

WATER CONFLICT IN THE KLAMATH: How a River Shapes
the Land and the Community

by

LYDIA G. ANGEL

A THESIS

Presented to the Department of Environmental Studies
and the Robert D. Clark Honors College
in partial fulfillment of the requirements for the degree of
Bachelor of Science

June 2020

An Abstract of the Thesis of

Lydia G. Angel for the degree of Bachelor of Science
in the Department of Environmental Studies to be taken June 2020

Title: WATER CONFLICT IN THE KLAMATH: How a river shapes the land and the
community

Approved: *Peter Walker*
Primary Thesis Advisor

The Klamath River Basin (KRB) is a community located in southern Oregon and norther California that relies heavily on the water from the Klamath River to sustain a number of different lifestyles. These stakeholder groups all vie for the precious, and limited, water resources and have for a long time. In 2001 there was much publicized disagreement over who should get the water from the river during a drought, but how the community recovered from those events was quite remarkable. This paper aims to analyze how the community moved from outright aggression in 2001 to an innovative water governance agreement in 2010 to a regression to a hostile social environment in 2020. The fluctuating social environment provides an interesting lens to view important theoretical natural resource management models that can help other communities struggling with similar circumstances in the future as more and more communities are affected by a lack of water.

Acknowledgements

I would like to thank Professor Peter Walker, Dean Gabe Paquette, and Ori Chaffe for helping me to fully examine issues of water governance in the Klamath River Basin and consider the various perspectives and contexts related to the social, political, and legal environments of the region and conflict. I would like to express my sincerest gratitude for having the privilege of having excellent professors who are willing to guide me through this strenuous but rewarding process, especially in the face of unusual circumstances in the spring of 2020. I would like to individually thank Professor Peter Walker for helping guide me on my topic and research methodology and serving as my primary thesis advisor. I would like to thank Dean Paquette for serving on my thesis committee and sticking with me during the writing process. I would like to thank master's student Oriana Chaffe for serving on my thesis committee and helping me out along the way. I would like to acknowledge all of the support I have received from the Clark Honors College and the CHC faculty during my time here.

Table of Contents

Introduction	1
Chapter 1: History of the Klamath River Basin	5
Chapter 2: Root Causes	11
Chapter 3: Water Management Theory	18
Chapter 4: Stakeholder Positions and Perspectives	26
Chapter 5: What lies ahead	36
Bibliography	39

Introduction

On December 31, 2020, we will officially pass the last possible day to meet the original deadline set by the Klamath community agreements to remove four dams along the Klamath River. In 2010, when these agreements were signed, they were lauded as a landmark occasion for natural resource management. The agreements were signed by 40 key stakeholder groups and marked the work of a previously warring community. They were able to sit and talk with each other to reach a peaceful, joint decision on how to use a precious resource for everyone's benefit. Part of that benefit would be reached by removing the lower four dams along the Klamath River, spanning southern Oregon and northern California where it meets with the Pacific Ocean, by the year 2020. In the decade since the agreements were signed, there have been a number of developments and regressions towards all of the stated goals in the agreements, including dam removal. However, with a few months to go, it seems close to certain that the dams will still be standing on December 31, 2020.

While year-end of 2020 is an important milestone in the Klamath communities' water governance journey, the regions story begins much earlier in this land's history. Allocation of the water resources from the Klamath is a longstanding issue between a number of different cultural and economic interests. Conflicting interests have caused tension since the first white settlers came into contact with the Indigenous Tribes of the region in the mid-1800s. Fighting over rights to the water rose until it reached a peak in the summer of 2001 during a particularly severe drought that put water needs at an all-time premium. A water governance decision requiring protection of critical stream flow for endangered fish species was handed down by the U.S. Fish and Wildlife Service and

the National Marine Fisheries Service. The decision that stopped all water irrigation deliveries to surrounding farmers angered those negatively affected groups. The ensuing clash, which included people trying to forcibly open the irrigation project head-gates and setting up “bucket brigades” to transfer water out of the river and deliver it to farms and ranches, resulted in nationally covered protests. The tensions between people on the ground were extremely high, and relationships between certain stakeholder groups remains strained even to this day from the cruelty of that time. Something positive did arise from the ugliness of that summer. An innovative stakeholder participatory process arose in the aftermath to address the long-standing tension and water conflict in the region. Its aim was to try and avoid a repeat of the events of 2001 when a drought inevitably struck again.

The result of the stakeholder process, along with an easing of social tensions on the ground, was a number of community based agreements, signed by all participants involved in the discussions, which specified certain changes to the water rights and management structure. The first major result was that the Indigenous Tribes of the area would regain the most senior water rights of the region, something these communities had been fighting to attain for decades. The second major result was that the lower four dams along the Klamath River would be removed by the year 2020. The discussions leading to the Klamath Agreements and the text of the Agreements themselves display aspects of important theoretical work in the field of natural resource management. These theoretical lenses and the changing social, political, and legal dynamics of the region affect each of the invested stakeholder groups in unique ways. Each group has a distinctive story that weaves in and out of every group next to it. Their collection of

stories creates the larger picture of a community just trying to make the best of the limited resource they all require for survival and growth.

The events in the Klamath River Basin (KRB) over the past two decades have provided an invaluable case study for communities around the world on the difficulties of water governance, a topic of increasing importance. Since the 2010 agreements were initially signed, the local community stakeholder groups have been absent from the key decisions and events related to the Klamath River because of a return to a top-down decision-making regime, overseen by the federal government. This has resulted in a regression to social and political tensions pre-2010 community agreements. Confidence in the importance of their involvement has eroded the confidence in their community management decisions. A re-centering and sustained focus of the dialogue on the people in the KRB community is essential for any management plan to succeed, and communities around the world should learn from the mistakes made in the KRB so that it does not take them 20 years to get it right.

To contextualize the story of water conflict in the KRB, I will begin in Chapter One by looking at a number of important historical elements, both cultural and legal, that have had deep impacts in shaping the people living in the region. In Chapter Two, I will look specifically at a few key events from the past 20 years of the conflict and analyze their root causes to further enhance the understanding of social, political, and legal dynamics. Chapter Three will shift away from the more local KRB narrative that I have been focusing on to place the case study in a broader context of natural resource management theory and how it applies to the KRB water governance decisions and progress. I will return to a more narrative look at social dynamics in Chapter Four when

I expand upon the unique perspectives of key stakeholder groups in the region related to the water conflict. Finally, I will finish in Chapter Five by looking at how the social environment has changed over time, with a focus on the most recent decade 2010 – 2020. This will further my discussion of what the KRB as a case study can teach us about natural resource management theory and what lessons can be learned by communities that may also experience similar water governance issues.

Chapter 1: History of the Klamath River Basin

A human being cannot go more than three days without water before suffering dire, life-threatening consequences. Water is essential for all life, and because of this sobering reality, making sure that organisms have this life-giving resource is not something that can be taken lightly. Moving into the future, the task of ensuring enough water for every person and every organism is going to become increasingly difficult as the effects of climate change alter how much water is available. This new reality will require communities to make tough choices about when and how to use the water that is available. These are typically very challenging conversations to conduct between the multitude of stakeholder groups involved because of the essential nature of water.

The Klamath River Basin (KRB), spanning southern Oregon and northern California, is a community that has had to address a long and contentious history surrounding water rights and subsequent water allocation in wake of a major drought in the summer of 2001. In the two decades between the drought crisis in 2001 and now, there has been ongoing dialogue between stakeholder groups both inside and outside the community to work out the best way forward. However, the KRB's story does not start in 2001, and in order to appreciate the current social, political, and physical environment, we must look at the full history of the complex water dynamics in the region.

Our story of conflict begins all the way back in 1826 when Peter Skene Ogden first happened upon the KRB while establishing his trapping business in the western United States. Ogden set a course of both physical and ideological conflict between the

indigenous tribes living on that land since time immemorial and the incoming white settlers following in his wake. The Klamath, Modoc, and Yahooskin Indigenous tribes, now known collectively as the Klamath Tribes, had been living in the region since time immemorial, meaning since a time before there is knowledge or memory of it (Norgaard, 2017). These Indigenous tribes had a deep cultural connection to the area and sustained their people with immense quantities of salmon that filled the rivers and streams of the KRB. For members of the Klamath Tribes, many “maintain highly specific relationships with the natural environment. Interactions with salmon, forest foods, rivers, and rocks organize social activities, individual and group identities” (Norgaard, 2017). The Indigenous Tribes used and thrived on the land as it was. They used complex resource management techniques to get the most out of their natural environment, which also played a major role in their group dynamics.

Westward expanding white settlers did not see much use for the marshes, swamps, and streams, so they took a different approach than the original occupants of the land. A number of bloody conflicts between the Klamath Tribes and the settlers occurred, including the Modoc War, that resulted in the white settlers taking full control in 1902 (Klamath Tribes History, n.d.). White settlers began programs to convert the land into what we now know as southern Oregon and northern California. This is where the United States Bureau of Reclamation comes in. The Bureau of Reclamation was established in 1902 with the mission of converting “unfit” lands in the west to farmable and useable land for westward settlers (Bureau of Reclamation, 2018.). The Klamath River irrigation project was one of the Bureau’s first ever irrigation projects, completed in 1906. A number of dams were built along the Klamath River to provide ample stocks

of water behind them to pull from during the dry growing season. This allowed farmers to settle and cultivate the previously “unsuitable” land.

This sets up an underlying core conflict in the region that is still being battled out in the community and the courts today. What should the land and the water be used for? In the eyes of the United States government and the westward settlers, the natural, original conditions were something that technology and willpower could tame so the land could be of actual use. This is inherently at odds with the beliefs and practices of the Klamath and other Tribes that viewed the land as a “gift from the Creator” that they now had a responsibility to care for and uphold (Norgaard, 2017). The idea that the land and water should be used to support the natural world versus the idea that they need to support human interests are two very different natural resource philosophies that lead to very different management practices. While a number of other stakeholders have gotten involved with the debate over how the water should be used in more recent years, this question is at the core of the conflict from 1826 to 2020.

Not only is the conflict ideological in nature as I just discussed, but this fundamental conflict has also been playing out in legal battles since the inception of the Klamath Irrigation district. Along with the cultural history of the people in the region, the legal history of water rights in the western United States is important for understanding the KRB’s struggle to allocate water. In the western United States surface water rights are primarily established based on the date at which an entity claims them with the government (Bureau of Reclamation, 2018). The colloquial phrase often used to describe the system is, “First in time, first in line”. This practice has set up

a longstanding hierarchical system of who and what has access to water if there are shortages for any reason, such as a drought.

The seniority-based system has a history of problematically excluding certain stakeholder groups, especially Indigenous Tribes. When the Bureau of Reclamation's Klamath Irrigation project was finished, rights to a certain amount of water from behind the dam were sold off as part of land allotments for settlers to establish productive crop lands. Indigenous Tribes were not included in this allocation system and did not initially receive any legal claim to the water (Benson, 2002). Not only did the dams prevent many of the Tribes from accessing salmon and other fish species because the dams physically prevented it, but they were also legally prevented from utilizing the water resources to benefit themselves or the fish in any way. Over the years there were a number of legal developments that gave the Klamath Tribes, and others in the region, the ability to fight for their and the natural worlds rights through the courts. However, the idea that Indigenous Tribes including the Klamath Tribes are owed the most senior water rights based on the United States government own rules, since they were there first, is a point of tension that remains central to the conflict throughout the region's story.

The final component of historical significance I will discuss is the legal and cultural history of the Endangered Species Act (ESA) in the Western United States. The ESA was signed by President Richard Nixon in 1973 and is touted as one of the most progressive environmental laws to date in the entire world (Jenkins, 2011). Environmental groups and wildlife conservationist were especially excited with the ESA's passage and initial implementation. Many land and business owners in the

Western United States were not as pleased. A broad coalition of parties, including farmers, ranchers, and loggers, opposed the legislation, (Czech et al., 2001). While they were not able to prevent its passage, they have fought in every political and legal way possible to weaken or eliminate the bill's regulatory authority.

Many of the species listed and protected by the ESA are located in the Western United States. In order to protect the listed species, certain economic development opportunities, such as logging forests where endangered bird habitats exist or removing irrigation water from a river to protect critical stream flow for fish, have been halted. In heavily affected western states and industries, there has been strong resentment towards federal decisions stemming from the ESA's regulatory authority and its impact, real and perceived, on the available economic opportunities (Czech et al., 2001). The decisions handed down by federal government based on the ESA have added to the tension and outright conflict between stakeholder groups in the region that either support the work the ESA does or oppose the restrictions it places on them. During the KRB crisis in 2001, a federal ESA decision was central to the hostility between fighting parties and it has continued to be a core issue for Klamath stakeholders.

As we can see, the Klamath River Basin is steeped in deep cultural and legal traditions that are often at odds with each other. The clash of interests and natural resource philosophies begins long before the conflict came to a head in 2001. The issue of what the precious water resources should be used for, human needs or ecosystem needs, has been playing out since white settlers first came into contact with the Indigenous Tribes in the 1800s, yet that question remains as central as ever even today. People's perspectives on the cultural and legal traditions that guide resource

management discussions are often at odds with each other. We see that here in the case of legal water rights and the Endangered Species Act. The federal government has been involved from early on in the dispute over water resources from setting up the water rights hierarchy to handing down ESA regulation decisions. Up until and during the 2001 conflict, the federal government was the main actor in top-down water governance decisions for the KRB. In the next chapter we will look at some of the results of that implementation style and how things have changed since then.

Chapter 2: Root Causes

2001-2010:

Now that we have situated our story in the broader history of the region and identified a core conflict between KRB's stakeholders, it is important to evaluate how the region came to its breaking point in the summer of 2001 during a severe drought. The root causes underlying the surface conflict over the river water that summer are important in order to tie the past tension with the outright aggression of 2001. The crisis was not unexpected or surprising in any way if one understands the underlying causes stemming from the regions contentious social, political, and legal dynamics, and a multitude of stakeholders vying for the limited water supply through these different avenues. I will examine two of the key root causes, the Endangered Species Act (ESA) and the suppression of the Klamath Tribes input. These will also enable us to further analyze how the events of 2001 shaped the community's response in the ensuing two decades.

During the summer of 2001, the U.S. Fish and Wildlife Service (USFWS) determined that in order to protect critical stream flow and ensure the survival of the salmon species listed under the Endangered Species Act, no water could be diverted from the river. This meant water would not be allocated to farmers within the Bureau of Reclamation Klamath Irrigation Project (Doremus and Tarlock, 2012). In 2001 the federal government had to make a decision between two separate legal precedents that I

previously discussed, the ESA and the western water rights hierarchy. In this instance, the ESA won out over the irrigation districts rights to the water.

The federal government's species management decision and subsequent water governance decision sparked outrage among regional farming communities and resulted in nationally covered protests. Benson argues that the Endangered Species Act (ESA), the legal foundation for the decisions, was a root cause of conflict because it required federal input into local water governance decisions in order to protect federally listed fish populations (2002). According to Benson, "ESA protection for the suckers and salmon held major implications for the management and use of the Klamath Project water. The presence of endangered fishes in these areas meant that the [U.S. Bureau of Reclamation] would sometimes have to hold water in lakes to preserve their habitat...or increase releases to the river below" the dams in order to preserve other habitat, but that these decisions were always "in conflict with irrigation demands from the Klamath Project" (Benson, 2002). This is how the phrase "water for farmers over fish" a phrase used farmer during the protests, originated. It also demonstrates the tension between federal responsibilities, certain local values, and the needs of a very powerful stakeholder group, farmers.

The Klamath Tribes' water claims and their impact on the conversation debating how water should be allocated is another major contributing factor leading up to 2001. Doremus & Tarlock and Benson agree that the marginalization of Indigenous peoples was underlying the crisis in 2001 due to the systematic exclusion of peoples that had extensive knowledge of the regional ecology and had sustainably utilized the natural resources from time immemorial. Indigenous peoples technically had the most senior

rights in the Basin, but their standing was never respected until it specifically aligned with ESA requirements and was invoked through that particular legal avenue (Benson, 2002). For all of history, “the interests of indigenous tribes were completely overlooked and routinely subordinated to those of the economy” and “bringing marginal interests towards the center”...“by prioritizing fish populations economically and culturally relevant to those groups” was a recalibration that added to the discontent of those who were formerly predominantly catered to (Doremus and Tarlock, 2008). Understanding the conflict as greater than simply farmers versus fish and including the Klamath Tribe voices, as well as various other stakeholders in the region, in water governance would become a key factor moving forward from 2001 to the present.

Armed with the understanding that a top down resource management regime, enabled by the ESA, and a lack of inclusivity of voices, particularly Indigenous Tribes, were root causes of the conflict coming to a head in 2001, the resulting community response was very impressive. The KRB community and its multitude of stakeholders were able to move forward in a remarkable way. Sparked by the dismal results of 2001, the KRB stakeholder groups came together around 2006 to begin official discussions on their preferred water governance strategies. These discussions were highly inclusive to a variety of perspectives and included frank conversations of the science and the social values surrounding water management. I would argue that they were initially structured in an ideal way to allow for a remedying of two of the major root cases and in the best position to produce a workable outcome; and they did. I will detail why this is the case in Chapter Three when I discuss natural resource management theory.

These stakeholder talks eventually led to two landmark Klamath Agreements in 2010. The first agreement, the Klamath Basin Restoration Agreement (KBRA), reestablished federally recognized Indigenous tribes as having the most senior rights to the Klamath River water (Jenkins, 2011). The second agreement, the Klamath Hydroelectric Settlement Agreement (KHSA), stipulated that for ecological, economic, and ethical reasons, the four dams along the Klamath River would be removed to begin a major restoration process (Jenkins, 2011). It also specified that the removal cost be split among the electric utility that owned the dams, the Oregon and California state governments, and the federal government (Gosnell and Kelly, 2010). Gosnell and Kelly claim that the signing of these agreements constitutes a landmark agreement because it is one of the first prominent examples of a water governance change that is supported by the majority of the complex community, especially one that was in such disarray not even a full decade prior. They suggest, “these new, collaborative approaches have provided more productive ways to manage conflict, avoid irreparable harm to any one interest, and reconcile conflicting resource management objectives” (Gosnell and Kelly, 2010). I agree that the extensive progress in community relationships in such a short amount of time, and the community’s ability to reach a comprehensive agreement, should be considered a landmark event. However, what came after 2010 was a much different story than the one of inclusion and cooperation that we saw from 2001 to 2010.

2010 – 2020:

The years of 2001 – 2010 marked a change from top-down decision making to ground up collaboration, and a re-centering of power from the federal level to the

community level and. These trends resulted in groundbreaking water governance agreements. However, I will argue that 2010 – 2020 marked a regression of legal, political, and social environments catalyzed by a reintroduction of a top-down decision-making scheme. Let us begin by examining the events that occurred following the signing of the 2010 Agreements.

The first part of the agreements, recognizing the Klamath Tribes as having the most senior rights, has had success and come to fruition. In March 2013 the Klamath Tribes won their case in federal court that confirmed their standing of holding rights since time immemorial (Mukherjee, 2018). This legally cemented the Tribal governments most senior water rights in the region. They have utilized their senior rights a number of times in the following years, especially during droughts, to require that the limited water not be diverted for irrigation purposes in order to protect the fish and overall water quality in the Klamath River. Even with the current physical barriers to fish still in place, the Indigenous Tribes were able to secure their rights to protecting what is left of these culturally and economically significant resources. The problem still lies with the second part of the Agreements that continues to restrain the fish from reaching their ancestral breeding grounds.

Since 2010, progress towards achieving the goal of removing the lowest four aging dams set forth in the second part of the Agreements has stalled out. The initial timeline stated in the Agreements was to see the dams removed by the end of 2020 (Stern et. al., 2014). This will not occur in the few short months from now until the end of 2020. A major reason behind the lack of action being that the 2010 community-based agreements still required federal congressional approval in order to proceed with dam

removal. Not only did they require the legal approval from Congress, but a portion of the funding for the removal was also dependent on a congressional appropriation. The original 2010 Agreements stipulated that if Congress did not approve the community's plan by the end of 2015, it would expire, and that is exactly what happened. Both the states of Oregon and California, and Berkshire Hathaway Energy (BHE), the energy utility that owned the license to the dams, raised their share of the money for dam removal, but the inaction on the part of the federal government halted the entire water governance process initiated on the ground in the KRB.

The original 2010 Agreements were killed on December 31, 2015. After the disappointing result from Congress, a few of the key stakeholders decided to move forward with the original intent of the 2010 Agreements and find another way to remove the dams. That is still an ongoing process spearheaded by BHE, the state governments of California and Oregon, and the non-profit entity to which the dam licenses will be transferred to conduct the actual removal process if they get approval from the Federal Energy Regulatory Commission (FERC). The most recent development is that in mid-2019 a contractor was selected to run the removal process if it is approved (Plaven, 2019). FERC approval processes are often very slow, and the earliest projected date for dam removal is currently 2022.

The unravelling during the 2010 – 2020 period is rooted in the reversion of the decision-making authority back to a top-down model. From 2010-2015 the national congress was in control of the decision-making authority for the KRB and in 2016-2020, a multinational corporation and a federal agency are in control of the decision-making authority. In both cases, the power is centralized at the top and decisions were

or will be generated at the top and handed down. The coalition and collaboration established in the talks and signing of the 2010 Agreements disintegrated when the decision-making authority for the natural resource in question was removed from the local scale and placed with the federal government, much farther removed from the everyday realities of what that water meant. In a review of the KRB conflict, Chaffin, Gosnell, and Craig argued that as progressive as any locally derived management process is, that the “distribution and application of political power cannot be underestimated as either a barrier or a facilitator” of locally derived water governance or natural resource management plans (2018). I would agree with Chaffin, Gosnell, and Craig that in the case of the KRB that it was clearly a barrier. The reintroduction of top-down decision-making, the actor being the federal government in this specific case, was key in undoing all of the previous work by the KRB community.

There is a strong parallel between the root causes of the 2001 crisis and the unravelling in the most recent decade. Both instances were heavily influenced by top-down decision-making regimes that was reliant on actors from outside of the community to make key decisions for the people on the ground. The difference between these two unsuccessful water governance attempts and the successful attempt that culminated in 2010 with the stakeholder signing was where the action and influence stemmed from. These differences are also noted in many of the theoretical models of natural resource management that I will discuss in the next chapter.

Chapter 3: Water Management Theory

In the previous two chapters I primarily focused on creating a clear picture of the KRB as a whole, detailing how the social, political, and legal landscapes have changed over time. In this chapter I am going to place the KRB conflict in more universal theoretical frameworks of natural resource management. The aim of doing so is to broaden the scope of what we can learn about the KRB case and its particular strategy of water governance and natural resource management. I will be discussing two theoretical frameworks, value based decision-making processes and stakeholder participatory processes, and two management strategies, adaptive governance and community based natural resource management.

The first theoretical framework for natural resource management to address is incorporating formal value based decision-making processes. Every living organism not only requires water for life, but they require a certain quality of water in order to properly sustain life. In the case of the KRB, each stakeholder group has an argument for who or what needs water the most depending on their unique perspective and circumstances. This reality will increasingly require communities to make value based decisions in regards to who gets water and how much they get as the overall supply dwindles. Gregory argues that it is frequently difficult for communities to openly address value based decisions and tradeoffs in their dialogues on natural resource management, but not doing so typically leads to resource risk-management failure (2002). In order to succeed in formulating risk management policies, “a structured decision making approach accepts the need for addressing tradeoffs”, and “it

acknowledges that, for many of the choices and judgments required... most people will have only a vague, imprecise value and, without additional help, will lack the ability to make finer distinctions or defensible trade-offs” (Gregory, 2002). Including value based dialogue in formal discussion about contentious natural resource policies helps the community find language for, and vocalize their values and needs in a more productive and valuable way. It allows everyone in the room and listening from the outside to have a greater understanding of each perspective. It also ensures that any one perspective is not limited by a single stream of information. Formal value based decision-making processes can foster trust by expanding cross-stakeholder understanding, to support long term, sustainable solutions.

In 2001, the decision made by the federal government allocating water to protect endangered fish species, including salmon, and restricting water to farmers was made solely on the scientific basis of low flow analysis on salmon health. While this is an important component to factor in, they did not consider the broader social-ecological relationships of the region (Gosnell and Kelly, 2010). The result as we know was mass protests and anger towards those who made and supported the decision. In 2010 the participatory stakeholder process opened up a forum to discuss the community’s multivariate values. It allowed them to weigh all of the groups priorities against another, which allowed for a more comprehensive and nuanced value based plan, rather than solely evidence based plan, to emerge. While it might have turned out that the value based reasoning of the community would have come to the same conclusion as the federal government in 2001, the process to get to the end result would have almost certainly changed the reaction to the final decision. The value based decision-making

process would have cultivated greater understanding of how and why the decision was made. It would have also increased the recognition and input of varied values related to water governance. Following the signing of the 2010 Agreements there have been no formalized discussions of updated or changing values. That part of the dialogue is now expressed in in opinion columns or on blog pages, which does not produce the same unifying perspective as Gregory described above.

The second theoretical component of natural resource management processes that actually follows from instituting formal value based decision-making processes is creating a forum for those conversations to take place. These are known as inclusive stakeholder participatory processes. Stakeholder participatory processes are characterized by “the direct involvement of an array of people in the decision-making and implementation of water policy or management, and at a minimum, involves individuals...having an opportunity to express their voices and articulate their arguments in a public forum” (Horganic et al., 2016). Water governance issues are becoming far more complicated as supply becomes scarcer, and the allocation decisions must navigate science and technical factors as well as cultural and social factors.

These are all much easier to confront when there is greater representation in the decision-making process. Horganic et al. argues that stakeholder participatory processes, as opposed to top down mandated decisions, are more effective in the long run because of certain distinguishing factors. “Stakeholder participatory processes have gained international recognition in water governance as the preferred strategy for its potential to produce more effective, supported, and durable management outcomes” by including they very voices that are at odds in the first place (Horganic et al., 2016). I

would extend their point by adding that people are typically unwilling to trust each other if they cannot understand one another's perspective. A participatory process aids in building trust that supports the durable outcomes mentioned. They do qualify their claim by mentioning that while these participatory processes are overall highly beneficial, it is still important to analyze who participates and why in order to structure more equitable and engaging discussions in the future to better facilitate trust.

In 2001, the management decisions that resulted in cutting off all surface water to irrigators were made at the federal level, and input from local stakeholders was nonexistent. There was also no history of local stakeholder groups or local community members being included in discussions, even previous to 2001, that established the resource management regime in the region. The results of this top down approach were immense tension and mass protesting, whereas in 2010, there was an inclusive participatory process that relied heavily on the input from stakeholder groups previously shut out. At the end of the process, the results were widely accepted by all parties involved. Both the stakeholder participatory process and the inclusion of value based decision-making are more about the process and less about the outcome because both strategies place more importance on unity and trust than on an exact, 'right' answer, which propagates long term cohesion and adaptability to future issues. After the Agreements fell apart in 2015 and a new coalition was built by PacifiCorp to keep the goal of dam removal alive. When constructing the new coalition and revising the new agreements they did not include a stakeholder participatory process nearly as robust as the first time around (Horganic et. al., 2016). I would argue that this may become problematic for continuing progress because the broad support base, cultivated by the

stakeholder participatory process, is not all there as it was in 2010.

Now that we have a basis of understanding regarding two critical aspects of natural resource management that varied in their utilization between 2001 and 2010, there are two major strategies that bring formal value based decision-making processes and stakeholder participatory processes together. The two different approaches present a larger strategy to the given management decisions, but they incorporate these elements with different emphasis.

The first major strategy is called adaptive governance. Most environmental management decisions are made at the federal level based off of stagnant laws that mandate specific actions across a range of ecosystems and social communities without being able to tailor implementation to specific cases. According to Cosens and Chaffin, adaptive management is an iterative process that focuses on continual monitoring of the physical area as well as an ongoing discussion, on the local level, that can be called upon whenever and new decision, small or large, needs to be considered (2016). This management strategy allows for local interactions and decisions to drive the every-day management. It will also theoretically create sustainable agreement that is both nuanced and flexible to allow multiple iterations to keep pushing the management of a resource to a better state. However, this management scheme is still reliant on government entities to be heavily involved in the major decisions (Cosens and Chaffin, 2016), which as we see exemplified in the KRB can become a problem.

In an article around the same time as their theoretical work, Chaffin et al. uses this new management tool to argue that the discussions and negotiations leading up to the 2010 Klamath Agreements were moving towards adaptive environmental

governance, which they also argued would be essential for addressing problems due to climate change. They claim that “through a unique set of historical, cultural, geographic, climatic, political, economic, and social circumstances... the Klamath bioregion may be beginning a transition toward more adaptive environmental governance” (Chaffin et al., 2016). This move towards a more flexible management style only assists in allowing stakeholder participation and value based decisions to become more prominent, such as in the 2010 proceedings. However, they also recognize, with a few years of hindsight, that there was an “unavoidable influence of powerful political actors... that [co-opted] the processes of emergent adaptive governance” and stalled the effectiveness of the new resource management process (Chaffin et al., 2016). Adaptive governance provides the water governance conversations a structure that is localized and adjustable to changing conditions so that they can proceed efficiently and with trust among the community members. However, I also see, as does Chaffin et al., a heavy handed influence of federal political actors attempting to undermine this element in the KRB, and has manifested as a lack of process forward since 2010.

The second major strategy is known as Community Based Natural Resource Management (CBNRM) and addresses some of the problems identified with adaptive governance. As I mentioned early on, the 2010 Agreements outlined a plan to remove the four dams on the Klamath River with economic support from multiple sources including the federal government. The main reason that dam removal is not on track to be completed by the original goal date is because of resistance on the federal level to approve funding and issue the appropriate permits. Gruber claims that CBNRM creates

a forum that keeps decision-making power at the local level and balances ecological and social needs by relying on value based data and scientific data to make decisions. Many of the principles that Gruber distills as the essence of CBNRM in his 2010 work align with what I have already discussed as important to successful management practices for the KRB. This includes participatory processes, value based decision-making, adaptive governance, public participation and mobilization, monitoring, feedback and accountability. CBNRM goes farther than adaptive governance because the strategy also focuses on devolution of top down influence to make it an equal voice to the empowered base. CBNRM initiatives have been successful in the past because the initiatives support the principles of participatory democracy and of building networks and linkages among different constituency groups, interdisciplinary groups, levels of governments, and economic sectors.

CBNRM initiatives “have as a core value the positive transformation of the relationship between rural (and sometimes urban) people and the environment”, which is something that is sorely needed in the KBR (Gruber, 2010). I would argue that the restoration efforts proposed and agreed to by the KRB community in 2010 stalled because there has not been enough devolution of power from the federal level and empowerment of more local governments, a key principle of CBNRM. I maintain that the community that created the landmark 2010 plans must stay invested and preserve trust among one another instead of ceding control to a legislative body far removed from the everyday realities in order for the project to achieve long-term success.

In this chapter I have shown how natural resource theory can help identify

aspects of the KRB case study led to 2010 being a success while 2001 and 2010 -2020 have not been. Many of the core principles of the CBNRM theory align with what happened in reality for the Klamath community while 2001 and the most recent decade do not align at all with the CBNRM theory. Moving forward, I will discuss how in looking at the KRB as a case study, especially its social narratives, the case study can help inform the CBNRM theory.

Chapter 4: Stakeholder Positions and Perspectives

Taking a theoretical lens to a natural resource management problem can be very helpful as I discussed in the previous chapter. Reviewing strategies like the Community Based Natural Resource Management (CBNRM) model with the specifics of the case study of interest can help elicit new insights into the bright spots and drawbacks of a community's plan. At the same time, it can also be helpful to use specific case studies to inform the theory and help it grow and adapt for more successful implementation in the future. To begin to do so with the KRB story, this chapter will focus on the unique and complex social narratives of the stakeholder groups that have been heavily involved in the past two decades. These narratives will help further elucidate the social environment of the region from 2010 – 2020 that has not received as much focus in the literature. The social narratives will also set the stage for how each group's story plays an integral role in the overall success or failure of this regions experiment with community based water governance.

I will follow the narratives of the stakeholders that hold legal rights to the water and/or the dams: PacifiCorp, Indigenous Tribes, and Irrigators/Farmers. While this is clearly not an exhaustive list of every stakeholder interest involved in the KRB, I believe these narratives represent the dominant interests that many other subgroups align in some way with. These stakeholders provide a comprehensive picture of past and current social dynamics of those actually living in the KRB that influence water governance decisions.

PacifiCorp –

One of the key supporters of the Agreements is the energy utility that owns the licenses to the dams, PacifiCorp. They are also important to our story because they were the initial instigator of stakeholder discussions. PacifiCorp operates seven hydroelectric developments and an eighth non-generating dam, making up the modest 169-megawatt (MW) Klamath Hydroelectric Project (PacifiCorp, 2018). The four most downstream dams are the ones targeted for removal by the Agreements. Every 30-50 years hydroelectric dams have to be relicensed by the Federal Energy Regulatory Commission (FERC) to ensure that their safety, the environmental quality around them, and the land rights that have be affected are reviewed before allowing the company operating them to continue to do so (FERC, 2015). In 2000, the Klamath Hydroelectric Project came up for relicensing and PacifiCorp filed the initial paperwork with FERC to get the review underway. Then, as we know, in 2001 there was a major battle over the water behind those very same dams, which caused aggravated tensions in the region that had not fully subsided when it came time for PacifiCorp to complete its relicensing in 2004.

Companies in general are wary of extensive legal battles over many different regulatory decisions, including relicensing. PacifiCorp attempted to conduct settlement discussions with a “diverse group of stakeholders to resolve issues related to relicensing of the Project” to avoid those legal battles (PacifiCorp, 2018). Then two important things happened to change how PacifiCorp viewed the situation and made the thought of removing the dams even a remote possibility. First, in those collaborative discussions they initiated PacifiCorp realized that there was a desire on the community level to

change how the water was being used. Secondly, FERC came back to PacifiCorp and said that in order to relicense the dams the utility would need to spend a lot of money to upgrade the dams with mechanisms to increase water quality, increase fish passage, and other costly items. The four lowest dams are not a major source of electricity production, so relicensing the dams became more costly than pursuing other strategies proposed by the community, such as removing them altogether (PacifiCorp, n2018). PacifiCorp now had a cost incentive to work with the community as well as the infrastructure in place to continue the discussion that eventually led to the 2010 Agreements. At the federal level, far removed from the everyday life of those living along and relying on the Klamath river, their decisions pushed PacifiCorp to consider and work with the community that is actually impacted by their decisions related to those dams. And thankfully, they eventually listened.

PacifiCorp initially resisted some of the stakeholder discussions when they moved away from how to best relicense to the dams to removing the dams. Once they were convinced that their concerns about liability and cost of removal would be addressed, they reengaged in the discussions (Gosnell and Kelly, 2010). They presented their case that removal was the most cost-effective option for their business and their ratepayers, which happened to be many of the people in the room with them, if they had assistance with the costs of removal itself. They listened to the wishes and concerns of the other parties at the table, yet always cognizant of their financial goals of dispersing the cost of dam removal (Dormeus and Tarlock, 2012). When it came time to sign the Agreements in 2010, they agreed to the terms and conditions and stood with the other

signatories in what they thought at the time as a great victory. But, as we know now, those initial Agreements were not approved by Congress.

However, PacifiCorp remained committed to their belief that removal of the dams was the most cost-effective option for both themselves and their ratepayers, so they pushed forward with the general wishes of the Agreements. In 2016, they signed amended agreements that were essentially the same as in 2010, but the process and coalition behind them was not as broad and inclusive. They did not ask all of the parties at the original table to sign on or participate in the discussion leading up the revised Agreements. They mainly dealt with state and federal regulators that led PacifiCorp, the state governments of California and Oregon, and the Department of the Interior to sign onto the amended Agreement (Mapes, 2016). PacifiCorp demonstrated that they are primarily motivated by the financial implications for their company, as many businesses are. While in this instance that happened to align with what the greater community wanted, that is not always the case. Moving forward, Bob Gravely, a PacifiCorp spokesperson, has said that removing the dams “is still our preferred path”, but the timeline and exact outcomes are still very uncertain.

Indigenous Tribes –

Another key stakeholder group that supported the 2010 Agreements are the Klamath Tribes, the Karuk Tribe, and the Yurok Tribe. Their stories began long before any of the other stakeholder groups, however, it was not always recognized that way. In a time before the dams, the return of salmon runs up to their historic fishing grounds in the in the spring represented life and prosperity returning after a long cold winter

(Klamath Tribes, n.d.). These salmon runs were completely disrupted in 1903 when the Bureau of Reclamation began construction on a set of dams along the Klamath River as a part of an irrigation project for white farmers. The tribes lost their ability to connect with and fish salmon out of the river as a result. A cultural and economic relationship from time immemorial was upended. The Tribes were no longer in control of their own resource management (Klamath Tribes, n.d.). Those management decisions were being made by higher up authorities on the other side of the country, far removed from the everyday realities of the region. That top down management scheme is still in place today to the detriment of the natural resources, in the eyes of these Tribes.

The salmon that were able to survive the dam construction were forced to remain downriver in less than optimal breeding grounds with less than optimal water quality. In the ensuing years, the Tribes turned their attention to protecting the remaining salmon by trying to assert what they saw as the most senior water rights in the region. They did not have any community or governmental allies at the time, so these rights were not respected. The group relied on litigation in the latter half of the 20th century to assert what they needed for themselves and for the salmon. As we saw earlier, they often relied on the ESA and even the threat of litigation to help promote their cause. While litigation was time consuming and resource draining, it was all they had to lean back on, so they used it to the best of their ability. The region was engulfed in a climate of litigation that people were happy to move away from for a while after post-2001.

Fast forward to the mid-2000s, the Karuk Tribe, the Yurok Tribe, and the Klamath Tribes decided to participate in the PacifiCorp initiated stakeholder discussions

around relicensing the dams along the Klamath. They were in strong opposition of relicensing the dams from the beginning. They were in favor of alternative options such as progressive mechanisms for fish passage and improving overall water quality, but their eventual goal was gaining support for dam removal (Horganic et al., 2016). Even though the Tribes did not have a great history in being fairly represented or respected in these types of discussions, a member of the Klamath Tribes said that “we decided to stop fighting and start talking...we haven’t seen salmon in our country for 90 years, [and] this Agreement represents our best chance of finally bringing the salmon home to the upper basin” (2009). The Tribes believed that this new type of process was a chance to see real change and results. They participated on good faith with all of the other stakeholders involved, and they were successful. They reached the Agreements with all major parties in alignment. It would not have been possible without the Tribes involvement because of their influence in the region, but everyone was able to come together and make compromises to ensure the greatest coalition of support.

However, as the deadline for Congress to approve the necessary elements of the Agreements, including some funding, they were either stalling or actively opposing the Agreements. As the deadline was approaching, Don Gentry, chairman of the Klamath Tribes, said, “I’m optimistic that that Congress can resolve this... I hate to think about what the future will be if it doesn’t. I hope folks in Congress will see that this is a local solution by local parties. It’s not necessarily all that we want but the settlement is something that we can live with.” (2015). Unfortunately, Gentry was overly optimistic because as we know, Congress let the deadline for action pass and the wished-for landmark Agreements expired. After the failure of the original Agreements, the Yurok

Tribe released an official Notice of Withdrawal that read “Unfortunately, Congress has failed to pass legislation authorizing the agreements, and over time the bargained-for benefits of the agreements have become unachievable. The Tribe is left with no choice other than to withdraw from the Klamath Agreements” (2015). Again, the decisions were being removed from the people on the ground and outsourced to the federal bureaucracy far away, so the coalition started to fall apart.

For the Karuk Tribe, the Yurok Tribe, and the Klamath Tribes, one positive thing that came out of these Agreements was official recognition of the most senior water rights of time immemorial. While that was a win for the Tribes, it just means that for many, they can use that when they have to revert back to their traditional methods of litigation to protect the salmon. In the time since the Agreements expired in Congress the Tribes have increased their rate of litigation once again, increasing the tension between water rights holders across the region (Chaffin et al., 2018). From the Tribes perspective, they took a chance on an inclusive process where they were finally recognized for their rights and contribution, and yet it failed again because the federal government would not accept the result that they put forth.

Irrigators/Farmers –

The story of irrigators, most of them farmers, begins with the story of westward expansion and the desire of Americans to tame the wild west into usable and productive lands. The Bureau of Reclamation was established in 1902 for just that purpose. One of its main missions was to build dams along western rivers to create stocks of water to use for irrigation districts. In the western United States, the precipitation regime is such that

all of the water comes down at exactly the wrong time of year. The Klamath region experiences all of its rainfall in the winter months and typically experiences drought conditions during the summer months, also known as the growing months. The water collected by the dams year-round helps remedy that problem by supplying water to create arable land for farmers to use productively, meaning croplands, in the summer.

After the creation of the irrigation district with the Klamath dams, the rights to the water behind the dams was sold off to properties that could now be used as farms because of a reliable water source. The order in which the water rights were sold established the seniority rankings of who received water first, second, and so on. Of course, as we saw previously, Indigenous Tribes were left off of the list in its infancy and it took a long time for the Tribes to fight to get back on the top of that list. The water rights are attached to the property owner, so families have a strong incentive to keep the farm in the family in order to keep the water rights attached. This has created long family legacies tied to the land. While not time immemorial, the farming community has strong emotional bonds with their culture and way of life that is dependent on the water from behind the dams.

Irrigators' critical dependence on the water from the dams, the Klamath region's summer drought conditions, and the Indigenous Tribes litigation on behalf of the salmon and suckers under the ESA all collided in the summer of 2001 to create the social and environmental crisis I discussed above in detail. The decision from the federal government came down that there was not enough water to distribute to any of the farms in the irrigation project. The reality of that decision for farmers was that their livelihoods were in peril. Without that water, they would not be able to grow that

season's crops, which means they would lose out on that season's profits for those crops. For some farms that meant the difference between being able to keep going till next year or having to sell all or part of the property. The difference between either continuing or having to sacrifice a family legacy. One farmer from the Project feels so strongly that he said, "To lose the productive ability of our land is almost like the loss of a family member. It's deep down" (Smith and Terray, 2018).

The turmoil that the summer of 2001 caused for the farming community at large in the Klamath region opened many of them up to the idea of partaking in stakeholder participatory processes. Anything seemed better than having to go through that type of uncertainty and crisis if another drought of that magnitude hit the region again. While most of the irrigation community began in the stakeholder talks, not all of them stayed. The group that dropped out were generally made up of organizations with more junior rights, who did not see the benefit of any sort of compromise because they already were not prioritized in water allocation decisions. However, over half of the irrigation organizations did stay committed to the process and ended up agreeing to and signing the 2010 Agreements. This was a major step in coalition building for the validity of the decision to remove the dams because the irrigation groups were expected to be the hardest to overcome. Coming out of the stakeholder meetings in 2010 one irrigator said, "What's happening here now is a maturing of people building relationships with one another and to me, that's what changes the environment" (Gosnell and Kelly, 2010). They signed onto the Agreements because they were assured more certainty than what they received in 2001 because they worked with the other community members to find a path forward for everyone.

The irrigators that signed the Agreements had been used to preferential treatment by the U.S. government since the inception of the Bureau of Reclamation in the early 1900s all the way to the present. That preferential treatment came at a cost of uncertainty in times of crisis, so they compromised and traded some of their status for certainty and cooperation in the region. What they agreed to was committing support to restoration projects and less water in “wet” years in exchange for benefits from water rights in dry years that would be more than under the current management regime. They traded some of their water resource in exchange for the certainty that their family legacies and their connection to their lifestyle and culture would be able to continue even in an extreme drought. For those who signed on, the tradeoff was worth it. For those irrigators who did not sign on, they continue to fight the validity of the Agreements altogether because they do not want to give up their preferential status and have worked in close contact with our next group to stall the momentum for the Agreements.

With the failure of the Agreements at the federal level in 2015, some irrigators were thrust back into a state of uncertainty and have seen the return of the litigious climate between themselves and the other stakeholder groups for rights to the water. The reversion of this group's feelings about the unraveling of the deals is well said by the Scott White, the director of the Klamath Users Water Association, when he said, “At the end of the day, farmers are the backbone of America...To be able to grow food and feed America: It's hard to do that without water” (Smith and Terray, 2018). Scott White puts us right back at the original conflict, what should the water be used for.

Chapter 5: What lies ahead

Emerging from a focused look at the driving stakeholder groups of the region, we can see that the complex dynamics of each group differs greatly from one to the next. The collective social dynamics in the region have gone through major fluctuations in the past two decades. In 2001 the aggression and hostility were at an all-time high. We looked at some of the factors that contributed to the social environment that included the use of litigation and the ESA by the Klamath Tribes. These are lawsuits that the irrigators would have to defend against. Focusing on the stakeholder narrative of the Klamath Tribes we got a better look at why that was necessary and why that was an unfortunate side effect of the only defense the group had. After 2001, tensions eased when PacifiCorp initiated stakeholder participatory discussion which produced agreements that aligned well with Community Based Natural Resource Management theory. The weariness of the community led people to the table, and when they were all able to listen fully to each other's perspectives, something highly innovative came out of it. While PacifiCorp has been primarily driven by its business interests, in 2010 they aligned with the people and there was a strong coalition rooted in collaboration.

After 2010, the Agreements were placed in federal hands and that changed the social climate again. The stakeholders living the conflict everyday were no longer in charge of what happened to their work they put in together. With the failure of the Agreements to gain traction on the federal level, hostilities and litigation returned. The coalition and broader community that built up around the Agreements unraveled. The top-down mandates came to rule the region again, and people became uncertain about where they stood in the water governance regime and how well they would be taken

care of. PacifiCorp has resurrected parts of the Agreements and is pushing forward with dam removal, but it is without an inclusive stakeholder process or a restating of the group's values. This part of the process is looking less and less like a CBNRM initiative. The decision-making power is moving farther and farther away from the people on the ground. At least in the past, that has not seemed to work out very well in the long run.

The CBNRM model has clearly provided a lot of perspective on the KRB case study, but this fluctuating social dynamic in mind, I would argue that the KRB case study can also inform the CBNRM model. For communities looking to this model as a way forward with their water governance or natural resource management regime, it will be important to maintain regular connection between the stakeholders and community members involved. The KRB groups were at their best when they were regularly sitting down at a table together having frank discussions. Things fell apart when it came time to actually implement what they had discussed but that connection had been lost. For CBNRM to be a more viable option, based on the results of the KRB, I would argue that formalized, regular contact between all parties involved in the management of the natural resource is necessary to maintain adequate communication and empowerment to maintain a sustainable plan.

What does the future hold for the Klamath River Basin?

A lot of continued work. The current water governance regime is clearly not very effective. There are only a few interests involved in the current process of water governance and the breakthroughs of the 2010 Agreements have been lost. There is also

another element to add to its future. The Oregon Climate Lab, based out of Oregon State University, projects that in general, southern Oregon will experience a great change in the precipitation regime over the next few decades as a result of climate change (2019). The Lab projects that there will be more rain, and less snow during the wet season, which will lead to less surface flow in the summer months when it is in highest demand (Mote et al., 2019). The KRB is in a geographic region that has already experienced severe water shortages during summer months of drought years, but climate change projections show an expansion of the problem. These problems are not going to go away, they are only going to get worse and these types of problems are not in any way limited to the KRB, which will require communities across the globe to deal with water governance issues in a timely and orderly manner.

Climate change has already begun to affect a plethora of communities worldwide, and its effects are only going to become stronger, which is why it is important to act now. Legislators and their communities should use the KRB as a case study to learn from about what works and what does not work when it comes to water governance, so they do not waste two decades with no tangible, physical success while their precious water resources continue to decline, making decisions even more difficult. “Never make water law in a drought year.” – U.S. Western Proverb

Bibliography

- Benson, Reed D. "Giving Suckers (and Salmon) an Even Break: Klamath Basin Water and the Endangered Species Act." *Tulane Environmental Law Journal* 15.2 (2002): 197-238. Web.
- Bureau of Reclamation. "Reclamation History." *Bureau of Reclamation*, United States Bureau of Reclamation, 2018, www.usbr.gov/history/borhist.html.
- Byron, Janet. "Lessons Flow from Klamath Basin Water Crisis." *California Agriculture* 56.4 (2002): 118-21. Web.
- Chaffin, B.C., et al. "Institutional Networks and Adaptive Water Governance in the Klamath River Basin, USA." *Environmental Science & Policy*, vol. 57, Mar. 2016, pp. 112-121.
- Chaffin, B.C., H. Gosnell, R.K. Craig. "The Emergence of Adaptive Governance in the Klamath River Basin." *Practical Panarchy for Adaptive Water Governance* (2018): 83-97.
- Cosens, Barbara, and Brian C. Chaffin. "Adaptive Governance of Water Resources Shared with Indigenous Peoples: The Role of Law." *Water*, 8(3), 2016, pp. 1-15.
- Czech, Brian, and Paul R. Krausman. *The Endangered Species Act: History, Conservation Biology, and Public Policy*. Johns Hopkins University Press, 2001.
- Doremus, Holly D., and Dan. A. Tarlock. *Water War in the Klamath Basin: Macho Law, Combat Biology, and Dirty Politics*. Island Press, 2012, ch. 1-5.
- FERC. "Hydropower Licensing - A Guide for the Public." *Federal Energy Regulatory Commission*, United States Federal Energy Regulatory Commission, 2015.
- Gosnell, H. and Kelly, E.C. "Peace on the river? Social-Ecological Restoration and Large Dam Removal in the Klamath Basin, USA." *Water Alternatives*, vol. 3, 2010, pp. 361-383.
- Gregory, Robin S. "Incorporating Value Trade-offs into Community-Based Environmental Risk Decisions." *Environmental Values* 11.4 (2002): 461-88.
- Gruber, James S. "Key Principles of Community-Based Natural Resource Management: A Synthesis and Interpretation of Identified Effective Approaches for Managing the Commons." *Environmental Management* 45.1 (2010): 52-66.
- Horangic, Alexandra, Kate A. Berry, and Tamara Wall. "Influences on Stakeholder Participation in Water Negotiations: A Case Study from the Klamath Basin." *Society & Natural Resources* 29.12 (2016): 1421-435.

Jenkins, Jeffrey S. "The Reproduction of the Klamath Basin: Struggle for Water in a Changing Landscape." *Yearbook of the Association of Pacific Coast Geographers* 73 (2011): 69-78.

"Klamath Tribes History." *The Klamath Tribes*, klamathtribes.org/history/.

Mote, P.W., J. Abatzoglou, K.D. Dello, K. Hegewisch, and D.E. Rupp, 2019: Fourth Oregon Climate Assessment Report. Oregon Climate Change Research Institute.

Mukherjee, Shomik. "Klamath Tribes Drop Lawsuit over Endangered Sucker Fish." *Times-Standard*, 2018, www.times-standard.com/2018/11/08/klamath-tribes-drop-lawsuit-over-endangered-sucker-fish/.

Norgaard, Kari Marie and Ron Reed. "Emotional impacts of environmental decline: What can Native cosmologies teach sociology about emotions and environmental justice?" *Theory and Society* 46.6 (2017): 463-495.

PacifiCorp. "Klamath Hydroelectric Settlement Agreement (KHSA)." *PacifiCorp*, Berkshire Hathaway Energy, 2018, www.pacificorp.com/energy/hydro/klamath-river.html.

Plaven, George. "Contractor Chosen to Remove Klamath River Dams." *Capital Press*, 26 Apr. 2019, www.capitalpress.com/ag_sectors/water/contractor-chosen-to-remove-klamath-river-dams/article_c6b50e54-6788-11e9-8700-4f683247eaa1.html.

Smith, Anna V., and Terray Sylvester. "How the Yurok Tribe Is Reclaiming the Klamath River." *High Country News*, 11 June 2018, www.hcn.org/issues/50.10/tribal-affairs-how-the-yurok-tribe-is-reclaiming-the-klamath-river.

Stern, C.V., H.G. Upton, C. Brouger, and B.A. Cody. "Klamath Basin Settlement Agreements." *Congressional Research Service* 7-5700 (2014).

"Walden Responds." *Klamath Tribes News and Events*, 9 Dec. 2015, klamathtribes.org/news/walden-responds/.

"Yurok Tribe Pulls out of Klamath River Agreement." *U.S. Congressman Jared Huffman*, 17 Sept. 2015, huffman.house.gov/media-center/in-the-news/yurok-tribe-pulls-out-of-klamath-river-agreement.