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Peace on the River? Social-Ecological Restoration and Large Dam Removal in the Klamath Basin, USA

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ABSTRACT: This paper aims to explain the multiple factors that contributed to a 2010 agreement to remove four large dams along the Klamath river in California and Oregon and initiate a comprehensive social-ecological restoration effort that will benefit Indian tribes, the endangered fish on which they depend, irrigated agriculture, and local economies in the river basin. We suggest that the legal framework, including the tribal trust responsibility, the Endangered Species Act, and the Federal Power Act, combined with an innovative approach to negotiation that allowed for collaboration and compromise, created a space for divergent interests to come together and forge a legally and politically viable solution to a suite of social and environmental problems. Improved social relations between formerly antagonistic Indian tribes and non-tribal farmers and ranchers, which came about due to a number of local collaborative processes during the early 2000s, were critical to the success of this effort. Overall, we suggest that recent events in the Klamath basin are indicative of a significant power shift taking place between tribal and non-tribal interests as tribes gain access to decision-making processes regarding tribal trust resources and develop capacity to participate in the development of complex restoration strategies.

KEYWORDS: Dam re-licensing, indigenous sovereignty, irrigated agriculture, collaboration, dam decommissioning, Pacific Northwest

INTRODUCTION

We stand for fish and farms, rivers and ranches. We stand for all the communities and the resources of the Klamath basin.¹

On 18 February 2010, PacifiCorp, a utility company that owns and operates dams in the Pacific Northwest, signed the Klamath Hydroelectric Settlement Agreement (KHSAs), which describes plans to decommission and remove four of its dams along the Klamath river in Oregon and California (figure 1). The KHSAs is intended to work in tandem with the larger Klamath Basin Restoration Agreement (KBRA), a comprehensive approach to restore threatened fisheries and bring "peace on the river" to parties long in conflict.² While a number of important and potentially challenging steps must be accomplished in order to implement these agreements, it is likely that they will lead to the largest dam removal project in history. Progress on these agreements thus far has been remarkable considering the animosity and distrust that have characterised stakeholder interactions in the Klamath basin for decades.

¹ Statement of Yurok Tribe, Karuk Tribe, Klamath Tribes, and Klamath Water Users Association, April 2008.

² The actual text in the KBRA reads "The Parties have negotiated this Agreement to achieve peace on the river and end conflict that has persisted related to the Klamath Reclamation Project" (Section 21.3.1.B.i).

What is notable about this restoration effort is that it involves much more than the environment. The multidimensional approach found in the KBRA and KHSAs reflects an effort to address social, economic and ecological stressors in an integrated manner that creates a shared vision, agreements and political momentum among a wide diversity of basin stakeholders and communities. Major issues addressed include:

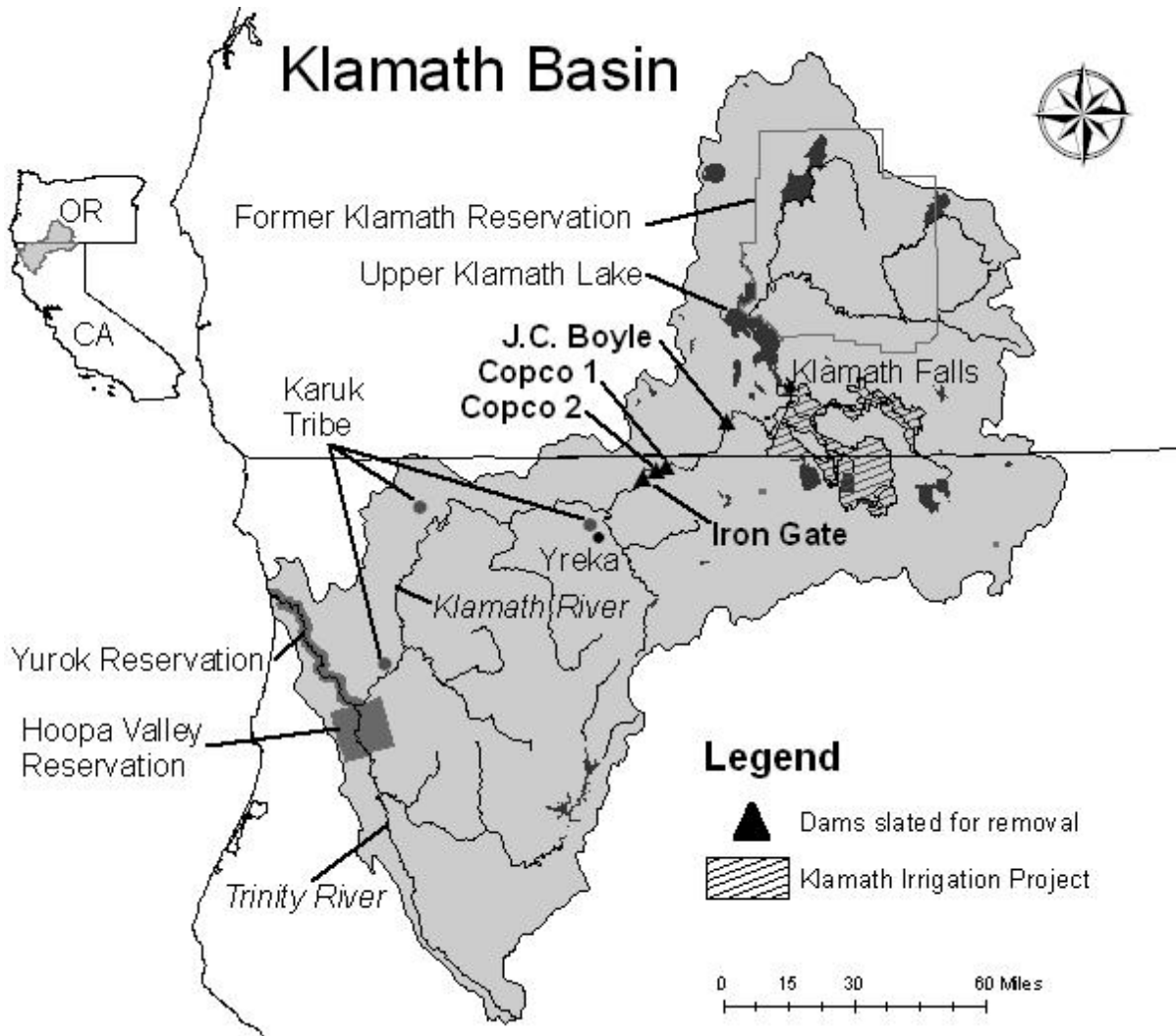
- a) *ecological*: problems of water quantity, water quality, fish passage, and habitat/functionality loss associated with land conversion, irrigation diversions and hydropower operations;
- b) *economic*: loss of subsistence (tribal) and commercial fisheries; persistent poverty among tribal groups, regulatory and water delivery uncertainty for irrigated agriculture; loss of preferential power contracts supporting agriculture; and
- c) *social*: persistent social conflict between groups and interests including state and federal government agencies, basin tribes,³ coastal commercial fishing interests, irrigated agriculture groups, and environmental organisations.

It would be difficult to overstate the magnitude of this moment in the history of water conflict in the Klamath basin and in the American West more generally. The Klamath has been ground zero for conflicts between the Endangered Species Act (ESA), Indian water rights, commercial ocean fishing, and irrigated agriculture for decades; and has provided vivid examples of the impacts that modern, large-scale ecosystem modification, including large dams, have on indigenous communities and fisheries. Over the past several decades the US federal government has made significant expenditures in targeted efforts to fix ecosystem problems and provide temporary relief to communities aggrieved by the results of ecosystem degradation and/or application of regulatory measures. Investments include, for example, a \$50 million special allocation of federal Farm Bill funds in 2002 to support water conservation infrastructure in the Klamath basin, and \$12 million between 2002 and 2004 for the Bureau of Reclamation (BOR) to establish a water bank to pay farmers to forego irrigation (crop idling) altogether or use only well water (groundwater substitution) (GAO, 2005). Relief for communities has included financial assistance to both farmers in the Klamath Irrigation Project (2001) following the water shutdown, and to commercial fishermen in 2006 following the closure of the Pacific salmon fishery along the California and Oregon coast.

We suggest that the pending agreements in the Klamath basin exemplify many of the principles put forth in the World Commission on Dams (WCD) Report (2000), which aimed, among other things, to examine the potential for competing parties to agree on how to better address environmental, social, and economic problems related to dams. Strategic Priority 3 of the WCD Report, for example, posits that dam management should include a systematic approach to monitoring, evaluation, and periodic reassessment; dam managers should be held accountable for ensuring that the dam is meeting the social and economic objectives of the broader population (not just the immediate beneficiaries); and the management process should allow for decommissioning if a dam has "exceeded its useful life... or where costs (including environmental costs) of further operation outweigh the benefits" (WCD, 2000). Indeed, the processes leading up to the signing of the KHSAs gave Klamath basin stakeholders the opportunity to consider the dams' large-scale, long-term impacts on the basin's social-ecological systems, and reassess the role of the dams in the basin in the context of the much broader socio-economic and ecological transformation envisioned in the KBRA.

³ We capitalize 'tribe' or 'tribes' when used as synonyms for a particular tribe (e.g. Karuk Tribe or the Tribe). We do not capitalize tribes when referring to tribes more generally (e.g. Basin tribes). The Klamath Tribes comprise three tribes, so we occasionally refer to them as 'the Tribes'.

Figure 1. The Klamath basin, showing the location of the four dams slated for removal, the Klamath Irrigation Project, and Indian reservations in the lower basin.⁴



Drawing on document analysis, participant observation, and semi-structured interviews with 30+ key informants over the past four years, this paper seeks to explain how stakeholders long at odds came to agreement on an integrated vision and plan for broad-scale restoration and redevelopment of their shared basin involving large dam removal. We focus on three causal mechanisms: the legal framework, which mandated action; the emergence of an adequately scaled forum for integrating multiple basin needs; and the growth of a bottom-up, place-based approach to collaborative governance involving tribal and non-tribal groups.

First, we examine the role played by several key laws, policies, and national obligations; particularly the ESA, the Federal Power Act (FPA) and a range of federal-tribal trust responsibilities. While these laws and policies have existed for decades, three recent developments in implementation have catalyzed constructive problem-solving: (1) investment in novel approaches that move from a focus on prevention of loss to investment in recovery; (2) investment in more collaborative, 'horizontal' forums and institutions that support decentralised, flexible approaches; and (3) more explicit attention to the

⁴ The Klamath Tribes no longer have a reservation, but their headquarters are in Chiloquin, Oregon, near Upper Klamath lake. The Karuk do not have a legally designated reservation, but do have a number of small tracts held in trust by the federal government as well as tracts owned by the Tribe outright.

tribal trust responsibility. We suggest that the evolution of legal history in the basin can be seen as indicative of important power shifts taking place at the regional, national, and global scales between indigenous peoples, development interests, and non-tribal governmental entities, often involving 'bottom-up' collaborative governance. Thus, in addition to explaining the laws, events and processes that facilitated the settlement agreements, our analysis aims to enhance broader understanding of the ways in which indigenous peoples are negotiating improved access to critical decision-making involving natural resources management.

Second, we suggest that while the laws were necessary to force change and, to some degree, forestall further ecological impacts, they were inadequate by themselves for resolving complex social and ecological problems without the right forum to explore socially sustainable ways to implement them. Thus, our analysis includes a consideration of the ways the hydroelectric dam re-licensing process mandated by the FPA and the Federal Energy Regulatory Commission (FERC) evolved into a forum providing the needed space to develop solutions to a complex suite of problems that, importantly, extended far beyond a narrow focus on dams alone.

Finally, we suggest that the right legal instruments and the right forum for negotiation were necessary but not sufficient. Without local capacity to communicate, strategise and develop place-based, socially sustainable solutions, the settlement agreement could never have been forged. An important part of the Klamath story is the shift from top-down, government-led attempts to resolve water conflict (many of which were ineffective) to bottom-up, locally led solutions involving, importantly, improved tribal/non-tribal social relations.

Taken together, these factors and processes led 20+ key stakeholder groups in the Klamath basin to set aside conflict-based litigation, single-interest political advocacy, and media wars, and adopt a collaborative approach to natural resources governance.

A GLOBAL PERSPECTIVE ON LARGE DAMS AND INDIGENOUS PEOPLES

According to the National Inventory of Dams there are over 82,000 dams in the US, about 6,000 of which are considered 'large' with a height of over 15 metres (USACE, 2007). Globally, the 45,000 large dams that have been built since World War II tend to be near the homes of indigenous people and ethnic minorities (Johnston, 1997). Local people, especially indigenous, are often excluded from dam planning or construction and many have protested dam operations and/or called for their decommissioning and removal (Desbiens, 2004; Jenkins et al., 2008; Johnston, 2005; Scudder, 2005; Wolf et al., 2005). In the Columbia river basin in the US Pacific Northwest, for example, a number of tribes historically dependent on migrating salmon have lost access to traditional fishing spots due to the construction of more than 75 federal, non-federal, and Canadian dams in the basin since the 1930s (Colombi, 2005, 2006; Volkman and McConnaha, 1993).

Since the many social impacts associated with dams are intimately tied to the ecological disruptions they cause, including decline and extinction of species and water-quality problems, it is no surprise that some of the most vocal and effective opposition to large dams has arisen from alliances between environmental non-governmental organisations (NGOs) and indigenous groups (Donahue and Johnston, 1998; McCully, 1996; Oviedo and Brown, 1999).

While dam opponents have tried to block construction and demand reparations associated with large dam impacts for decades, it was not until the end of the 20th century that outright dam removal began to be seriously discussed, in part because many dams were built 50-100 years ago in the US and are naturally aging and coming to the end of their life cycle; and in part because they are now subject to stricter environmental regulations. Most dam-removal activity to date has involved only small dams in the United States (US) (WCD, 2000). We could find no good statistics on the total number of large dams that have been removed or decommissioned globally; but we found that, in the US, between 1996 and 2005, FERC required, or agreed to, the removal of at least 19 of the ~1000 (large and small) private dams it licenses (Clark, 2007). Decommissioning has occurred on other (non-FERC) US dams, as well, as

they outlive their economic usefulness, become unsafe, or face new regulatory requirements such as the ESA. Aging dam infrastructure and the growing need to weigh the economic costs of dam retrofitting against the alternative of removal will likely precipitate more dam removal discussions in the future (Born et al., 1998; Doyle et al., 2003). In the US, largely because there has been a trend toward ecosystem restoration and endangered species recovery, the decommissioning rate for dams overtook the rate of construction in 1998 (WCD, 2000).

The ability of indigenous peoples to effectively influence decisions around dam construction and management varies tremendously from region to region depending on the laws in place defining indigenous rights. The WCD Report reflects the evolution in thinking about the roles of tribes in dam decision-making, advocating the use of a framework of "free, prior, and informed consent" to dam construction, maintenance, and alternatives (WCD, 2000). This language addresses the historical exclusion of indigenous and tribal people from natural resources decision-making.

As legal scholar Charles Wilkinson has suggested, for all of its flaws, the policy of the US toward its native peoples is one of the most progressive of any nation, and the American West is the site of some of the most significant victories related to indigenous sovereignty in recent years (Wilkinson, 1987, 2005). Indian tribes in the US draw on powers granted to them as part of a federal-tribal trust relationship established at the time of European settlement. As stated in a landmark Secretarial Order entitled American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act, signed by Secretary of Interior Bruce Babbitt in 1997:

[t]he unique and distinctive political relationship between the United States and Indian tribes is defined by treaties, statutes, executive orders, judicial decisions, and agreements, and differentiates tribes from other entities that deal with, or are affected by, the federal government. This relationship has given rise to a special federal trust responsibility, involving the legal responsibilities and obligations of the United States toward Indian tribes and the application of fiduciary standards of due care with respect to Indian lands, tribal trust resources, and the exercise of tribal rights (1089 Secretarial Order, Sec. 4, in Wilkinson, 1997).

These powers mostly lay dormant until the second half of the 20th century, when tribal communities gained significant capacity and began to play an increasingly important role in land and water resources management, especially that concerning public resource decisions. According to Wilkinson (2005), "gradually, Indian people built a movement and generated pressure on Washington, driven by political action and lawsuits". In some cases, tribes in the US have gained access to natural resource decision-making through top-down federal mandates; and, in others, they have been included in increasingly common decentralised natural resources management processes involving co-management and collaborative decision-making (O'Faircheallaigh and Corbett, 2005). In northeastern Oregon, Waage (2001) found that informal meetings between Nez Perce tribal and non-tribal people regarding salmon management led to collaboration based on shared values, and a shift in local power relations that allowed for tribal/non-tribal alliances. These alliances "increased their chances of being heard in resource management debates" dealing with species subject to regulations under the ESA (Waage, 2001). Recent experiences in the Klamath have been similar in many ways, suggesting that a 'political plurality' may arise in some cases through negotiation, collaboration, and co-management (Zaferatos, 2004).

THE KLAMATH BASIN CASE

The four dams proposed for removal in the Klamath basin are on the Klamath river, near the Oregon-California border (figure 1). The ecological, historical, legal, and political processes that have led to the current situation are complex, involving a long history of social and environmental conflict that has been well documented elsewhere (Braunworth et al., 2002; Doremus and Tarlock, 2008; Most, 2006).

The Klamath basin is better defined as two regions: the upper Klamath basin (UKB) and the lower Klamath basin (LKB), separated by the dams currently slated for removal and the California-Oregon

state border. The two sub-basins, which collectively cover 40,000 km², are nearly equal in size, but vary significantly geographically and ecologically.

The basin's headwaters are in the eastern Cascade Mountains, where three major tributaries wind their way through forest and ranch land and converge at Upper Klamath Lake. Until the 20th century, much of the UKB comprised wetlands, and served as an important stopover on the Pacific Flyway. Historically, salmon migrated from the Pacific Ocean all the way up into the tributaries above Upper Klamath Lake, but the Copco 1 dam blocked passage in 1918. This arid, high-elevation region has been Klamath Tribes' territory for thousands of years (Most, 2006). The Klamath Tribes ceded over 8 million ha of their homeland for a reservation of 800,000 ha in the Treaty of 1864; importantly, they reserved hunting and fishing rights across the reservation and the ceded lands. These rights have been determined by subsequent interpretation of the treaty to include the right to sufficient in-stream flows to support two species of sucker fish, now endangered, on which they have historically depended for physical and spiritual sustenance. The Klamath Tribes were terminated in 1954, along with many other tribes in the US, as part of federal assimilation policy.⁵ Termination was disastrous for the Klamaths due to the loss of their reservation. In 1986, tribal status was restored, but no land was returned (Doremus and Tarlock, 2008).

The UKB is also now home to a number of close-knit agricultural communities, which developed as part of the wave of immigration into the western US in the late 1800s, and explicit federal policies designed to attract and encourage settlement and land conversion for agricultural production in the era between World War I and World War II. As described below, these communities are largely dependent on the water of the Klamath basin for irrigation of extensive cattle pasture, alfalfa, and crops, including potatoes, horseradish, onions, and mint (Braunworth et al., 2002).

Below Upper Klamath Lake, the Klamath river flows past the hydroelectric dams and into the LKB, where it is joined by the Scott, Shasta, Salmon, and Trinity rivers before emptying into the Pacific Ocean. The LKB, mostly rugged, temperate rainforest, was once the third most productive salmon river system in the lower 48 states, but habitat-blocking dams, poor water quality and insufficient flows have reduced the salmon population to less than 10 percent of its historic size, harming the tribes as well as commercial and recreational fishing communities. The LKB is still home to three salmon fishing tribes, the Yurok, Karuk, and Hoopa Valley. The Yurok and Hoopa Valley Tribes both have treaty fishing rights, which "include the right to prevent other appropriators from depleting the streams' waters below a protected level" (Woodward and Romm, 2002).⁶

Ecological transformation and water development

Much of the current conflict in the basin can be traced to European-American development and settlement projects, many of them initiated and supported by state and federal governments, that significantly transformed and degraded the ecological functionality and fisheries productivity of the Klamath system.

During the mid-to late 1800s, ranchers and farmers settled in the valleys above Upper Klamath Lake and claimed water under the state prior appropriation doctrine, a system of 'first come, first served' water allocation used throughout the western US. The oldest claimants in the basin, however, are the Klamath Tribes, whose reserved water rights, which stem from their hunting and fishing treaty rights, date from 'time immemorial' (US v. Adair, 478 F. Supp. 336, 345 (D. Or. 1979) (Adair I)). Both the Klamath Tribes and the lower basin tribes have asserted treaty rights to in-stream water flows needed to support treaty species. Put simply, the tribes want to maintain water in-stream for fish, and irrigators

⁵ Termination was the policy of the US from the mid-1940s to the mid-1960s due to the belief of Congress that Native Americans would be better-off assimilated into mainstream society. In addition to loss of tribal land, termination involved loss of tribes' status as sovereign nations able to negotiate with the federal government on even footing.

⁶ From footnote (page 344) in Woodward and Romm (2002), this quote is from: Solicitor Opinion, 1995, citing Joint Board of Control, 832 F.2d at 1131-1132; Adair, 723 F.2d at 1411; and also Kittitas Reclamation District, 763 F.2d at 1033.

need water for their crops. Until the KBRA was developed – with landmark Indian water rights settlements – competing claims were unresolved and were at the root of much of the tension and conflict in the basin.

Farmers were drawn to the Klamath basin in large part by the Klamath Irrigation Project, authorised by the Secretary of the Interior in 1905 to "drain and reclaim lakebed lands of the lower Klamath and Tule lakes, store waters of the Klamath and Lost rivers, divert irrigation supplies, and control flooding of the reclaimed lands".⁷ Today, the Klamath Project diverts about 1.7 billion cubic meters of water from the Klamath river and its tributaries to irrigate about 97,000 ha of croplands and rangelands in Oregon and California. In addition, 'off-project' ranchers⁸ irrigate about 71,000 ha in the UKB tributaries located upstream of project lands, which collectively feed the source of the main stem Klamath river (Doremus and Tarlock, 2003).

Ecosystem modification for agricultural production had significant impacts on basin fisheries and ecological functionality. Most obvious was the significant withdrawal of river and Upper Klamath lake water to irrigate crops and pasture. Draining of wetlands and irrigation practices also contributed to degraded water quality (nutrients, temperature increases) in a system already taxed by waters naturally high in dissolved minerals including phosphorus. Finally, modification of lands, development of irrigation-conveyance canals, and early to mid-century grazing practices contributed to significant changes in river ecology with resulting alterations in hydrology (especially timing), water quality, and available fish habitat.

The other significant water development in the Klamath basin involves a series of dams that were constructed along the Klamath river and its tributaries for hydroelectric power. The dams, originally operated by a company called Copco, are currently owned by PacifiCorp, a subsidiary of Berkshire Hathaway, owned by billionaire Warren Buffett.

The four dams proposed for removal are Copco 1, Copco 2, J.C. Boyle, and Iron Gate (figure 1, table 1). They were built over a period of 44 years, and have been controversial from the beginning. In 1911, when dam construction was in its planning phase, many Klamath irrigators opposed hydroelectric dam construction because water resources were limited and some farms and ranchlands would be submerged by reservoirs (Boyle, 1976). As a result, in 1917, Copco signed a joint venture contract with the BOR that would benefit both irrigators, through low-rate electricity provision, and the dams' owners, through contracted water regulation (Boyle, 1976).

Table 1. Klamath river dams considered for dam removal (source: Kruse and Scholz, 2006, except storage capacity, from G&G Associates, 2003).

	Copco 1	Copco 2	J.C. Boyle	Iron Gate
Year built	1918	1925	1958	1962
Height (metres)	38	10	21	59
River km	320	319	360	306
Storage capacity (m ³)	57.8 million	90,000	4.3 million	72.5 million
Generating Capacity (MW)	20	27	80	18
Upstream fish passage	No	No	Yes ⁹	No

Unfortunately, while the concerns of irrigators were considered, the effects of dam construction on fish and waterfowl and the concerns of Indian tribes were largely ignored (Robbins, 1999). Copco 1, built in

⁷ From Senate Report 106-489 (2000), the Klamath Basin Water Supply Enhancement Act of 2000. http://ecip.loc.gov/cgi-bin/cpquery/?&sid=cp106okwwf&refer=&r_n=sr489.106&db_id=106&item=&sel=TOC_5351& (accessed 15 November 2009)

⁸ 'Off-project' refers to the agricultural lands outside of the Klamath Irrigation Project, e.g. the Sprague, Williamson, and Wood River subbasins above Upper Klamath lake.

⁹ The current J.C. Boyle ladder does not meet federal passage standards and so would have to be replaced to meet re-licensing requirements.

1918, blocked anadromous fish passage to the UKB. In 1951, Copco proposed another hydroelectric dam (Copco 2), and conflict with irrigators again arose over water allocation (Keppen, 2004). As a result of this conflict, a compromise in the form of the Klamath River Compact was forged between the states of Oregon and California and the US Congress in 1957. The Klamath River Compact *did* include fish and wildlife concerns, but it prioritised irrigation rights over all other concerns, including hydroelectric, fish, wildlife, and recreation water rights (Keppen, 2004). After approval of the compact, the J.C. Boyle dam was built upstream of Copco 1. To mitigate flow fluctuations, the largest and most recent of the dams, Iron Gate, was built in 1962. Iron Gate is the most downstream anadromous fish blockage, at river km 306 (Kruse and Scholz, 2006). A salmon and steelhead hatchery was built at Iron Gate in 1966 in an attempt to mitigate fish loss.

The fall-out: Degraded ecosystems, regulatory action, and community conflict

Together, problems related to water quality, water quantity, flow regimes, fish passage, and fish habitat issues – compounded by the ineffectiveness and collateral impacts of regulatory actions – led to a variety of ecological and social problems by the late 20th century. The tension between tribes and irrigators grew as tribes asserted their treaty rights through litigation demanding in-stream water for fish, and irrigators maintained their rights to water and low-cost power rates. By the 1980s, the inherent disconnects in the ecological and political system had become evident.

In 1988, two endemic fishes of the UKB, the short-nose sucker (*Chasmistes brevirostris*) and the Lost River sucker (*Deltistes luxatus*), treaty species of the Klamath Tribes, were listed as endangered under the ESA by the US Fish and Wildlife Service (USFWS). Although not related to the dams, this event served as the first public/political indicator of crisis in the system. In 1997, coho salmon,¹⁰ a treaty species of the lower basin tribes, was listed as threatened under the ESA by the National Marine Fisheries Service (NMFS) and the river was closed to both commercial and recreational fishers (Doremus and Tarlock, 2003). Since Section 7 of the ESA prohibits any federal actions that further jeopardise a listed species, federal agencies like the BOR and FERC must consult the wildlife agencies (USFWS and NMFS) and affected tribes whenever a federal action might affect a listed species.

Section 7 is arguably the strictest environmental law in the US, but it is rarely implemented with full force for a number of practical and political reasons (Gosnell, 2001). During a severe drought in 2001, however, the USFWS and NMFS issued biological opinions that required the BOR to take a number of controversial actions, including the maintenance of higher water levels in Upper Klamath lake (for the suckers) and higher in-stream flow levels in the Klamath river below the Iron Gate dam (for the coho). These decisions resulted in curtailment of water to Klamath Project irrigators (NRC, 2004), which led to losses of between \$37.5 and \$54 million in gross crop revenues. The federal government provided \$35 million in emergency payments for irrigators (Jaeger, 2002); however, this did not account for secondary and tertiary impacts to the agricultural economy. Further, costs and benefits were not distributed equally and many individual farmers suffered steep economic losses, as did many farm workers.

In part because the curtailment did not improve the status of any of the listed species, the BOR's decision was disputed throughout the West and was considered by some to be an attack on rural livelihoods and irrigated agriculture, with fish prioritised over people. Reactions from both Project and off-project irrigators and their supporters were swift and impassioned, and the issue became a rallying point for a variety of interests across the West that shared antipathy to federal government policies. In May 2001, several people supportive of the irrigators illegally breached the closed headgates, and in Klamath Falls, thousands of farmers, ranchers, area citizens, and out-of-area activists participated in a symbolic bucket brigade. In August, an ironically named 'Convoy of Tears'¹¹ rolled through town, with a

¹⁰ The Southern Oregon/Northern California Coast Evolutionary Significant Unit of coho salmon was listed as threatened.

¹¹ 'Convoy of Tears' is a deliberate allusion to the 'Trail of Tears', which refers to the forced removal and relocation of the Cherokee Indian people by the federal government from their homelands in the southeastern US to 'Indian Territory' in 1838.

traveling 10-foot bucket from Elko, Nevada. The bucket was installed in front of the Klamath Government Center and has remained there since, a symbol of community support for irrigated agriculture (Most, 2006).

In 2002, a National Research Council¹² (NRC) report commissioned by the federal government criticised the science behind the 2001 biological opinions. In response, the BOR immediately released a new 10-year water management plan for long-term provision of irrigation waters, in spite of the ESA listings – a deviation from the year-to-year planning approach that had been in effect since 1992. In a show of solidarity with local irrigators, the Secretary of the US Department of the Interior flew to Klamath Falls on 1 April 2002 to open the head gates and mark the beginning of the irrigation season.

In September of that year (2002), low flows in the lower Klamath river led to overcrowded conditions, disease, suffocation and, ultimately, a fish kill involving more than 33,000 adult salmon (including threatened coho) and other species (Lynch et al., 2003; Turek et al., 2004). A number of fisheries biologists and other observers noted that it may have been the worst fish die-off in recorded history (McHenry, 2003). Four years later, at least in part due to the 2002 incident, salmon fisheries along the California and Oregon coast were closed due to low numbers of returning fish, reducing the fishing opportunity in the Klamath impact area by 71% from recent years and devastating Klamath basin coastal fishing communities and economies.¹³ In 2005, the Ninth Circuit Court rejected the BOR's new 10-year plan after a lawsuit was filed by the Pacific Coast Federation of Fishermen's Associations and conservation groups, claiming that it did not adequately protect fish.

In sum, at the turn of the 21st century, broad-scale ecosystem modification combined with the undeniable limitations and incapacity of the existing environmental regulatory framework were coming to a head and meting out hard impacts on the communities and natural systems of the Klamath basin. As one NGO employee put it, the events of the early 2000s could be seen as a set of 'rotating crises', in which first the tribes, then the farmers, and then the fishermen were forced to deal with water shortages resulting in negative social, economic, and cultural consequences throughout the basin (29, interview 2008).¹⁴

The search for solutions

Since the listing of the endangered sucker species in 1988, the ESA has guided most water-related governance in the Klamath basin. After the 2001 curtailment, many people argued that the top-down, regulatory, and blunt ESA-driven approach to basin management was compounding difficulties for communities attempting to adapt to the drought-prone ecosystem. The ESA was able to address only one symptom of a larger problem on an annual basis; but it did not provide a comprehensive approach to correcting the many social and economic issues that were inextricably linked to the ecological problems affecting the basin.

There was a growing sense that the federal government was incapable of solving the many problems it had created, as articulated in a 2006 editorial in the local newspaper:

Whether the measure used is the size of salmon runs, the state of the basin's water quality or the amount of water flowing in Klamath basin streams and rivers, the 20-year effort to restore the Klamath river and its fisheries has failed. Salmon runs now are at greater risk of extinction, fishing is more restricted and water quality is more degraded than when 'restoration' began in earnest 20 years ago. Most importantly, the dewatering of major Klamath tributaries has continued unabated during those 20 years. What [is needed]

¹² The research arm of the National Academy of Sciences in the US.

¹³ Declaration Concerning the Klamath River Fall Chinook Salmon Fishery, Secretary of Commerce Carlos M. Gutierrez, 10 August 2006.

¹⁴ Each interviewee was identified with a numeric code in order to maintain anonymity.

is an honest, practical and hard-nosed assessment of failures as well as successes and a probing analysis of why so much taxpayer money has been spent with so little positive impact.¹⁵

With the federal government leading most efforts to resolve the many socio-economic and environmental problems, locals were only marginally involved in attempts to improve the situation. As one UKB rancher observed, "to make a decision about natural resource management you could not avoid a process that kept you apart, with the feds in the middle" (31, interview 2008). Over time, the BOR's inability to balance regulations required by the ESA with individual water rights and community needs ultimately led to efforts to move decisions regarding water resources management and allocation into local hands (Parobek, 2003).

Toward collaborative governance

We're not in crisis mode, we're in problem solving mode. We're just doing it. We need to feel the hope and let it drive us. I'm so tired of fighting. I've been fighting for five years in the Klamath and I'm through with it. What we're doing is part science, part democracy (31, interview 2006).

Prior to the late 1990s, most efforts to resolve conflict relied on litigation, single-interest political advocacy, and media wars, or as Doremus and Tarlock (2008) put it, "macho politics, combat science, and dirty politics". These approaches created temporary wins for the various parties involved, but they were inadequate for developing long-term solutions, failed to deliver any needed ecosystem or operational stability or continuity, and only added to distrust and animosity.

Tensions in the Klamath basin began to take a new direction through a wide variety of processes, pilots and initiatives involving collaboration, multi-party negotiation, and convening of multiple interests and communities. While there is significantly more research to be conducted to catalogue these processes and evaluate their contribution to progress in the basin, we find notable the impacts of an Alternative Dispute Resolution approach to ongoing water rights adjudication in the UKB during the early 1990s; a series of listening sessions and a small-scale collaborative restoration project after 2001; and the evolution of the FERC dam re-licensing process into a broader, basin-wide negotiation forum which resulted in the KBRA and KHSA. We suggest that 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.

Critical to this evolution, we suggest, was improved communication – much of it informal, outside the legal and political negotiating arena. Self-selected members of the historically antagonistic tribal and irrigator communities – leaders who saw the need for a new approach and who were willing to take the risk of starting conversations beyond the legal /political/media arenas – began to connect. So, too, did upper and lower basin interests, which, because of the extensive geography and socio-political boundaries, historically operated largely independent of one another. For many stakeholders, the ability to connect the experiences of tribes and salmon fishermen in the LKB with farmers, ranchers and tribes near the headwaters of the basin 400 km and six hours away by car, and vice versa, led to an expansion of the perceived community of concern, and a greater ability to conceive basin-wide solutions and compromises (15, interview 2008). While none of the collaborative or settlement-oriented efforts were in and of themselves successful at resolving the conflict in the basin, they can all be thought of as 'run-ups' to the eventually successful negotiations that led to the KBRA and KHSA.

In the years immediately following the 2001 crisis, collaborative projects began to emerge focused on restoring private lands with the involvement and support of conservation and tribal interests. One example is the Klamath Basin Ecosystem Foundation (now Klamath Watershed Partnership), which established a board of local landowners, conservation interests and tribal representatives. In another

¹⁵ Klamath Falls Herald and News, 9 November 2006.

example, the trust built between one off-project irrigator and the Klamath Tribes during a collaborative restoration project on the Yainix Ranch, situated on former reservation land, ultimately resulted in the first full water settlement in the UKB's adjudication – one, significantly, achieved outside the court system. The agreement ensured the ranch owner's reliable access to water in exchange for her commitment to collaboratively manage and sustain a healthy riparian corridor along the river's headwaters.

One participant called the Yainix Project "part social experiment, part gamble" (29, interview 2009). The Project aimed to demonstrate that restoration and economically viable agriculture were not mutually exclusive endeavours (15, interview 2008). Another important goal was to experiment with new mechanisms for collaborative land management, including formal involvement of the Klamath Tribes (among other interested parties including state and federal agencies) in land management decisions.

The participants' perceived success of the project emboldened them to engage more people in discussion of broader basin settlement by convening 'living room' dialogues about possibilities for broad scale socio-economic and ecological restoration with tribal and agricultural leaders. For many participants, these meetings were the first time tribal and non-tribal locals had ever met one another informally, and without acting through intermediaries (most often, lawyers). One rancher contrasted the informal dialogues and place-based collaborative projects with the way his prior interactions with tribal members had taken place:

I encountered him at adjudication meetings, right? Water rights adjudication. And we both sat on opposite sides of the room... while our attorneys talked to each other and, um... there was just... I developed this bizarre perception of who that guy was, right? He was just, with his braids and his beads and, y'know, a big Indian, and I'm on the other side with my cowboy hat and my vest and boots and all that sort of thing. And that was how we interacted... (31, interview 2008).

Around the same time, another set of upper basin-focused settlement discussions (informally called the 'Shiloh meetings' after the hotel in which they most often met) brought together UKB leaders to discuss formal water settlement. The meetings were convened by a local landowner, received significant support from Bush Administration officials and, though they also failed to yield final results, are widely credited with advancing dialogue and developing some early concepts of 'water balance' (allocating water as between in-stream flow needs and irrigation) that were refined in the subsequent KBRA process.

A very different type of process widely recognised in the basin as important to moving toward settlement came to be known as the 'Chadwick Talks'. In 2005-2006, the Klamath Compact Commissioner brought in a noted conflict-resolution facilitator, Bob Chadwick, with funding support from federal agencies. Five dialogue and planning sessions were set up across the basin, with the intention of having 'opponents' meet in one another's communities to facilitate mutual understanding (Most, 2006). The sessions were widely available to whoever was interested in participating. In all, 180 people participated, with many participants attending multiple sessions. The format created a 'safe space' that allowed people to bring out their strongest emotions about an issue, and, ultimately, try to identify common values. While some participants dropped out or rejected participation because of unclear connection to power or concrete action, others embraced it and saw real hope in not only addressing old wounds, but jointly piecing together a vision of a better future, and, at the very least, creating better understanding and relationships.

A number of interviewees indicated that these informal side meetings throughout the basin after 2001 were, in many ways, more productive than some of the formal litigation-based forums because of the 'human-scale' successes in forging community and shared identities. As one observer noted, "the many formal and informal meetings created a 'horizontal' model of cooperation among local participants, but this model was supported by many 'vertical' relationships, including federal laws and legal decisions that supported either Indian or irrigator rights" (29, interview 2008). In other words,

these informal processes taking place throughout the basin contributed to a culture that helped facilitate the more formal processes that were already underway, in particular those surrounding the FERC dam re-licensing process.

The FERC re-licensing process

The dams proposed for removal are part of the larger Klamath Hydroelectric Project, authorised by FERC to operate under the 1920 Federal Power Act (16 USC 792). FERC grants 30 to 50-year operating licenses and, since many licenses were granted during the heyday of the 'Big Dam Era' in the 1950s, at least 40% have come up for renewal in recent years (Powers, 2004). The license for the KHP, initially issued in 1956, expired in 2006 (Schreiber, 2009). In order to renew a license, dam operators must demonstrate compliance with existing laws dealing with threatened and endangered species, habitat, recreation, and other resources. To comply with modern laws not in place at the time of the original license, PacifiCorp would have to mitigate impacts on listed species, and address concerns such as blocked fish passage, serious alterations in the natural flow regime due to peaking power operations, and water quality impacts.

From the beginning, PacifiCorp favoured maintaining the dams, and continued to do so, even after a 2007 Environmental Impact Statement estimated mitigation costs at over \$300 million. Recommended measures included (1) developing management plans to deal with sediment, erosion, and habitat needs; (2) riparian restoration; (3) releasing certain minimum flows at various points and regulating flow levels; and (4) constructing fish ladders, fish screens, and downstream fish passage facilities at some of the dams. Expensive mitigation measures could be avoided by removing the dams; but uncertainty about liability for impacts associated with removal, costs associated with removal, and the prospect of lost revenue from electricity generation all kept PacifiCorp opposed to dam removal (FERC, 2007).

At the beginning of the re-licensing process in 2000, participating stakeholders tried to persuade PacifiCorp to adopt FERC's 'alternative' approach, which allowed for more stakeholder participation than the 'traditional' approach.¹⁶ From 2004 to 2006, PacifiCorp convened stakeholders including tribes, environmental groups, irrigators, fishermen, and federal and state agencies from all over the basin in what they called a 'hybrid' process that would retain the traditional procedure and run it in parallel to an effort to negotiate terms for re-licensing. The result was regular meetings between the most comprehensive set of stakeholders and interests ever regularly convened in the basin. Participants were connected by their common interest in the Klamath river, but many had never entered into a direct dialogue not intermediated by attorneys, lobbyists or formal procedures; and some had never even met one another. They participated for several reasons: Project irrigators because of water allocation and their interest in retaining low cost power rates they received from a contract associated with the KHP; off-project irrigators also concerned with power issues; Indian tribes and environmental groups because of their concerns about endangered species and water quality; and federal and state agencies because of their unique authority under the FPA and broader obligations to protect species and allocate water fairly.

The timeline and FERC process between 2004 and 2006 also included the design and scoping of studies and the submission of PacifiCorp's license application to FERC. During this period, the agencies, tribes, environmental groups and PacifiCorp vigorously debated the relative merits of multiple ways to provide fish passage around the company's dams. The submission of the license application triggered regulatory timelines under the FPA, including complicated procedures for NMFS and USFWS to prescribe conditions on the license. Despite constant debate about salmon and the lack of fish passage, the license application was relatively silent on the issue.

¹⁶ The Traditional Licensing Procedure follows a quasi-judicial process in the form of an extended litigation; the Alternative Licensing Procedure seeks to develop terms for re-licensing from a settlement proceeding that informs eventual (required) National Environmental Policy Act documentation.

In March 2006, NMFS recommended that FERC remove the four dams in order to restore salmon runs (Spain, 2007). This contradicted PacifiCorp's view that they could mitigate salmon losses by trucking ('trapping and hauling') salmon around the dams, and installing fish ladders. PacifiCorp's contention that salmon could recover through trap and haul passage was strongly opposed by federal biologists as well as tribal members and environmental NGOs. They argued that dam removal would be less costly than the mitigation measures proposed by FERC and PacifiCorp, and that the value of ocean fisheries was arguably higher than that of the energy provided by the four dams (Spain, 2007). Still, PacifiCorp hoped to avoid having to comply with expensive mitigation requirements.

The Klamath re-licensing at this point entered new territory. The Energy Policy Act of 2005 provided an alternative to these strict requirements wherein the license applicant could appeal fish-passage conditions through a 'trial-type' hearing (Spain, 2007). PacifiCorp rejected both the dam removal and fish passage recommendations, and opted to employ the hearing option to test the agencies' recommendations and ultimately avoid the mitigation requirements. On September 27, 2006, after a mammoth trial that was the first in the nation under this provision of the 2005 Act, an administrative law judge ruled in favour of the agencies, and PacifiCorp was left with only two options: full, volitional fish passage or dam removal.

As these legal proceedings moved forward, the hybrid alternative licensing forum that brought together key stakeholders from the entire basin to meet monthly and attempt to hash out their differences contributed to the move toward settling basin issues not connected to the dams. More informal side meetings, often in a social setting after the formal FERC meetings, facilitated the gradual accumulation of mutual trust amongst key stakeholders. Troy Fletcher, a Yurok tribal member, explained this phenomenon:

The other thing was we sat down and started working on those issues of trust... Sit down and talk about things that here to date you've been very cautious talking to people about. Some of your fears when it comes to water flows, or why is it we felt fish needed particular amounts of water at particular times of the year. And it is very challenging for the irrigation community to start talking about some of their fears, and where there might actually be savings of water, on both sides. Those kinds of discussions where you have to let your guards down are particularly sensitive... because you put your issues on the table, your bargaining chips, but you're not gaining anything at that moment... But what you are doing is gaining the trust that's going to enable you to get down to that final solution (Fletcher, 2007).

From FERC re-licensing to the KBRA and KHSA

As discussions with PacifiCorp grew more difficult, the FERC meetings began to morph into an 'extended caucus' (without PacifiCorp) that eventually became the Klamath Settlement Group (KSG), comprising approximately 26 stakeholder groups. As one member of the Klamath Tribes observed, the KBRA negotiations began when "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" (IPIR, 2009).

The KSG was endorsed by the Bush Administration at the behest of key leaders from the tribal and agricultural communities, and given generous funding and resources to obtain needed facilitation and scientific information to support negotiations. Stakeholders early on realised that the non-hydropower dam issues were too numerous and too complex to negotiate with the dam issues, and that PacifiCorp had no stake in them. In addition, many members of the extended caucus believed that if they could forge an agreement that dealt comprehensively with most of the driving conflict issues in the basin (water allocation, water rights settlement, habitat restoration, etc), then they could turn back to the dam issues with far greater political capital to pressure a settlement that would include and address hydropower issues.

Following a consensual model, the KSG produced a settlement framework in 2007 that several participants decided they could not live with, including two environmental groups. Those participants

were asked by the tribes to leave the negotiations when they reconvened to finalise the framework. This development signified a move from a full consensual approach to one that relied on some level of 'coalition' that might not represent 100% support, but would have enough breadth and depth of representation to be able to move forward politically. This move to a more exclusive process also created clear exposure to the potential for litigation at points down the road. The KSG's decision to go down this path was an indication that litigation was a risk they were willing or prepared to take. The coalition drafted the KBRA and released it in January 2008.

After the completion of a draft KBRA, the Bush Administration made significant overtures to PacifiCorp to return to the table and discuss settlement. They worked with the company and California and Oregon to address PacifiCorp's concerns about liability and costs of removal and other issues. Together with the state governments of California and Oregon, the federal government negotiated an Agreement in Principle (AIP) in November 2008 for dam removal with PacifiCorp, which would eventually become the KHSA. Throughout the process, tribes intervened to the extent possible, through legal and policy processes that recognised their government-to-government negotiation rights, through relationships, and "through threats of boycotting the whole deal if it looked like it would not work for them" (29, interview 2009).

Many parties supported the AIP, but the final agreement would have to come out of a process that had all stakeholders at the table. A new forum was convened to sort out the details of the KHSA between November 2008 and the release of the final agreement in September 2009. Here, the KSG again embarked into new territory, as the Bush Administration was replaced by the new Obama Administration. In a demonstration of the durability of the process and draft product, the parties kept their stakeholder coalition alive and completed both the KBRA and KHSA under the new President. Indeed, Secretary of Interior Ken Salazar embraced the notion that 'failure was not an option' in the Klamath, and a comparison of the AIP to the KHSA shows that the Obama team even improved the dam removal agreement.

Most negotiations took place 'behind closed doors' and under strict confidentiality because of the sensitivity of the terms, property interests and details of the settlement concepts. Parties deemed this to be essential to ensure that they had the space to be creative and flexible, and also to ensure that the temptation would not be available to leverage negotiations with media accusations. While there was criticism from some quarters for the confidentiality – notably the two environmental organisations NOT participating in the effort and disgruntled farmers and ranchers who did not agree with the direction established by leadership or pro-settlement groups – each negotiating organisation used a form of internal communication and formal decision-making to arrive at the decision to execute the agreements. For example, the majority of irrigation district boards in the Klamath Project voted in support of the agreement, and the Klamath Tribes used a member referendum process that confirmed their approval.

When finalised, the KHSA contained provisions to conduct necessary additional studies and environmental reviews (still to be carried out) prior to a final decision by the Secretary of the Interior as to whether removal of the dams will (1) advance restoration of salmonid fisheries; and (2) be in the interest of tribes, local communities, and the general public. The KHSA also contains provisions for interim operation of the dams prior to removal, and a process for decommissioning and removing the dams.¹⁷

Dam removal will involve a number of other steps, as well. As of June 2010, California needs to pass a \$250 million bond measure or develop another funding mechanism in case removal costs exceed the \$200 million PacifiCorp customer cost cap. The US Congress must pass legislation to shield PacifiCorp from liability connected to dam removal (the settlement calls for removal to be carried out by the US government or a designee, without FERC intervention), and provide another \$500 million for river and

¹⁷ For official documents related to both the KBRA and KHSA, see www.edsheets.com/Klamathdocs.html (accessed 4 April 2010).

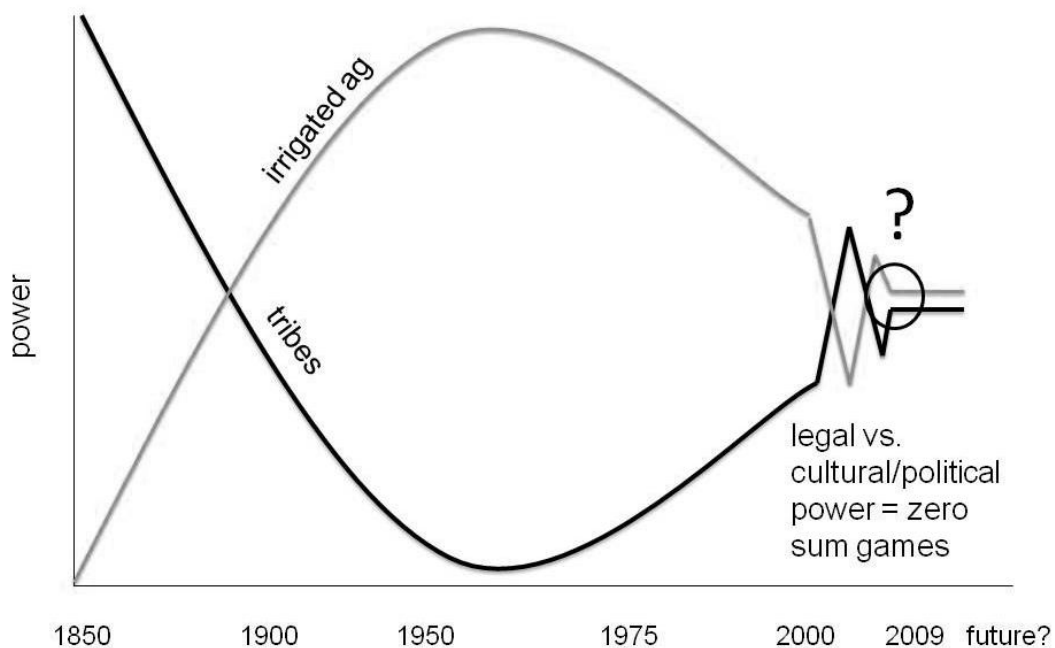
wetland restoration and other elements of the KBRA (Oregonian Editorial Board, 2009). Finally, the approach to dam removal must be designed and permitted to survive possible organised opposition, such as from environmental organisations that have been critical of the process, or anti-settlement activists from within the farming and ranching community who have focused on the political hot-button issue of dam removal to try to capsize the broader settlement agreements.

3.4 Power shifts: Growing recognition of tribal sovereignty

There's rectification that has to be done, and without that part of it, this basin isn't going to move ahead – Alan Foreman, former Chairman, Klamath Tribes, 2004 (quoted in Most, 2006).

In the previous sections we described how improved social relations and the emergence of a flexible, comprehensive, well-supported forum for decision-making contributed to the development of the KBRA and KHSA, an integrated approach to basin restoration and redevelopment, including the decision to remove four dams. In this section we examine some of the underlying causal mechanisms that enabled these events and processes to take place, in particular a fundamental shift in power relations between tribes in the basin and irrigated agriculture interests. Figure 2 is a generalised diagram representing our conceptualisation of two concurrent and causally linked trends related to the legal and political power of irrigated agriculture and tribes in the region. We suggest that these shifts are taking place at broader scales, as well.

Figure 2. A model depicting shifting power relations between Indian tribes and irrigated agriculture interests in the Klamath basin from the time of European-American settlement to the present.



Prior to the arrival of European-American settlers in the Klamath basin, indigenous communities enjoyed autonomy and control of sufficient land and resources to maintain their way of life. In contrast, when settlers came to the region, they had neither land nor resources; but through treaties, displacement, and armed conflict during the 19th century, those positions were reversed to create space for homesteaders and other settlers. With the support of the federal government, irrigated

agriculture flourished in the basin throughout the first half of the 20th century, while tribes suffered a series of blows to their culture and way of life, including the near extinction of fish species they depended on for survival, as well as severe marginalisation from the institutions and forums that drive natural resources management.

Federal policies supported productivist agriculture throughout the region from settlement through the 1960s, evidenced by what Marc Reisner (1986) refers to as the 'Big Dam Era'. This privileged status began to wane with the globalisation of agriculture, along with shifting social values that manifested themselves during the 1970s with the passage of a number of federal environmental laws, most notably the ESA in 1973.

The 1970s saw the beginnings of a gradual recovery of tribal power, embodied in a global indigenous sovereignty movement and, in the US, a number of important court decisions that recognised and legitimised the rights that had been reserved by tribes during the treaty era (Wilkinson, 1987). As tribes throughout the West gained more economic, political, and legal power, their capacity to fight for treaty rights in more sophisticated, effective ways grew. A growing number of reserved rights water claims, for example, have resulted in over 20 negotiated settlements between irrigators, the federal government, and indigenous communities throughout the West. There is a growing recognition that negotiated settlements are more effective and efficient than litigation, and current proposals for settlements with Indian tribes exceed billions of dollars.

In the Klamath basin, these trends were exemplified by the *Adair* cases,¹⁸ which sought to resolve claims by a local rancher that the Klamath Tribes forfeited water rights associated with their hunting and fishing rights with termination in 1954. In the end, the courts determined that "the Termination Act expressly *preserved* pre-existing water rights, including the right to instream flows" to support the fish upon which the Tribes depended (Doremus and Tarlock, 2008). The courts also specified that the Tribes' water rights dated to "time immemorial", confirming tribal seniority in the adjudication of water claims. In 1999, the Tribes achieved another important victory, when, in *Klamath Water Users v. Patterson* (US Ct. of Appeals, Ninth Circuit), the court found that the Project irrigators' water rights were subservient to the ESA, and that PacifiCorp dams had to operate in compliance not only with the ESA, but with the Tribes' treaty rights: "[B]ecause Reclamation maintains control of the dam, it has a responsibility to divert the water and resources needed to fulfil the Tribes' rights, rights that take precedence over any alleged rights of the irrigators".

While these court decisions legitimised tribal legal claims to significant amounts of water in the basin, they placed them on a direct course of conflict with irrigation interests of the farming and ranching community which drew on culture, history and political power (vs. legal power) to continue a century-long way of life. As conflicts with environmental laws grew, irrigators made claims of marginalisation, claiming in 2001, for example, "you're treating us like Indians!" (Most, 2006). These competing claims of marginalisation defined relations between the tribes and irrigators throughout 2001 and 2002, with the irrigators increasingly resorting to cultural and political power as they saw their legal power waning.

On the other hand, tribes could now rely less on informal, cultural claims (which had been minimally effective at best), and more on their formal legal claims, since their sovereign status allowed them access to decisions involving the implementation of federal laws related to their tribal trust resources in ways that irrigators were not. Taken together, however, the back-and-forth short-term wins on each side resulted in a zero-sum game for basin ecosystems and communities (figure 2).

Since much of the turmoil in the Klamath basin can be attributed to the difficulties involved with top-down legislation, the tribes' ability to negotiate with the federal government on an even playing field had the potential to help irrigators and the larger basin-wide cause once the comprehensive framework of the KBRA was established. For example, in 2001, the Klamath Tribes were able to

¹⁸ The *Adair* cases have been ongoing as various parties appeal decisions. The initial case, *Adair I*, is *United States v. Adair* [478 F. Supp. 336 (D.Or.)].

participate in consultations that led to the decision to curtail water to irrigators in order to maintain lake levels for the suckers. Their exercise of that power in 2001 exacerbated distrust and animosity between the Tribes and irrigators; but later, after tribal-agricultural alliances had been forged, the Tribes were able to impact the way the ESA was implemented such that irrigators would be somewhat protected, with the understanding that they would act in the Tribes' interest when given the opportunity as well.

Tribes in the Klamath basin also began to cultivate significant partnerships with environmental NGOs during the late 1990s and early 2000s, which enhanced their capacity to gain access to key decision-making processes. They allied themselves with member organisations of the California Hydropower Reform Coalition (CHRC), for example, which advised them on strategies for intervening in the FERC re-licensing process. CHRC also benefited tribal interests by initiating studies to evaluate the economic costs and engineering feasibility of dam removal (Leimbach, 2009). In 2004, tribal members worked with CHRC to travel to Scotland, headquarters of PacifiCorp's parent company, Scottish Power, to protest the dams and their effects on salmon. There, they were greeted with a great deal of public support, especially as they protested outside the corporation's annual general meeting, banging drums. At the meeting, tribal members warned that the public image of the company would be damaged if they failed to help restore salmon, and the 450 shareholders at the meeting applauded (Peterkin, 2004).

In April 2008, tribal members travelled to Omaha, Nebraska, to protest at a shareholder meeting of Berkshire Hathaway, which had purchased PacifiCorp from Scottish Power in 2006. CHRC and the tribes sent out mailers advocating dam removal, and CHRC funded a study that linked the decline of Klamath salmon to changes in the Karuk diet (Leimbach, 2009). International Rivers, another NGO based in Berkeley, California, facilitated Karuk participation in its 'International Day of Action' event. On this occasion, Karuk tribal leader Leif Hillman released a statement saying:

What's at risk here is the region's cultural heritage as well as the economy. For the tribes, salmon represent an integral part of their cultures, including unique ceremonies based on the annual return of salmon. As the salmon runs dwindle, ceremonies are lost. In addition, commercial fishermen and the communities dependent on the fishing economy struggle to survive as well.¹⁹

In these ways, NGOs and Klamath basin tribes were able to tap into the international indigenous sovereignty movement while also participating in meaningful ways in the development of local, place-based solutions. Combined, these efforts contributed to stronger implementation of the federal-tribal trust responsibility, and increased pressure on PacifiCorp to consider dam removal. As we suggest in figure 2, the relative power of tribal and irrigated agricultural interests began to converge at the end of the 20th century, resulting in a more even playing field for the cultivation of a collaborative approach to natural resources management decision-making and the development of basin-wide restoration strategies.

What these events suggest is that the strategy adopted over many years of relying on litigation, regulation, and competing single-interest political advocacy was ultimately ineffective in addressing the tremendous social conflict between the tribes and the irrigators. Those processes could identify and highlight problems, but could not, by themselves, provide the solutions to them. The success of the KBRA represents a sort of 'moving beyond' the narrow confines of ESA regulation and litigation, in favour of negotiation and reliance on the federal-tribal trust responsibilities to move toward species recovery and implementation of other necessary social and economic goals. As one KBRA participant stated:

The tribal trust 'juggernaut' is allowing us to go places with the Feds that we couldn't with the ESA. Put simply, when the Indians saw their way to a settlement, they were able to make the Feds come along in a

¹⁹ From International Rivers website, www.internationalrivers.org/en/node/515 (accessed 29 April 2010)

way that other stakeholders couldn't quite achieve. ESA helped us find the 'stopping' place. Tribal trust and community consensus gave us the 'go forward' approach. Many of the [non-tribal] proponents of ecosystem restoration have not led, but have actually lagged and stand in the way of a transformative moment. I think this is very significant (29, interview 2009).

In the name of basin-wide settlement, the KBRA relied on negotiation rather than on the heavy hand of the ESA to resolve seemingly intractable disagreements. While stakeholders can still use the ESA to sue over takings, and while it established a clear marker that the status quo was not acceptable, the ESA was not the primary tool in creating an agreement or in moving to an integrated system of ecological recovery, community stability or peace on the river.

Importantly, the KBRA was ultimately negotiated 'behind closed doors' because of the sensitivity of the settlement. This not only garnered intense criticism from stakeholders who were not included, but also precluded in-depth briefings to lawmakers and other interested parties along the way. The settlement group "must now turn from problem-solving to a focus on education and outreach" (29, interview 2009). In particular, pivotal groups such as the US Congress – which must pass legislation regarding the KBRA and allocate funding for it – must trust that decisions behind the KBRA were practical, science-based, and will lead to recovery.

SUMMARY AND CONCLUSION

What's happening here now is a maturing of people building relationships with one another and to me, that's what changes the environment (15, interview 2008).

The last decade in the Klamath basin saw a gradual but significant shift away from unmanageable conflict characterised by litigation, media wars, single-interest political advocacy, and zero-sum games, toward a more collaborative, integrated, and productive approach to conflict resolution. The result is the crafting of an ambitious socio-economic and ecological restoration that, as part of a multi-faceted plan, allowed for a broadly supported effort to remove four large dams.

The Klamath case, in many ways, can be seen as the realisation of many of the principles put forth in the 2000 WCD report which elevate environmental and social concerns to the levels of economic concerns. The WCD's 'Rights and Risks' Framework, for example, called for a new type of decision-making process recognising tribal and affected peoples' human rights, land rights, and sovereign rights. A review of the causal mechanisms behind the development of the KBRA and KHSA reveals several lessons that may be applicable to similar conflicts over large dams in other geographic contexts.

First, the Klamath case demonstrates the importance of a robust legal framework that protects the rights of all stakeholders, ensures the integrity of the environment, and provides a forum for inclusive decision-making. Together, the federal tribal trust responsibility, the Endangered Species Act, and the Federal Power Act forced basin residents to address the social and ecological problems associated with over a century of mismanagement of water. The FERC re-licensing process, in particular, established a regulatory deadline for decision-making regarding the dams, creating both the structure and the impetus for negotiation. Without the pressure of these deadlines and possibilities for further community impacts, there would have been little motivation for stakeholders to participate. Thus, while horizontal approaches to decision-making are important, they are likely most effective when constrained by more formal vertical processes (e.g. a mandate from above). Still, the regulatory processes alone were limited to the identification of problems and were incapable of addressing multiple ecological and economic issues simultaneously to achieve species recovery.

Another set of lessons emerging from the Klamath case has to do with process, and the need for a forum that allows for inclusive negotiations that address multiple economic, ecological and social issues at the correct (inclusive) geographic scale. Prior to the FERC re-licensing process, basin residents had

never had occasion to meet regularly. The hybrid 'alternative' re-licensing process, a fairly recent innovation in FPA implementation, laid the groundwork for an extended caucus and then the broader settlement talks which eventually led to the KBRA and all of its diverse dimensions/components. For any solution to work, most agreed, stakeholders from all parts of the basin needed to be included and committed.

One of the more interesting lessons from the Klamath basin, however, has to do with the confidential nature of the negotiations that ultimately led to a draft KBRA. In spite of frequent calls for inclusion and transparency in decision-making principles espoused by organisations like the WCD, it was essential in this case that 'rightsholders' – namely leaders from the tribal and agricultural communities (as opposed to *all* 'stakeholders') – had the confidence to take risk without constant media exposure. That said, inclusion of all major stakeholders (and open invitation to participate) was essential to most of the Klamath process, and US federal law will ensure transparency behind all major decisions, from hearings for requisite Congressional approval to NEPA (National Environmental Policy Act) analyses of all major proposed activities.

Third, the Klamath case illustrates the important role of NGOs in holding governments accountable to the laws in place, and bolstering the capacity of indigenous groups with similar agendas through strategic alliances. NGOs working in the Klamath played a critical role in supporting the tribes, developing the dam removal science that built initial momentum for it, and providing leadership in negotiations. They also provided financial, institutional and technical support to tribes and other dam-removal advocates.

Finally, the success of the KBRA, in contrast to the previous years of unproductive conflict driven by litigation and federally-dominated 'solutions', suggests that unified local leadership is essential. Without the tribal-agricultural alliance at the core of settlement negotiations during the 2000s, we suggest that little progress toward a mutually agreeable compromise would have been made. Tribes and irrigators, the two parties most critical to the basin-wide negotiations, had a century-and-a-half long history of conflict, distrust, and even hatred that had to be acknowledged and at least partially overcome by community leaders before progress could be made. Improved tribal-irrigator relations at the local scale forged by local leaders were gradually 'scaled up' to basin-wide discussions. (It is important to note, however, that while rectification has occurred to varying degrees among key leaders in the tribal and agricultural communities, the same is not necessarily true among the larger communities they represent).

We suggest that the unified local leadership demonstrated in the Klamath depended on changing power dynamics, and the emergence of a more even playing field. Irrigators came to realise they would need to work more 'horizontally' with tribal leaders than they had in the past if they were to achieve their goals; thus there was a growing willingness to work with the tribes in the basin, and offer political power in support of solutions that were mutually agreeable. Without that political power, the tribes' legal power – even when combined with the ESA, we argue – would likely have been inadequate to solve the basin's problems. While pure legal power might have won the tribes a significant amount of water in the adjudication process at the expense of the irrigators, for example, water in and of itself will not bring back the fish. A broader approach to restoration built on significant financial and institutional support from the government is necessary, and this support is more easily accessible when the interests of all parties, especially irrigated agriculture, are addressed.

Similarly, while irrigators might have enjoyed short-term wins over the tribes, they came to realise that without tribal support (drawn from their status as sovereigns with negotiating status with the US federal government) they had little hope of ever developing a resource management regime that could provide greater certainty for irrigation deliveries. Further, alliances with tribes allowed irrigators to advance key economic needs such as renewable energy investments in a framework of shared interest in economic stability among basin communities. Finally, the development of a shared social-ecological restoration agreement between tribes, irrigators, and conservation groups motivated federal and state governments to productively address their fundamental concerns, namely, that ratepayer financial

liability be capped and controlled in a dam-removal scenario, and that the utility not carry the burden of legal liability for the act of removal itself.

The KBRA compromise suggests that, together, tribal legal power and irrigator political power are synergistic and can be used for the cultivation of remedies for social as well as environmental problems. Indeed, agreement on dam removal would have been unlikely without explicitly addressing a whole suite of social and economic issues not directly related to the dams.

In conclusion, we propose that the processes described here that led to a comprehensive, holistic, basin-wide approach to social-ecological restoration may serve as a model for conflict resolution in other places; and that the issues raised in this article only scrape the surface of many important topics related to the human dimensions of dam removal needing further examination in the future.

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