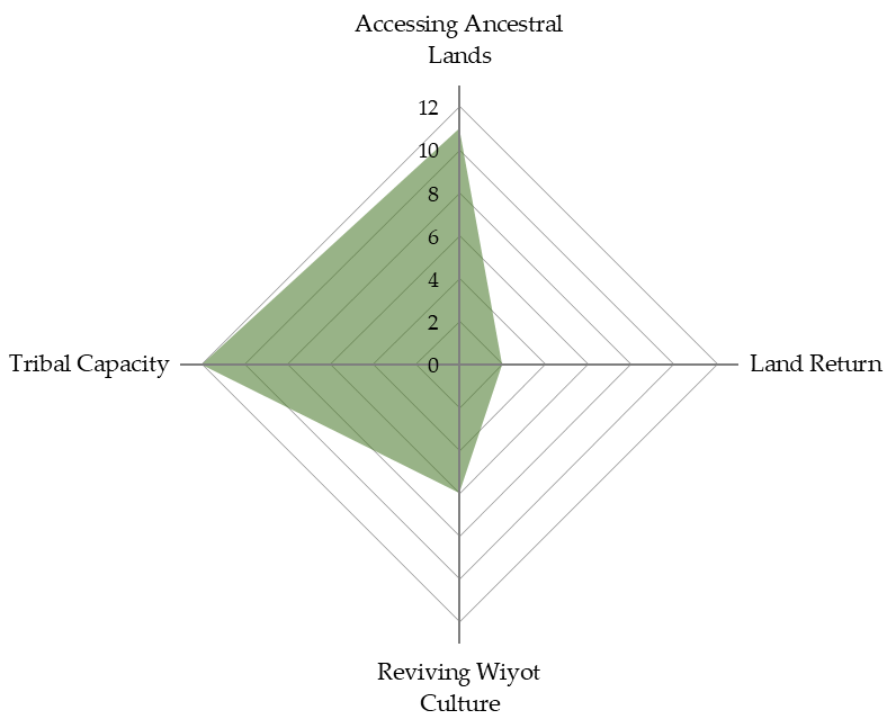
participant presented the idea of “building up an endowed Wiyot position or two positions that is, basically, shadowing and the assistant to the forest manager.”

Tribal capacity was also identified as a potential barrier to co-management. Limitations in staff, knowledge and technological resources were each indicated to be something that would need to be addressed in the co-management partnership. Capacity is already strained by responsibilities such as reviewing Timber Harvest Plans (THP) and employees already fulfilling multiple roles. Participants contrasted the small Wiyot Tribe NRD against large companies or the university that have larger budgets. “...in the cultural department, it’s Ted [Tribal Chairman], who has an assistant who... assists him sort of reviewing projects, timber harvest plans but also is dually placed over in our childcare center or childcare program.”

One participant shared that this can sometimes make it seem like the tribe doesn’t care, but this perceived lack of interest due to limited capacity, “it’s not our unwillingness to, to steward these lands. But it’s, it’s our ability to just not have resources and people power. Honestly, that’s it.”

#### Accessing Ancestral Lands

Accessing ancestral lands was shared as a major benefit of this co-management partnership by 85% of the participants ( $n = 11$ ; *Figure 2*). When discussing access, participants shared that there are limited forested lands that the tribe has access to, and they currently do not feel welcome to practice cultural activities on private lands within their ancestral boundaries.



*Figure 2. Subthemes that are within the broader theme of “Regaining Access to Ancestral Forests Can Promote Cultural Knowledge and Reconnect Tribal Members as Stewards of the Land”. Subthemes of ‘tribal capacity’ and ‘accessing ancestral lands’ were mentioned by the most participants with 12 and 11, respectively.*

Participants shared fears of “hopping fences” and “trespassing” on private lands. One participant shared that on public lands where they do have access, they have to contend or compete with all other members of the public using these resources. “I can’t even hunt in my own lands, so I have to go and try to fight it out with the rest of the people in the forest.”

When discussing activities that could be supported by access, participants particularly focused on being able to gather medicines, traditional foods, and basketry materials. Participants also shared other benefits to access including activities such as camping or just having a place where a tribal member could connect back to the land.

This included having ceremonies, a village site, and a space where they would feel welcomed to “go be themselves.”

Regaining access was shared as being a positive for passing on knowledge, especially to younger generations. Participants indicated that they have been “severed” from their ancestral lands and that because of this change, “...a lot of our traditions have, you know, maybe not survived this whole time.” One participant was afraid of this detachment of identity and was interested in building a place that was inviting to the tribe that would “...allow Wiyots to walk in peace.”

Many shared statements did not focus on a single activity and instead said that co-management would offer a space for the tribe to get out into the forest and get together. Of the participants, 23% ( $n = 3$ ) compared their lack of access to that of surrounding tribes such as the Yurok and Hoopa. Participants shared that most of the Wiyot Tribe’s lands are held privately (*Figure 1*) while others are surrounded by federal land. One participant shared that tribal members need to travel over an hour to get to public lands where they could hunt.

### Conditions for Achieving True Co-Management

By interpreting and assigning quotes taken from participant transcripts into subthemes, we found that participants had insightful opinions on particular opportunities and challenges of implementing co-management. Important co-management subthemes related to forest access, roles and responsibilities, decision-making authority, preference for collaboration as opposed to consultation, and benefits of management (*Table 2*).



*Table 2. Examples of the assignment into subthemes of quotes relating to the theme of co-management are taken from participant transcripts.*

Subtheme	Quote
Provide Access	“You know we—all forests are either held privately or through the state or feds and although we can, you know, access these places it’s with permissions, right? It’s always with somebody else’s permission and if we co-manage this land, I don’t want to have to ask permission.”
Adaptive Roles and Responsibilities	“...I think it will be different. Each project will be different. Each one comes with a different mindset.”
Sharing Decision-Making Authority	“Well, the university has to get off the high horse, because they are the ones because it’s their university, it’s their property. And they are going to have to concede some of their authority because it’s theirs. And we’ve got to remember that it’s theirs. It’s not ours. So they have to concede some of their authority so that we can meet them at least halfway and talk.”
Moving Beyond Consultation	“So, that’s one of the components, is that...it’s an ongoing—I don’t want to say consultation--it’s an ongoing decision-making group that we’re part of. And that we aren’t just there to consult. That we’re there to manage just as well as the other groups of people or the other representatives.”
Identify Mutual Benefits in Management	“But...with a collaboration, you know everybody’s committing together. We’re giving our word that we’re going to arrive at this location we’re going to talk about the management of this particular forest, we’re going to develop a forest management plan that supports its health and well-being both for the forest, as well as Wiyot people, as well as you know forestry students.”

### Listening, Learning, and Respecting Tribal Perspectives

Well, I think that it means, again, as a group, I guess understanding that the knowledge that indigenous people hold of lands and waters and critters is based on thousands upon thousands of years, of living in this location and that it should be held as primary evidence of... stewardship and land management.

Most participants (92%) acknowledged that there would be a difference in opinions, but most were optimistic that university partners would be open to tribal perspectives and priorities (*Figure 3*; subtheme: ‘having an open mind, listening, and learning together’). Another shared that, as Native Americans, they don’t always think like the university. “We don’t always think like the university or like the government, or like private citizens who own private land that was once our land.”

One participant indicated that they have little faith that the university can respect Wiyot Tribe TEK and that it will be, “thrown out the window because of their ideology...”. Others were more optimistic about the partnership indicating that the university and tribe should, “Just listen to what each of the groups have to say. And then we should be able to work together for the project....”

They also shared that there will be learning and the exchanging of ideas on both sides, not just the tribe teaching the university, or vice-versa. Participants shared that TEK, such as cultural burning, has been ignored for years and the university should be open to learning about their ways of managing it, “...we learn something new, we share the knowledge, and we bring people in, and we share the knowledge and all the while working together.”

Participants also indicated that they understand that there will be a compromise, or “give and pull”, on both sides while managing the property. This requires some sharing of power, which one participant shared might be difficult for some university partners, “...when you come to the table, you come to the table and you know, you’re going to have to give up something. Both sides. There’s a give and pull.” One participant

shared that disagreements should not lead to university partners giving up on the partnership and not saying to the tribe “This is our project...you stay out of it.” They hoped that the university would understand the tribe’s connection to the land and try to “...support that to the best of their knowledge.” There is an expectation that this knowledge is held primary and that university partners are willing to incorporate it into WEK.

When discussing the issue of power, one participant indicated that letting go of it can be scary for some people, but they hope they can support them in learning new information. Another participant shared that it is important that the university not overrule the tribe because that could lead to more disagreement. “It could be really top heavy from the Cal Poly side, or the Wiyot Tribe side so, like really trying to understand that it’s a collaboration and partnership, not one trying to supervise the other.”

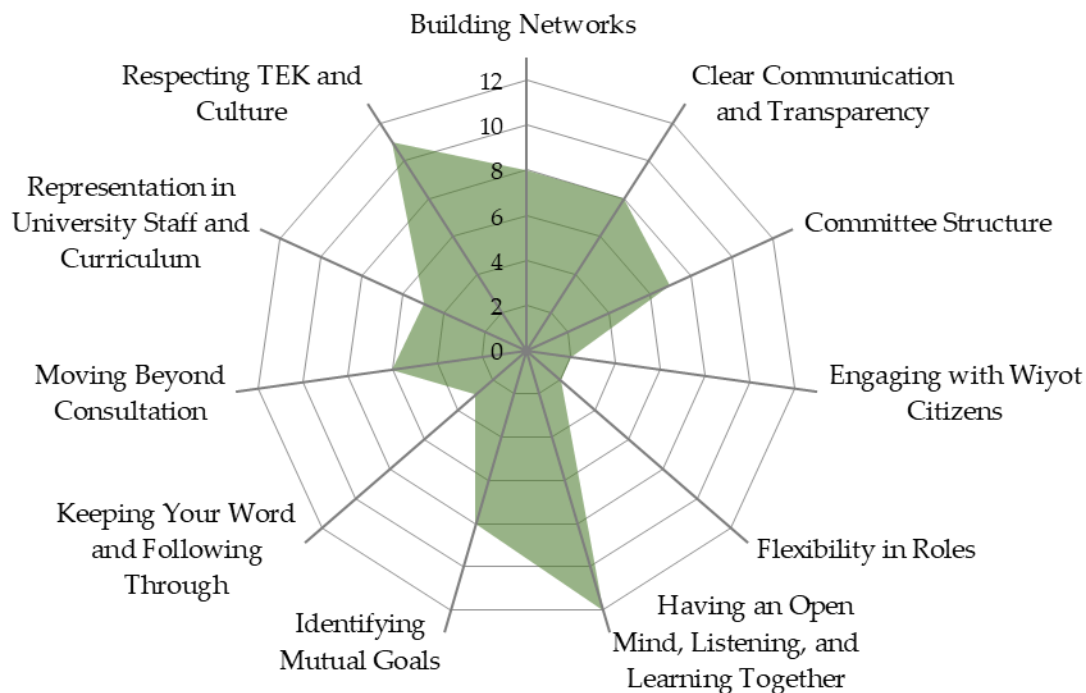


Figure 3. The frequency of participants that spoke about subthemes relating to co-management. For example, 8 out of 13 total participants spoke about the co-management subtheme 'building networks'.

### Moving Beyond Consultation Toward Shared Decision-Making

So, I mean a collaborative relationship is much more involved. It's, it's ongoing, it's--it continues it doesn't stop. It considers all voices at the table. Whereas with consultation, you know again it's just a letter to, to [tribal member] and [tribal member] writes off on it and, and it may or may not happen how [tribal member] wants it to happen.

Participants shared that while the university holds title to the land, they would have to give up some decision-making authority in the co-management partnership. This includes not just asking the tribe to sign off on things or just giving presentations but rather being a managing partner at an "equal level" with the university. This sentiment

was shared by one participant who shared that the university would need to “...concede some of their authority so that we can meet them at least halfway and talk.”

The partnership was viewed by many participants as being a long-term commitment. When describing the length of the relationship they used terms such as “ongoing,” “forever,” or “no sunset.” Another participant shared that within this long-term relationship, decision-making authority may not always be the same. A participant shared that authority would be a compromise and they would need to find an “equal spot, that we’re comfortable with at both sides.” When asked if this would always be at the same spot, they responded, “No, I think it will be different. Each project will be different.”

#### Centering Forest Management Activities on Cultural Resources, Wildlife Habitat, and the Restoration of Natural Processes

Specific research projects that could occur in the forest were suggested by 38% ( $n = 5$ ) of the participants (*Figure 4*). Some projects were forestry specific, including the treatment of underbrush, vegetation mapping, and reforestation techniques. Other potential projects related to water quality and fisheries. When discussing a potential research project, one participant with experience in natural resources shared how treatments could be tested to assess their ability to promote native plant species by, “cutting down all of the underbrush around these trees, just like everything once a year, then seeing how it grows back better and also doing like burning having a burn, seeing if that helps things for like getting rid of the ivy or getting rid of any non-native plant any non-native plants...”

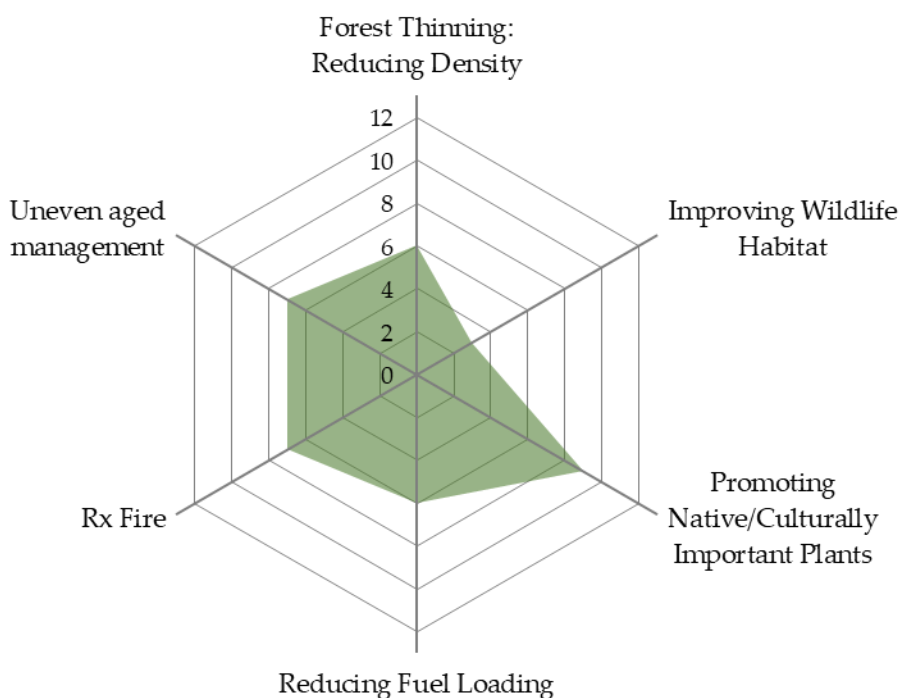
The terms “sustainable,” “ethically,” and the phrase “...it could be done better,” were used when discussing how harvesting should be done. Six participants (46%) viewed clear-cutting, specifically, as negatively impacting wildlife habitat and was visually displeasing. Two of the participants in this study (15%) indicated that they would not want to see any harvesting in the forest, but the majority saw timber harvesting as a “necessary evil.” When asked their thoughts on timber harvesting, one participant shared, “It can be done, and has been done, ethically and responsibly. It’s a necessary evil. Like, replanting where they’re harvesting is nice. No, I mean, as long as it’s being done ethically and responsibly, I don’t have a problem with it.” One participant indicated that they do not think any harvesting is necessary for the forest. All other participants viewed some form of active management as necessary to improve forest health, improve wildlife habitat, reduce excessive stand densities, and reduce wildfire risk (*Figure 4*).

Participants shared that the forest may need to be thinned to remove dead and dying trees but also highlighted the importance of dead trees for wildlife habitat (*Figure 4*). There was also a focus on removing diseased trees with a particular focus on sudden oak death due to its impact on tanoak (*Notholithocarpus densiflorus*), a culturally important food to Native Americans on the western coast of the United States. When discussing tree harvesting, a participant shared thoughts on thinning diseased trees, “This is a diseased tree, we need to cut it out, burn it, get rid of it so the other trees don’t get infected. I just know things like that. That’s just common sense. Because you can’t make board feet out of a diseased tree. Right?”

In combination with thinning, participants were interested in utilizing controlled burns, or cultural burning, as a way to “clean up” the forest, reduce invasive species, and promote wildlife habitat. One participant shared that Native Americans had been concerned about the risk of wildfire for years, “...Native Americans have been predicting it for years...when this starts to burn...this is gonna burn everything up. I’ve been hearing that since I was a kid. You know, like they’ve seen it coming...because they saw the mismanagement.” Another participant shared how fire was required for certain basketry materials, “...look at beargrass. Beargrass needs to be burned before... you can gather and weave it,” and to maintain prairies, “But then after that burns, guess what? The elk love to come in there, the deer come in there and they roam through their meadows. Bobcats out there, coyotes, fox.” These participants were making connections between fire exclusion, fire use, and the promotion of culturally important species like basket material and wildlife (*Figure 4*).

Regarding the potential for uneven-aged management mentioned by 54% of participants, one shared that they would like to see some trees felled to provide light resources for understory trees while another explicitly wanted to see “*different size-class trees*,” and the preservation of western redcedars and hemlocks. They are also interested in seeing trees planted either before harvest occurs or after the removal of trees. A participant with experience in natural resources shared their idea of a well-managed forest as “...beautiful and open, lots of diversity, lots of different size-class trees, but lots of mature and maturing trees, distinct plant communities, really rich riparian corridor and going upslope, you know, trying to preserve the western redcedars and hemlocks.” The

idea of not harvesting all trees was expressed in terms of “*only taking what you need*” when removing resources. Another participant elaborated, “Yeah, do it in sections. Like just don’t do it all in one spot. I was taught that from a young age like when you go and gather you don’t take the whole plant. So that way, it could thrive and come back to life.”



*Figure 4. Within the subtheme of “Active Management”, this graph indicates the number of participants who spoke about each management activity. For example, the subtheme ‘promoting native/culturally important plants’ was talked about by 9 participants.*

### Providing Opportunities for Tribal Youth While Nurturing Their “True Self”

But do I think there’s a huge opportunity for tribal youth being involved with this and if Cal Poly is really serious about investing in the TEK education, I think you can bridge those together and collaborate. Maybe even get these kids you know, they’re 15–16, the opportunity to work in the forest, and then by the time they’re like graduate high school they’re like, ‘I want to go into like Resource Management.’



All participants (n = 13) viewed engaging tribal youth in the management of Goukdi'n positively through programs such as paid summer internships and job shadowing. There was a desire to teach them "to respect the forests" and also to "keep them busy." Participants indicated that this opportunity could expose them to potential career paths which could lead them to local jobs. One participant shared that this opportunity could put in their mind something "that they may have not thought about that as a career path...or something they could pursue in school." Another participant added that the university could support this by having, "...some kind of stipend for them to be a part of it."

This opportunity could also be used to teach youth important life skills like how to gather necessities like firewood and locate water. Another participant shared that it was an opportunity to teach them about Wiyot Tribe cultural knowledge and teach them to "...be stewards of the land again" which another believed was an "innate responsibility" held by the youth. Another benefit of co-management was identified as learning the distinction between native and non-native plant species.

A participant shared the importance of having the opportunity to transfer traditional knowledge, "I think it would be important, you know to get them back to their cultural stuff and, you know, all the things we used to do. There's a lot of knowledge being lost." However, this opportunity for knowledge transfer can also place responsibility on tribal youth and bring pressure, "... But also, for themselves, we put a lot of pressure on them. Because they're young people, and because we know what can be lost, you know?"

While all participants positively viewed this opportunity, they also shared that they hope that they could learn skills while nurturing their cultural values. There are unique pressures and expectations for tribal youth that should be considered. “How do you take Indian kids, not pull the Indian out of them, try to make them something else. How do you...create a program that nurtures the true self?”. A younger participant shared that information from public schools conflicted with their cultural beliefs. They described this divergence of world views, “I walked two worlds...because my family is very traditional.”

Transportation was identified by 38% of participants ( $n = 5$ ) as the biggest barrier to engaging tribal youth in the management of Goukdi'n. The remoteness of the reservation and the lack of resources was seen as two obstacles to overcome. When discussing this barrier, one participant shared, “So I think the biggest one is like, ok, yeah, you have youth that wants to get involved but they don't have any transportation to get there.”

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## DISCUSSION

The use of semi-structured interviews served as a successful method of building bridges between the university and the Wiyot Tribe (Dockry et al., 2018) and initiating dialogue (Plummer & Baird, 2013) outside of formal government-to-government communication channels (Diver, 2016). Participants appreciated that we sought the views of all Wiyot Tribal citizens and not exclusively members of the Wiyot Tribal Council. The specific views, opinions, and priorities of participants identified in this study provide valuable information and guidance to support university management if they continue to move toward developing a co-management partnership with the Wiyot Tribe. We utilized Decolonized Research Methodologies and focused on gaining insights from tribal members from different backgrounds and varying experiences in natural resource management. While this study does not include a comparison of data collection methods, our use of semi-structured interviews served as an important step toward co-management and provided rich data to address our three research questions.

Our research questions were aimed at identifying the views on the co-management relationship, forest management objectives, and the importance of engaging with tribal youth in natural resource management. Although participants shared a variety of opinions on their expectations related to the research questions, four broad themes emerged from the data:

- Regaining access to ancestral forests can promote cultural knowledge and reconnect tribal members as stewards of the land;

- Conditions for achieving true co-management;
- Centering forest management activities on cultural resources, wildlife habitat, and the restoration of natural processes; and
- Providing opportunities for tribal youth while nurturing their “true self”.

All 13 participants had positive views on the potential co-management partnership. Expectations of the university included clear communication, transparency, a willingness to listen, and keeping their word. The analysis of transcript data revealed that participants acknowledged that a forest may require active management to re-store forest health, improve wildlife habitat, and mitigate wildfire risks. Management goals in Goukdi’n largely focused on promoting native plant and tree species that are of cultural importance to the tribe. Each participant positively viewed the engagement of tribal youth in natural resource management. However, they cautioned that native youth have unique pressures placed on them and need programs that both nurture their tribal cultural values and provide exposure to WEK skillsets. Here we discuss the main themes identified in the results section of this study. Then we will describe unexpected findings that emerged from the data.

### Regaining Access to Ancestral Forests Can Promote Cultural Knowledge and Reconnect Tribal Members as Stewards of the Land

Our results align with findings from Diver (2016) where the Karuk Tribe leveraged co-management as a way to increase access to cultural resources, build tribal capacity and increase the legitimacy of tribal management institutions. Recognition of

rights to access and the preservation of cultural identity were also identified as key aspects in a study examining the co-management of freshwater resources by the Maori in New Zealand (Tipa & Welch, 2006). This study also supports the tribal co-management literature in identifying tribal culture (Plummer, 2009) as an important component of a successful relationship.

### Conditions for Achieving True Co-Management

Co-management literature has identified the integration of different ways of knowing as important to cogenerating knowledge (Berkes, 2009; Berkes & Turner, 2006; Hoagland, 2017; Plummer & Fitzgibbon, 2007). Participants echoed this desire to use both TEK and WEK to develop management plans but, similar to a study in tribal co-management by Diver (2016), they preferred that co-managers place greater importance on TEK over WEK. Similar to other studies, all participants indicated that they expect the university to respect tribal cultural values (Diver, 2016; Matson et al., 2021; Nadasdy, 2003b; Sowerwine et al., 2019; Tipa & Welch, 2006). Incorporating and respecting TEK can help address the important cultural variable found to be important to co-management success (Plummer, 2009).

The priorities of participants that we interviewed regarding co-management relationships supported the findings of Plummer et al. (2012) in that collaboration and social learning were primary components of a successful partnership. Learning from each other was a common emergent theme in this study. Participants expect the university, as an educational institution, to be willing to learn from the tribe, just as they would learn

from them. This process is described as social learning and is defined by iterative loops of assessment and re-adjusting governing and forest management approaches (Armitage et al., 2008; Olsson et al., 2004; Olsson & Folke, 2001; Ruitenbeek & Cartier, 2001). This iterative exchange of information has been seen as having the potential to create novel solutions to complex social-ecological issues (Berkes & Turner, 2006; Hoagland, 2017). Viewing the partnership as a process, participants' expectations echoed previous research that highlights the need for partners to understand the long-term nature of co-management relationships (Armitage et al., 2008; Cronin & Ostergren, 2007; Plummer, 2009).

While recognizing that there was a power imbalance due to the university holding title to the property as noted by Nadasdy (1999), the participants in the study still expected that decision-making authority should be shared to reach what some researchers describe as complete tribal co-management (Bene & Neiland, 2004; Pinkerton, 2003; Pomeroy, 1995). Shared decision-making as an essential component of Adaptive Co-Management has been viewed by researchers as a rare occurrence in partnerships (Nadasdy, 2003b). In one case study, the lack of decision-making authority was a reason that a tribal partner viewed co-management as a means to protect sacred lands, rather than an end goal of the partnership (Pinel & Pecos, 2012). Participants in this study similarly viewed the relationship as a stepping stone toward other co-management relationships as well as building capacity for future forest management projects.

Additionally, studies have shown that expectations of clear communication and transparency on roles and responsibilities foster co-management (Moorman et al., 2013; Thondhlana et al., 2016) and are similarly supported by the results of this study.

### Centering Forest Management Activities and Research on Wildlife Habitat and the Restoration of Natural Processes

The main interest of participants was a focus on forest management to improve wildlife habitat. This aligns with the primary purpose of the Goukdi'n forest conservation easement. Species-focused management has also been emphasized in a study investigating the integration of TEK and WEK (Bussey et al., 2016). In our interviews, this could be seen as one of the most important measurements of success when assessing forest management projects. Elsewhere, the integration of cultural values and views on the natural world has conflicted with agency management objectives around federal wildlife protection laws in the Klamath Basin (Hatcher et al., 2017).

The utilization of TEK as a primary component in research and management activities is supported by both federal (Haaland & Vilsack, 2021) and state (Newsom, 2020a) executive actions and policies. At CPH, a recently released 5-year strategic plan (2020) outlines goals of decolonizing research by valuing TEK and partnering with Indigenous communities. These "Visions" and "Core Values" signal that there are enabling environments (Armitage et al., 2008; Berkes, 2009) for tribal co-management on state-owned lands. Tribal partners' desire for TEK-generated re-search and management

activities has also been observed in other tribal co-management studies (Diver, 2016; Matson et al., 2021).

Interview participants want management activities to focus on culturally important plant species, mitigating wildfire risk, and improving wildlife habitat by utilizing uneven-aged silviculture (



*Table 3*). Uneven-aged silviculture does not remove all trees in harvest areas and leaves either single trees or groups of trees, with reductions in canopy cover to encourage a forest structure of varying age classes. Based on the results of this study, university managers should expect uneven-aged management to be the preferred silvicultural method of their tribal partner when conducting management activities in Goukdi'n.

*Table 3. Examples of quotes provided by participants and how they could be translated into forest management objectives.*

Forest Management Objectives	Interview Quote
Manage for Uneven-aged Stand Structure	“...you have to leave some so that the forest can create, again, its own, its own, its own ecosystems to care for all the different growing things underneath it. You know you have them big ones, to protect the medium ones, to protect the little ones. So, you can’t cut them all.”
Conduct Extensive Botanical, Water quality, and Wildlife Surveys.	“I’d love to see how many critters live on the land. I’d love to see what that water tastes like. Is it healthy water? Where does it come from? Is it good for drinking? I’d love to see what kind of lichens grow in the forest. I’d love to see these different...research opportunities.”
Silviculture Promoting Native Understory Vegetation	“You could plant with you know, a couple understory shrubs here and there as well, I know that sounds crazy...”
Improve Wildlife Habitat	“...and they did do some light logging. Not heavy, just light. And it was nice, it was really nice to see. So, that habitat plays a role to bring back wildlife.”
Develop (Interpretive) Trail System	“It would be cool to see you know, a nice trail system that, that you know goes to different patches of interest.”

#### Providing Opportunities for Tribal Youth While Nurturing Their “True Self”

Aligning with the Sowerwine et al.(2019) study that sought the goals and objectives of a tribal research partner, we found that engaging tribal youth was an important component of co-management. Consistent with research investigating the education of tribal youth, our findings indicate that successful engagement includes the need for the university’s partners to understand their tribal culture (Demmert et al., 2006;

Gilliland, 1999; Klug & Whitfield, 2012; Reyhner, 1994; Rhodes, 1994). Therefore, co-management not only reconnects and provides access to forested lands but also provides an opportunity to train younger generations of tribal youth to empower the tribe's next generation of natural resource managers.

### Unexpected Findings

While not deliberately investigated by asking questions, three unexpected results emerged from this study. First, returning the land to the Wiyot Tribe was only brought up by approximately 30% of the participants ( $n = 4$ ). In none of these cases did the participant view the two actions, co-management, and land return, as mutually exclusive but would prefer the land to be returned to the tribe. The participants were, instead, concerned with restoring the forest, and improving wildlife habitat while focusing on Wiyot Tribe's cultural values and TEK. Second, many participants shared that they would like to see more Native American representation in the staff and curriculum being taught at CPH. When discussing this desire to have more representation at the university, it was also linked to creating a more inclusive environment for tribal students. Lastly, participants in this study not only sought to involve Wiyot Tribe membership in co-management but also mentioned including the non-native community. This finding is contradictory to a study of a co-management partnership between a tribe and the Bureau of Land Management (BLM) where the tribe sought to exclude and limit public access to a park for the protection of cultural resources (Pinel & Pecos, 2012). This may be

because the forest in this study is held privately rather than publicly and currently does not have many visitors.

### Limitations and Recommendations

None of the participants had professional forestry experience which potentially limited the depth of their responses regarding forest management. While many of the participants had some experience in natural resource management in either report writing or an allied discipline (such as botany), they had limited understanding of common silvicultural prescriptions such as thinning and selection management, natural resource law, and forest operations. Without knowledge of different possible management options, participants were unable to describe, in detail, what types of activities they would like to see conducted in the forest.

Additionally, due to COVID-19-related restrictions on social gatherings and historic exclusion from their ancestral lands, only two of the participants in this study had recently visited this particular forest. This lack of knowledge of current forest conditions throughout Goukdi'n likely limited potential responses to questions about their goals for forest management. Further limitations existed in terms of participant sampling methodology and generalizability. For example, before conducting this research project, we had no contacts within the Wiyot Tribe and social capital was absent. This meant that we relied on individuals with connections within the community to begin building relationships with Wiyot Tribe citizens. Conducting an interview project during a global

pandemic in combination with limited social capital and with research fatigue within the community, we found difficulty reaching those in our potential pool of participants.

Finally, this study focused on the co-management priorities of only one of many Native American tribes and is therefore limited in its ability to be generalized. While this study provides detailed insight into tribal partners' views on co-management, due to the nonprobability sample these findings are not intended to be generalized to other tribes and tribal communities or other co-management case studies. Therefore, we recommend replicating our study, and also suggest that future studies of tribal co-management include interviews with both the institution and tribal partners to identify mutual goals and potential barriers to success.

## CONCLUSIONS

Semi-structured interviews provided an opportunity to initiate meaningful dialogue between CPH and the Wiyot Tribe while answering our three research questions. This research aimed to identify: (i) views on co-management, (ii) forest management objectives, and (iii) the importance of engaging tribal youth in natural resource management. Based on a qualitative analysis of 13 interview transcripts we identified themes that informed these three research questions and found that (1) participants were optimistic about the potential partnership and anticipated that real benefits to the tribe could be born from the partnership, (2) forest management objectives and gauges of success were tied to the improvement of wildlife habitat and the promotion of culturally important native plant species, and (3) engaging tribal youth in the management of natural resources was unanimously viewed as beneficial. Our study suggests that the co-management of Goukdi'n can create benefits for the Wiyot Tribe by focusing on meeting their partnership requirements, managing expectations, and anticipating ways to address identified barriers. These findings are supported by the core components of ACM theory which could serve as a potential framework for the forming and building of a partnership between CPH and the Wiyot Tribe.

CHAPTER 2: ENABLING CONDITIONS, SOCIAL CAPITAL, AND SOCIAL  
LEARNING ARE DRIVING TRIAL CO-MANAGEMENT EFFORTS OF  
CALIFORNIA PUBLIC LANDS

INTRODUCTION

Managing public lands cooperatively with Indigenous groups is increasingly common as many Native American communities assert their inherent rights to self-determination (Pinkerton, 1992). The need to develop these cooperative relationships is due to a “history of violence, exploitation, dispossession and the attempted destruction of tribal communities” (Newsom, 2019), which left most Indigenous lands under private or public ownership (Jacobs et al., 2022). Some Indigenous peoples have sought agreements with state and federal governments for the co-management of the natural resources, land, water, and wildlife located on public lands within their ancestral lands (Diver, 2016; Hatcher et al., 2017; Pinel & Pecos, 2012; Pinkerton, 2003) to which tribes retain a deep connection (Long & Lake, 2018).

In the United States (USA), many Indigenous tribes have inherent and reserved rights, codified by federal law through the signing of treaties (Wilkinson & Miklas, 2004). Additionally, the State of California is home to the largest number of Native Americans (U.S. Census Bureau, 2020) with greater than 100 federally recognized tribes and over 70 tribal groups that are seeking federal recognition (California Courts, n.d.). Tribal ancestral lands, or “Indian country” have been formally recognized since 1769 but

by 1848 comprised only 1% of the then newly formed State of California (Wood, 2008). In this state alone, 18 treaties were negotiated but due to public pressure against the treaties, they were never ratified by the USA Senate (Castillo, 1999). During the 1850s, the treatment of tribes by California included the splitting of families (Johnston-Dodds, 2002), state-sanctioned murders (Madley, 2016a, 2016b), enslavement, and land theft (Heizer, 1993). The following quote illustrates the perspectives on the relationships between the State of California and the Native American tribes whose ancestral lands fell within the newly created state boundaries:

“Our American experience has demonstrated the fact, that the two races cannot live in the same vicinity in peace.” – State of California’s First Governor, Peter Burnett, regarding California Native Americans in 1851

Since an executive order explicitly urging co-management with tribes on California’s public lands (Newsom, 2020b), limited literature has been published examining if, and how, this work is being completed (Sollfrank, 2023). Other co-management studies have focused on relationships between government agencies and a limited number of Indigenous groups and governments (Adams, 2003; Davenport et al., 2007; Diver, 2016; Hahn et al., 2006; Nkhata et al., 2012; Ulvevadet, 2008). The situation is even more complex in California, where many tribes are in the early stages of engaging in co-management with the numerous agencies overseeing public land management projects.

Not until over a century of horrors and hardship would tribes begin to gain the state’s acknowledgment of their relationship to cultural resources contained on their ancestral lands. Since the 1970s, the State of California has moved from being essentially



devoid of tribal involvement in management decisions on state-owned lands to now where the state is actively seeking to develop co-management agreements with tribes. Major legal advances were spurred by the development of various state tribal consultation policies beginning with the passing of the California Environmental Quality Act (CEQA) (1970) (

*Table 4*). Today, the State of California acknowledges that both federally and non-federally recognized tribes have sovereign rights, unique traditional ecological knowledge (TEK) (Berkes, 2017; Pierotti & Wildcat, 2000; Whyte, 2013), and relationships with California's resources (Brown & Laird, 2012).

#### Defining Co-Management and Moving Toward Adaptive Co-Management

Co-management is rooted in tribal efforts to assert off-reservation fishing rights guaranteed to the 1855 treaty tribes in the State of Washington (Pinkerton, 2003). It is defined, broadly, as the sharing of decision-making power regarding natural resources between the government and a community of stakeholders (Pinkerton, 1992). This definition has since been "stretched" (Pearson & Dare, 2019) by researchers beyond its original intention (Pinkerton, 2003) to include varying levels of participation (Arnstein, 1969; Berkes, 1994; Pomeroy, 1995; Sen & Nielsen, 1996) in the management of common-pool resources (Adams, 2003; Diver, 2016; Hahn et al., 2006; Hatcher et al., 2017; Russell & Dobson, 2011; Ulvevadet, 2008). This decentralized form of governance is gaining popularity in natural resource management (Plummer & Fitzgibbon, 2004) and places importance on managing relationships rather than natural resources (Cheng, 2006;

Natcher et al., 2005). This decentralization of authority should occur at a scale consistent with the resource being managed (Bohensky & Lynam, 2005) with consideration of user groups' capacity (Jentoft & McCay, 1995; Sen & Nielsen, 1996) but researchers caution that co-management has not always yielded positive outcomes for communities (McCloskey, 1996; Nadasdy, 2003b). While viewed as a long-term commitment (Armitage et al., 2008; Cronin & Ostergren, 2007; Plummer, 2009), some studies have highlighted that tribes viewed co-management as a means to supporting self-determination rather than an end goal (Berkes, 2009; Erickson et al., 2022; Pinel & Pecos, 2012).

Adaptive Co-Management theory (ACM) expands co-management to include elements of adaptive management (Corrao et al., 2016; Gerhardinger et al., 2009; Holling et al., 1978; Stankey et al., 2003) such as iterative processes of learning based on feedback, co-generating knowledge, and experimentation (Armitage et al., 2010; Fabricius & Currie, 2015; Folke et al., 2002; Holling et al., 1978; Olsson et al., 2004; Plummer & Baird, 2013). While ACM should not be seen as a panacea for solving social-ecological problems (Armitage et al., 2009; Plummer, 2009) it could be considered a technique for solving complex or wicked problems (Carlsson & Berkes, 2005; Colfer & Prabhu, 2008; Plummer & Baird, 2013) which move beyond power-sharing agreements (Carlsson & Berkes, 2005). Ruitenbeek and Cartier (2001) argue that ACM's core components are more important than the definition (Fabricius & Currie, 2015). These components include enabling conditions (Armitage et al., 2009, 2009; Olsson et al., 2004; Plummer & Fitzgibbon, 2004; Selin & Chevez, 1995; Waddock, 1989), social learning

(Armitage et al., 2008, 2009), collaboration across multiple levels and scales (Armitage et al., 2008, 2009; Ruitenbeek & Cartier, 2001), and viewing the relationship itself as a long term (Davidson-Hunt & O’Flaherty, 2007), iterative, and experimental process (Armitage et al., 2009).

Social learning is described as the learning that “occurs among individuals and groups when they join together to understand environmental challenges and to develop practical responses to them (Woolcock, 1998). As an outcome of collaboration (Berkes, 2009) social learning relies on and facilitates the essential process of trust-building outlined in ACM literature and co-management case studies (Armitage et al., 2009, 2009; Davenport et al., 2007; Dockry et al., 2018; Hahn et al., 2006; Ho et al., 2016b; Journey et al., 2017; Olsson, Folke, & Hahn, 2004; Pretty & Ward, 2001; Robinson & Wallington, 2012). Research on Indigenous co-management has observed that the co-generation of knowledge is an important step in co-management (Davidson-Hunt & O’Flaherty, 2007; Olsson & Folke, 2001) which requires the careful integration of TEK and western ecological knowledge (WEK) (Bussey et al., 2016; Eriksen & Hankins, 2014; Hoagland, 2017; Mason et al., 2012; Ramos, 2022; Weiss et al., 2013). When integrating these two ways of knowing, it is important to reflect on decision-making norms present in government and how they make impact implementation (Natcher et al., 2005; Vaughan et al., 2017) with co-management impaired in cases where the process does not occur (Nadasdy, 2003b; Taiepa et al., 1997). When successful, social learning can develop trust and facilitate the development of social capital (Pretty & Ward, 2001).

In ACM literature, social capital has been viewed as an essential component of co-management relationships (Plummer, 2009). Social capital is defined as "...features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995) which can lower the cost of working together (Temple, 2009) by giving partners confidence that their efforts will be reciprocated (Pretty & Ward, 2001). Social capital exists between individuals and across groups (Adler & Kwon, 2006) through horizontal linkages of bonding (between similar groups) and bridging (between dissimilar groups) (Adler & Kwon, 2006; Berkes, 2009; Davidson-Hunt & O'Flaherty, 2007; Pretty & Smith, 2004).

Developing social capital requires the shifting of cultural norms on authority and how it is delegated (Davidson-Hunt & O'Flaherty, 2007) and is a product of social learning (Armitage et al., 2008) that is dependent upon enabling conditions (Nykqvist, 2014) which can include law, policy, or favorable political climate (Olsson et al., 2004; Plummer & Fitzgibbon, 2004; Selin & Chevez, 1995; Waddock, 1989). Though, enabling conditions alone, without guidance or political will, does not always equate to successful co-management (Lu et al., 2012).

### Building Upon State-mandated Consultation via Co-Management

California policies describe agency consultation procedures within the California Natural Resources Agency (CNRA). Departments are legally required to consult with tribes on state projects but recent policies encourage that they seek opportunities beyond this action. The following

*Table 4* provides, in chronological order, an overview of the current enabling conditions (Berkes, 2009) for moving beyond legally required consultation to co-management of California's public lands (

*Table 4*).

*Table 4. A chronological list of tribal consultation policies and statutes that support and outline methods of tribal consultation in the State of California. The term "co-management" is not used until 2019.*

Title	Enacted	Legal Standing	Purpose
California Environmental Quality Act (CEQA)	1970	Statute	Protection of natural resources and requiring consultation with Native American tribes
Department of Parks and Recreation (CSP) Consultation Policy & Implementation	2007	Policy	Identifies how and when consultation should occur, promotes tribal access to cultural places, enable cooperative agreements to act as caretakers of cultural places
Office of Governor Executive Order B-10-11	2011	Policy	Creates Tribal Advisor in the Office of the Governor, strengthens tribal relations
California Natural Resource Agency (CNRA) Tribal Consultation Policy	2012	Policy	Consult at the earliest possible time in the planning process, encourages meetings at the tribe's convenience, create a tribal liaison network and committee, provide training for tribal liaisons
Assembly Bill 52 (AB-52)	2014	Statute	Strengthens limited protection measures of Tribal Cultural Resources and

Title	Enacted	Legal Standing	Purpose
California Department of Fish and Wildlife (CDFW) Tribal Consultation and Communication Policy	2014	Policy	Encourages early and ongoing communication and provides opportunities for tribal input on or off tribal lands, creates tribal liaison title
California Department of Water Resources (CDWR) Tribal Engagement Policy	2016	Policy	Adopts a policy of cultural competency training for employees and supports enabling California Tribes to “...manage and act as caretakers of tribal cultural resources.”
Executive Department State of California Executive Order N-15-19	2019	Policy	Apologizes for the history of mistreatment by California toward Native American tribes
Office of the Governor Statement of Administrative Policy Native American Ancestral Lands	2020	Policy	Encourages <i>co-management</i> of California’s “natural lands”
Executive Department State of California Executive Order N-82-20	2020	Policy	Encourages use of TEK in California land management to protect biodiversity

The passing of the California Environmental Quality Act (CEQA) ushered in requirements for consultation with Native American tribes in California. The California State Parks developed an early consultation policy followed by a 2011 Executive Order, which has been re-affirmed by the current administration, that built upon CEQA

consultation (EO B-10-11). Within a year the CNRA released its own Tribal Consultation Policy (Brown & Laird, 2012).

In 2014, new perspectives on tribal consultation law were clarified and codified under Native Americans: California Environmental Quality Act, Assembly Bill 52, 2013–14 California Legislator, Regular Session (2014) (AB-52). This amendment expanded on the existing consultation procedures outlined in the CEQA to “...directly include California Native American tribes’ knowledge and concerns” (Assembly Bill No. 52, 2014). Post AB-52, further department consultation guidelines were produced (Bonham, 2014; Torgersen & Brown Jr., 2016) with only the CDFW consultation policy utilizing the term “co-management”. Although they lack the permanence of bills passed by the legislature, a series of Executive Orders and a Statement of Administrative Policy followed with one containing explicit language urging the co-management of California’s public lands (Newsom, 2020b).

This qualitative study aimed to support the implementation of co-management by the CNRA based on perspectives of tribal points of contact within land management departments. This paper can inform improvements and adaptations when implementing current and future co-management models of natural resource management in California and beyond. In the following sections, we discuss the state’s efforts with co-management case studies, firstly by providing some background on co-management and the associated theory of Adaptive Co-Management (ACM). We finish with identifying statutes and policies that support California’s efforts of building on legally required consultation toward co-management.

## MATERIALS AND METHODS

We conducted semi-structured interviews with employees of departments within the CNRA to investigate their roles and responsibilities, and challenges. The goal of the questions was to describe the enabling conditions for achieving co-management of the State of California's public lands. Research methods were approved by the Cal Poly Humboldt Institutional Review Board (IRB 21-124). Interviews were conducted from May 5th, 2022, to February 9th, 2023. The number of tribal points of contact within each of the CNRA departments varied (*Table 5*). The interview guide was consistent across interviews but semi-structured interviews allow both the participant and the researcher to explore questions to obtain deep information (Creswell & Creswell, 2018; Ritchie et al., 2013). This design has been utilized in similar studies seeking to understand the tribal relationship-building strategies of the United States Forest Service (Dockry et al., 2018).

Our interview consisted of 14 questions and anticipated follow-up questions to further explore participant answers (*Appendix B*). These questions focused on: 1) existing formal and informal agreements between the CNRA and tribes whose ancestral lands overlay the public lands; 2) identifying barriers and enabling conditions to develop collaborative management partnerships.

Participants were recruited via email or phone and those interested in, or granted permission by their superiors, were interviewed for this project (*Table 5*). We engaged with departments within the CNRA that managed natural resources on public land. These departments include the California Department of Forestry and Wildfire Protection (CAL



FIRE), California State Parks (CSP), California Department of Water Resources (CDWR), and the Department of Fish and Wildlife (CDFW).

Interviews were conducted over the telephone or using Zoom Inc. remote meeting software. Interview recordings were transcribed through Otter.ai transcription software and verified word for word for each interview. We used an adapted grounded theory approach to analyze the interviews through the lens of ACM through iterative open coding to identify emergent themes (Strauss & Corbin, 2015). Each interview transcript was read three times, utilizing line-by-line, axial, and focused coding (Charmaz, 2014) utilizing Atlas.ti 9 Qualitative Data Analysis software. Thematic qualitative analysis was used to identify and analyze emergent themes from participant interviews (Braun & Clarke, 2006; Strauss & Corbin, 2015).

## RESULTS

We interviewed roughly half of all CNRA employees from four departments that work directly with Native American tribes and serve as a point of contact within the state government. Most of the interview participants were employed by CSP (n=13) while CDFW was the least represented (n=1) (*Table 5*). Although their official job titles varied, here we generally describe participants' titles as "tribal point of contact", synonymous with the term "tribal liaison" more commonly found in official documents. All participants shared that tribal relations duties were added to their primary job duties (n=20). Participant ages ranged from 31 to 69 years old with an average of 18 years of experience working with Native American tribes. The gender of interview participants was nearly balanced with 55% being male and 45% female. None of the participants identified as Native American.

*Table 5. Number of tribal liaisons - also known as tribal point of contact - in the four departments within the California Natural Resources Agency (CNRA).*

CNRA Department	Total Number of Tribal Liaisons	Number of Liaisons Interviewed	Percent Sampled
CDFW	12	1	8
CAL FIRE	1 (2) *	3	100
CDWR	6	3**	50
CSP	21	13	62

\*Two of the CAL FIRE interviews were conducted with forest managers.

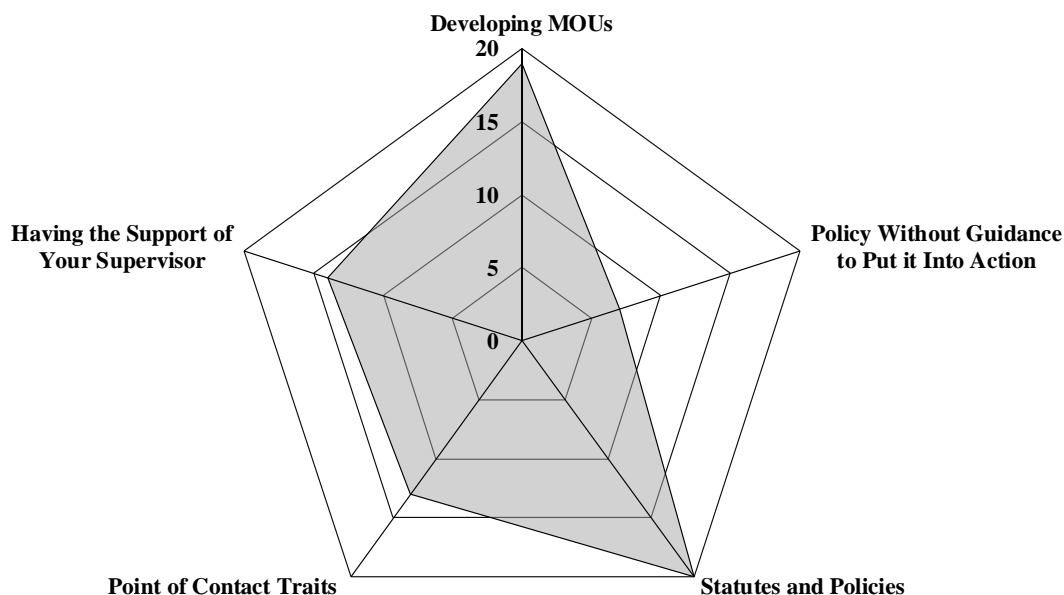
\*\*One CDWR interviewee submitted a written response to the interview guide.

The following sections provide summaries of interview data by emergent themes with supporting data. Three major themes emerged from the transcript data: (1) enabling

conditions are means for moving beyond project-based consultation, (2) roles and responsibilities, and (3) challenges to achieving co-management in California.

#### Enabling Conditions Are Means for Moving Beyond Project-Based Consultation

Almost all participants viewed the development of MOUs as an important step in working toward the co-management of natural resources on California's public lands (n=19) (*Figure 5*). Project-based, or legally required, consultation was viewed both as a positive and negative for engaging with tribes. Participants pointed towards the legal framework for tribal consultation (n=19) as important for justifying tribal involvement in management decisions on state lands but do not reflect a process that builds trust and social capital. Though enabling conditions exist, some participants (n=6) specifically shared that there was a lack of guidance to implement co-management with tribes.



*Figure 5. The frequency of participants that spoke about subthemes relating to enabling conditions used to move beyond legally required consultation to achieve co-management. Each vertex on the shaded triangle represents the number of participants that spoke about a theme or subtheme. All participants used existing statutes and policies while 19 of 20 participants either used or hoped to use, memoranda of understanding (MOU).*

### Distinguishing Between Consultation and Co-Management

The majority of the interview participants agreed that there was a difference between consultation and co-management (n=19). Consultation was defined as the legal requirement of CNRA employees as stated by law and the “bare minimum.” Co-management interpretations ranged from a formal signed agreement (n=4) to eliminating entrance fees to public lands. One identified reason for the diversity in interpretations of co-management was highlighted by a participant, “I don't know what that looks like, but I don't think anybody does” (03). Another participant shared their interpretation, “a co-management agreement really is like a solid partnership, where you're like, we're

managing this for each other, with each other, and for each other" (01). At the time of this study, two formal agreements were highlighted by participants as a model for co-management. One participant shared that formal co-management agreements were very detailed and included a clear definition of roles and responsibilities. They go on to explain that the process can "...dive deep into the weeds on how who's going to be responsible for what" (10).

#### Leveraging Enabling Conditions to Work Toward Co-Management

Participants identified laws, statutes, policies, and conditions that supported moving beyond legally required consultation (n=19). Department policies, specifically California State Parks, were pointed to as being progressive and put in place before the passing of AB-52. The legal consultation process, supportive policies, and the development of MOUs were cited as the main tool for increasing tribal involvement on public lands (*Figure 5*).

Executive orders and policy statements were also identified as useful tools to develop co-management agreements. But as one participant shared, "They're not truly statute...but it's a lot more than just policy" (04). These EOs and policies were identified as a document that participants could point to when they were speaking to their supervisors about increasing tribal engagement. Another participant shared that "while there's a policy that allows things to happen...there's no mandate that says, 'Hey, you will go and partner with tribes on these things'" (10). Contracting was viewed as one way to work with tribes (n=2) which served as a tool to engage tribes in activities on state lands.

The development of MOUs was viewed as a tool for personalizing communication preferences (n=8), facilitating access and gathering (n=7), and ensuring continuity within the CNRA in the case of staff turnover (n=6). The process of developing an MOU with a tribe was seen as such a positive relationship-building experience by one participant that, in the end, it almost negated the need for the agreement.

While interview participants dealt with tribes directly, decision-making authority ultimately belonged to their superiors (n=15). Having good superiors was widely viewed as important to prioritizing relationship building (n=14) but under half of the participants explicitly stated that they currently have positive support (n=7). Supervisors with experience with tribes were more open to supporting increased relationship building because they had "already experienced it" (n=3).

#### Moving Beyond Legally Required Consultation

Participants explained that relationship building, while initiated through project-based consultation, occurred during informal meetings outside those required by law. All participants indicated that relationships were built on personal communication (n=20) and happened often during informal meetings or gatherings outside of project-based consultation (n=8). One participant shared that these gatherings offered opportunities for building a relationship "that's not just transactional, project-based" (11). These relationships helped overcome mistrust between tribes and the CNRA (n=7) due to "histories that affect the relationship today" (09).

Often initiated through project-based consultation, these long-term relationships existed beyond the completion of a project (n=9). This relationship-building process takes time (n=11) and requires employees to be open, honest, and transparent (n=4). Two participants indicated that there was a need to have a “personal touch” among other traits needed for working with tribes and that it was important to “have the right people in the right place” (03). Other identified traits included a willingness to listen, “having thick skin”, and as one employee shared, “... you have to, I don't want to say, ‘be cool’ but you have to just like, listen to what the tribal members saying and respond to it in a good faith manner” (06).

### Roles and Responsibilities

Participants shared perspectives on their roles and responsibilities as tribal contacts. Explored below, these roles are seen as multi-faceted, facing outward, from the CNRA to tribes, inward, toward fellow CNRA employees, and between their agencies and tribes (Figure 6). This goes beyond the legal requirements for project-based consultation and many participants only saw consultation as one piece of building

successful relationships with tribes.

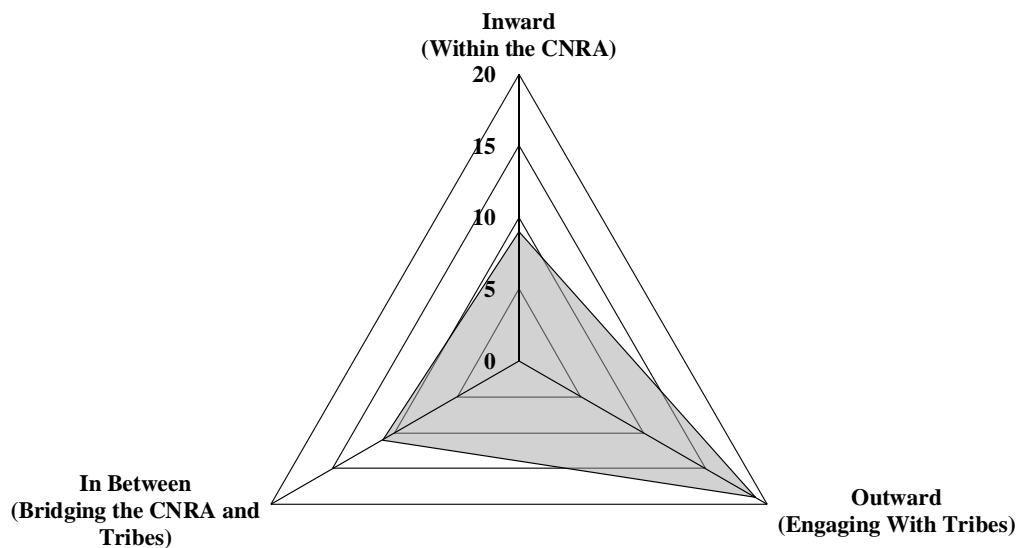


Figure 6. The frequency of participants that spoke about subthemes relating to roles and responsibilities of participants. This graph shows that participants spoke with the greatest frequency about their roles facing the tribe (outward). Each vertex on the shaded triangle represents the number of participants that spoke about a theme or subtheme.

### Facilitating, Communicating, and Protecting Relationships

When discussing their roles and responsibilities, participants focused predominately on their outward-facing duties (n=18) (Figure 6) which included building and maintaining tribal relationships and helping tribal partners navigate state bureaucracy. Participants shared that one of their roles was to initiate and maintain partnerships by building trust because “They don't come in with a trusting relationship for reasons of history and condition. And our goal is to try and recreate a trust” (09). One participant has been working to build trust for over 15 years, sharing that “it takes some serious time and energy to develop that relationship” (01). Building trust also led to more



streamlined project-based consultation. Participants also shared that their roles included “helping them navigate” state bureaucracy, “to be that bridge for them” (11) while being transparent about what they can and cannot do. When discussing prescribed fire, one participant spoke about the limitations of requiring permits “we just can't give that to do. That's not within our authority as a department.” (15).

Participants highlighted the importance of having a consistent point of contact within the CNRA for tribes. One participant viewed their roles as “go-to person so that the tribes have like a familiar person that they're going to” (05). Having consistent contact also facilitated long-term relationships “As opposed to somebody rotating in and out of this role” (10).

#### Educating Co-Workers and Advocating for Tribal Involvement in CNRA Projects

Participants in this study shared that there are responsibilities to educate and communicate with employees within their departments as well as advocate for tribal interests. The most cited inward-facing role, or working within the CNRA, was “educating the people within our agency” (07) and facilitating connections between CNRA employees and tribes ( $n=11$ ). Two participants indicated that they had issues engaging CNRA natural resource managers with tribes while another cited potential issues with long-time employees that have the attitude of “don't tell me what to do” and “You're gonna make this more complicated” (04). Facilitating relationships included encouraging co-workers to attend informal events to strengthen their relationships with tribes. Participants also shared that they were responsible for advocating tribal priorities

when projects were being internally developed within CNRA and to elevate conversations to their superiors with increased tribal involvement.

Tribal consultation was viewed by participants as both a legal and moral obligation that was distinguished into two categories. These categories were identified as “little c” and “big C”. “Big C” consultation was identified as the basic legally required consultation “...where you do the bare minimum, you're doing the compliance stuff...” (01). One participant shared that despite disagreement from a tribe, “the project proponent or the lead agency can move forward...It's not all that popular” (02). “Little c” was seen as moving beyond the basic legal requirement and involved building personal relationships between the CNRA and tribes. This included “explaining to your agency why relationships with tribes are important and why we need to do it” (07).

#### Acting as a Conduit Between the CNRA and Tribes

Interview participants also viewed themselves as playing a role between their departments and tribes. Participants described themselves as a “filter”, “conduit”, or “intermediary” (n=11). They sought mutually beneficial outcomes and assessed how both sides will be affected by CNRA decisions. One participant shared that their position was about building relationships and “balancing our responsibility to the resource” (09). One participant shared that informal events provided the opportunity to build trust between tribes and their co-workers, “we're just gonna have an informal get together... that's going to provide conversations” (04).

## Challenges to Achieving Co-Management in California

All participants viewed tribal diversity and capacity as the dominant challenges (n=20). Participants also viewed the competing missions of the CNRA and their responsibilities to multiple stakeholders as being a barrier to developing co-management partnerships (n=18) (Figure 7).

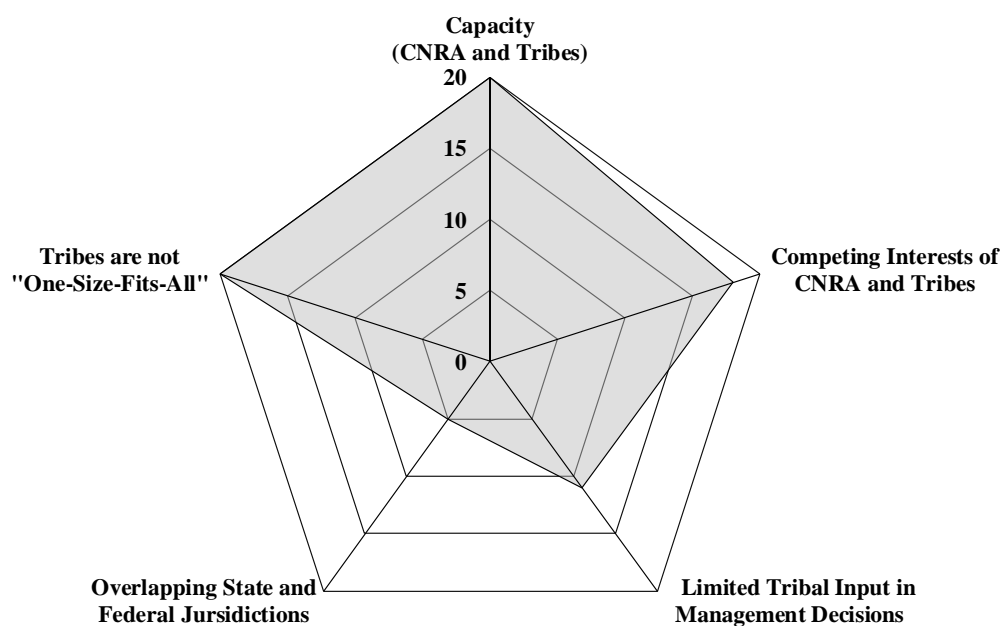


Figure 7. The frequency of participants that spoke about subthemes relating to challenges that need to be overcome to achieve co-management. Each vertex on the shaded triangle represents the number of participants that spoke about a theme or subtheme. For example, all participants referred to capacity and the diversity of tribes as potential challenges to overcome.

### Tribes Are Not One-Size-Fits-All

Participants shared that tribes have varying definitions of co-management, capacities, and priorities in natural resource management that vary between tribes and generations of tribal members. Each participant shared, due to diverse tribes in their

responsibility areas, that there is no “one-size-fits-all” approach (n=20) and that tribes “...wants and desires are different” (01) (*Figure 7*). One participant shared that while involving tribes early in planning is important, some tribes would rather have “...something to chew on” (03) but cautioned not to come to them with a completed plan. Some participants shared that they believe tribes should “participate as much as possible, as much as they want to.” (01) (n=3). The capacity to participate was associated with the presence of tribally owned casinos (n=6) and the tribe’s federal recognition status (n=14). A lack of federal recognition was seen by one participant as “a big barrier because they don't have the resources that federally recognized tribes have access to” (07). Successful casinos were viewed as positively impacting engagement in co-management because “It takes money to build capacity and it takes people” (10). But others indicated there wasn’t a “direct correlation of, ‘You own a casino; therefore, you have the ability to be engaged’” (15). Other identified priorities focused on regaining access to ancestral lands for gathering and ceremonial activities (n=5), “We were charging the tribe to come to their garden of Eden, basically” (01). Tribal interpretations of co-management varied and as one participant stated, “you'd be amazed at the responses that you get from different tribal employees versus elected officials and then it varies from tribe to tribe too” (14).

Variations in priorities in natural resource management were attributed to the sheer number of tribes in the state as well as generational shifts in leadership. One participant shared the difficulty of working with numerous tribes in a single county, “if we were to try and formalize an MOU with all [the] tribes...it’s sort of hard for me to understand how that would work” (06). This tribal diversity and quantity can lead to a

limitation in whether the CNRA can effectively engage with each of them (n=2). Another participant shared that rural tribes in their area had limited internet access, which hindered communication. Generational shifts included the preservation of cultural artefacts held by the CNRA rather than using them for ceremonies (03). Another non-native participant had witnessed that as tribal members aged, they became more focused on raising families than co-managing off-reservation lands. Other priority shifts may come from changing leadership including developing MOUs or other collaborative agreements. When speaking about shifts in tribal priorities one participant shared that “Sometimes it involves co-management and sometimes it doesn’t” (10).

#### Tribal and CNRA Limitations in Capacity

Participants shared how limitations in capacity were identified as a limiting factor in connection on both sides (n=20) as all participants indicated that tribal point of contact was a duty added to their current responsibilities (n=20). This was viewed as an impediment to relationship building due to lack of time to engage in tribal communication (n=2) leading one person to suggest that tribal liaison should be a dedicated full-time position.

Non-tribal CNRA employee participants shared that tribal capacity was a limiting factor in achieving co-management (n=20). They shared experiences of getting no response from requests for consultation (n=5), this non-response was assumed to be due to tribal capacity and the sheer number of requests tribal natural resource offices receive from government agencies. As one participant states, “They’re not waiting around for you to call them” (03).

### Competing Missions of the CNRA and Responsibilities to Multiple Stakeholders

Participants shared that there were times when the priorities of tribes conflicted with CNRA management responsibilities (n=18) because CNRA employees are "...still beholden to all of the people of California" (15), not only Native American tribes. Sometimes tribes "...wind up being treated like other citizens" (16), especially when pursuing gathering permits. Examples of competing stakeholder interests include opposition to changing location names, multi-use of public lands (e.g. mountain bike and off-highway vehicle use), and negative views on prescribed fire.

Western views on management, as well as state law, may be inhibiting the integration of TEK and WEK. One participant shared that when considering this integration, they thought about the differences in ways of knowing as, "a government agency versus ... a spiritual way of seeing nature" (17). Another participant explained that some natural resource employees have the belief that "We have got to make sure nothing happens to these natural resources" (03) and that any human activity will harm them.

Potential legal barriers were identified when considering incorporating TEK into the management of the culturally important food, tanoak (*Notholithocarpus densiflorus*), and prescribed fire. One participant shared that management for tanoak was potentially in opposition to current forest practice laws while prescribed fire requires certain qualifications to conduct burning activities. When discussing how TEK is not viewed the same as western fire professionals, one participant shared, "If you understood TEK and the culture behind it, you might understand that TEK person might actually have more

experience and knowledge than somebody who gets a state sort of burn boss certificate”

(15). In both cases, participants indicated that they are actively working on ways to overcome these challenges to support tribal cultural activities.

## DISCUSSION

Through the analysis of 20 interview transcripts, we explored the current efforts of the State of California to co-manage public lands with Native American Tribes. Guided by our three research questions, we identified that (1) limited co-management cases exist, but many CNRA employees are seeking agreements, (2) barriers to co-management are found in both agency and tribal partners, and (3) relationship building is step one when initiating co-management.

### Limited Co-Management Cases Exist, But Many CNRA Employees are Seeking Agreements

At the time of this study, two co-management agreements were identified. Many participants indicated that they were either interested in or actively pursuing co-management agreements utilizing enabling conditions as pivot points (Diver, 2016) for moving beyond legally required consultation. Participants indicated that the current norms for engaging with tribes, especially in light of limited capacity, were limiting opportunities for co-management. They sought outside opportunities such as pursuing grants with eligible partners to provide financial payment for tribal engagement.

While participant interpretations of co-management varied, they each placed it well above the lower rungs of participation (Arnstein, 1969; Berkes, 1994; Pomeroy, 1995; Sen & Nielsen, 1996) similar to “true co-management” as defined by tribes in the Columbia River Basin (Pinkerton, 2003) but could vary based on tribal capacity and



priorities. Our findings suggest that support from leadership to increase engagement with tribes was essential, which has been observed as a successful recipe for achieving co-management (Lu et al., 2012; Nykvist, 2014).

#### Barriers to Co-management are Found in Both Agency and Tribal Partners

This study identified barriers to co-management that align with those observed in similar studies including conflicting missions and responsibilities to multiple stakeholders (Diver, 2016; Dockry et al., 2018). The panoply of tribal priorities, interests, and capacities can pose issues when developing individual co-management agreements. Tribes' priorities ranged from re-gaining access to their lands for important cultural activities to complete co-management (Pinkerton, 2003) and varied within small geographic areas. This variation highlights the importance that co-management needs to occur at a scale appropriate to the tribe and resource (Bohensky & Lynam, 2005).

Many of the roles and responsibilities shared by participants echoed those identified by a similar study investigating strategies of United States Forest Service tribal liaisons for building relationships with Native American tribes (Dockry et al., 2018). How interviewees described their roles indicated that they operate outside of CNRA norms and culture acting as a bridge between tribes and their departments (Berkes, 2009; Davidson-Hunt & O'Flaherty, 2007; Pretty & Smith, 2004). This required support from supervisors to generate long-term relationship-building opportunities, although more frequent engagement was not matched with increased time and financial resources (Armitage et al., 2009).

### Relationship Building is Step One When Initiating Co-Management

Our study results indicate that the required enabling conditions are present to support both initiation of social learning processes and the development of social capital, all important components of ACM (Fabricius & Currie, 2015). These conditions include department policies, statements of administrative policy, and statutes that reflect a political climate favorable to engagement in co-management.

Social learning is being initiated between the CNRA and Native American tribes. The process is taking place on various levels, including between CNRA employees and tribal partners and between the CNRA and tribes. One stage where this is being tested is the integrating of TEK and current management practices to co-generate new knowledge through the management of cultural landscapes and cultural burning (Emery et al., 2014; Hummel et al., 2015; Lake, 2021; Mason et al., 2012). As seen in similar case studies, this process is hindered by existing management norms (Nadasdy, 2003b; Taiepa et al., 1997; Vaughan et al., 2017). Co-management is occurring on California's public lands but efforts are currently focused on building personal bridges between the CNRA and tribes, rather than managing a resource (Natcher et al., 2005).

This study re-affirms the primary importance of building trust and social capital (Davidson-Hunt & O'Flaherty, 2007; Kietäväinen & Tuulentie, 2018; Nkhata et al., 2012; Plummer & Fitzgibbon, 2007; Pretty & Ward, 2001) through the development of long-term (Armitage et al., 2008; Cronin & Ostergren, 2007; Plummer, 2009) personal relationships. Though two examples of co-management existed at the time of this study,

many non-native CNRA employees are first developing a foundation of personal relationships with tribes which have been seen as an essential early step towards co-management (Diver, 2016).

Enabling conditions are present in California and facilitate tribal co-management (Berkes, 2009). Similar to Diver (2016) the participants in this study used enabling conditions as pivot points to initiate co-management though many policies lacked legal standing. As in many case studies, interview participants had concerns about the threat of staff turnover jeopardizing CNRA and tribal relationships (Diver, 2016; Dockry et al., 2018). Implementation of existing enabling conditions could also be hindered by limited guidance although high-level political will exists (Lu et al., 2012).

## CONCLUSIONS

Semi-structured interviews provided an opportunity for candid responses from CNRA employees on their perspectives about the co-management of California's public lands. While limited examples of co-management exist, CNRA employees are utilizing enabling conditions to support efforts of developing co-management relationships through the signing of MOUs. These efforts are largely focused on developing relationships which, when successful, facilitate the building of social capital. Increased social capital was achieved through informal, non-transactional gatherings occurring outside of project-based consultation. CNRA employees have limited time and financial resources to attend or host such events which could limit relationship-building opportunities. The diversity of tribes, including their priorities and concerns, further complicate co-management relationship-building. There is a lingering question about the durability of current and future co-management agreements which exclusively rely on the development of MOUs. These findings suggest that allotting tribal points of contact more time and financial resources to engage in informal relationship-building could aid in bridging gaps and connecting tribes and the CNRA. In conjunction with the enabling conditions, these relationships could become the essential building blocks to implementing and sustaining new co-management partnerships.

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## APPENDICES

### Appendix A: Wiyot Tribal Citizen Interview Guide

#### **Interview Guide**

##### **Introduction**

What is your name?

##### **Forest Management**

Could you please tell me about some of your first memories of being in the forest?

What, if at all, is your professional experience in natural resource management?

How do you define a healthy forest?

When walking in the forest, what are some indicators that you look for?

In your opinion, what are the biggest threats to a healthy forest?

What do you believe can be done to mitigate this?

What are your thoughts on forest management?

What are your thoughts on timber harvesting?

Foresters use the term “non-timber forest products”, you could think of these as tribal cultural resources like basketry material or medicines, how does forest management influence these?

##### **Co Management**

How can Cal Poly Humboldt and the Wiyot Tribe work together to manage this forest?

What makes a successful partnership/collaboration between tribes and universities/states/feds?

What types of expectations would you have for the university as a co-management partner?

Do you anticipate any barriers in the development of this relationship?

From your perspective, how can co-management of Goukdi'n benefit the Wiyot Tribe?

What types of impacts could co-management have on the Tribe?

What are your forest management goals within Goukdi'n?

How do these goals promote a healthy forest?

If we were transported 100 years into the future, and this forest was properly managed, what do you imagine it looking like?

### **Tribal Youth Engagement**

What are your thoughts on tribal youth being involved with forest management?

What are some barriers and how can we work around them?

Do you believe that it is important that tribal youth obtain college degrees in forestry or natural resource management?

### **Relationship to the forest**

How would you describe the relationship between the Wiyot Tribe and the forest?

### **Demographics**

Are you Native American?

Where do you work or who do you work for?

What is your gender identity?

What year were you born?

## Appendix B: Tribal Liaison Interview Guide

### Interview Guide

The Interview Guide will be used for interviewing employees within the California Natural Resources Agency (CNRA). The agencies within the CRNRA and their associated acronym are as follows: Department of Forestry and Wildfire Protection (CAL FIRE), California State Parks (CSP), California Department of Water Resources (CDWR), and the Department of Fish and Wildlife (CDFW).

1. Just to get us started, could you please describe your experience working with Native American tribes?
  - a. Before becoming a tribal liaison, did you have any experience working with tribes?
  - b. How many years would you say you have worked with tribes?
2. Could you please describe for me your position as Tribal Liaison?
  - a. How long have you been in this position?
3. What types of tools does your agency give you to develop tribal partnerships?
4. What type of specific training did you receive for this position?
5. What are the most important roles and responsibilities you have as a Tribal Liaison?
6. How do you view your role in advancing Tribal relations within your district?
7. Do you distinguish between consultation and co-management? If so, then how are they different?
8. Within your district, what types of natural resources do you manage?

- a. To your knowledge have tribes sought any formal or informal agreements for collaborative management of these resources?
9. How would you describe the current involvement of tribes in the management of natural resources within your district?
  - a. Would you describe this involvement as consultative?
10. In your opinion, what are some of the barriers or challenges to tribal involvement in the management of natural resources on California's public lands?
  - a. What are your approaches or tactics to overcome these barriers?
  - b. How would (CAL FIRE, CDWR, CDFW, CSP) approach this issue?
11. How do you approach developing and/or maintaining partnerships between tribes and your agency?
12. What strategies or tactics have you found to be the most effective in developing partnerships?
13. What have you found to be the biggest barriers to developing partnerships between tribes and your agency?
14. How have you seen the relationship between the district and the tribes change over time?
  - a. How is the relationship different than before you started?
15. The California Natural Resource Agency Tribal Consultation Policy outlines the need for open and ongoing communication with Native American tribes. Could you please describe what "open and ongoing communication" means to you in the context of collaboration?

16. What are some of the main motivations for consulting or collaborating with tribes within your district?
17. In some of the work on tribal co-management that has been done at the federal level, formal agreements have been important for tribal relations. Here in California, we only have three agreements, what are your thoughts on that?
18. There has been increasing interest in integrating Traditional Ecological Knowledge typically used by tribal communities and tribal resource managers with western scientific knowledge typically used by non-tribal agencies such as the Forest Service. What is your perspective on the issue of integrating traditional and western scientific ecological knowledge in natural resource management?
  - a. Have you had projects where these two knowledge systems were utilized for a job?
  - b. How do they come together within the agency as a whole (or with you individually)?

**Demographics**

1. What is your professional discipline?
2. Do you have other job duties besides Tribal Liaison or are you a fulltime Liaison?
3. What is your preferred gender pronoun?
4. What year were you born?
5. Are you a tribal member?
6. Approximately how many years have you worked with tribes?