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The Klamath River Crisis

Environmental Degradation and Indigenous Food Insecurity

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Abstract

Due to factors like anthropogenic climate change, agricultural runoff, and dam implementation, the once-abundant natural resources provided by the Klamath river are now scarce. This has caused infighting and litigation between various Klamath-area stakeholders and residents, since the Klamath river plays such a vital role in each of these parties' livelihoods—from that of the salmon populations, to that of the workers farming its surrounding land, to that of the Indigenous tribes that have lived symbiotically with the Klamath for centuries. Though the Klamath's dwindling natural resources have uprooted the lives of countless individuals, it must also be acknowledged that no party has been affected on such an earth-shattering level as the Klamath tribal communities, whose livelihoods have been intertwined with that of the river for generations. The lack of water and salmon supplies have caused mental-health, physical-health, and spiritual-health crises within tribal communities like the Yurok of the Klamath. Since the Yurok people are forced to rely on unhealthy products with a long shelf life rather than salmon, diseases like Diabetes and heart disease disproportionately affect their community. Moreover, depression and suicide rates within the Yurok tribe have correspondingly skyrocketed as the Klamath's conditions have worsened. In this paper, I will analyze these topics further and discuss possibilities for mitigation measures pertaining to these environmental and humanitarian crises.

I. Crisis Overview

The Klamath river—the second longest river in California, stretching 257 miles from South Crescent City to Oregon—has been an object of environmentalist and humanitarian concern since the 1970s. But it was long before the acknowledgement of the Klamath’s worsening state that climate change, along with anthropogenic factors such as dam implementation, agricultural runoff, commodified farming, and racist governmental policy, had begun to irreversibly damage the once flowing water supply and diverse flora and fauna that used to characterize the Klamath area. These long-standing issues have culminated in the mass environmental degradation of the Klamath basin (drought, poisonous algae blooms, mass fish kills, pollution) which threatens the Klamath ecosystem at large.

A diverse array of suffering stakeholders depend on the Klamath river for their own livelihoods, from farmers whose crop yields have been halved, to small-business owners who can no longer lead eco-tours along the river due to its drought-ridden state. Governmental water allocation has therefore become a massively contentious issue among all those who are reliant upon the dwindling water and fish supplies that the river provides; this has resulted in infighting and litigation among irrigators, Indigenous peoples, and both federal and state governments (Smith). The Indigenous tribes inhabiting this area (who are not considered stakeholders but rather a group with far more intrinsic sovereignty over the river’s bounty than any other) have intertwined their own livelihoods with that of the Klamath for centuries; the two entities have become one married being. We must therefore acknowledge that this environmental crisis has affected Klamath tribes on a much deeper level than it has any other “stakeholder” group physically, economically, and spiritually and that this crisis has both directly and indirectly contributed to the intense food insecurity observable within Klamath tribal communities.

Indigenous and Western scientists alike have proposed a conglomerate of ideas on how to mitigate the Klamath crisis, ranging from more sustainable crop production; to aeration technologies used to ease the pollutive effects of agricultural runoff; to collaborative and innovative restoration policies. Eco-cultural solutions intended to alleviate Klamath tribes’ rampant food insecurity have also been posed: rearing captive salmon eggs and introducing alternatively sustainable food products to the Klamath region are promising solutions. The Klamath river crisis, inseparable from all of its implications, has never been more pertinent to America’s political and environmental climate than it is today. By decolonizing the American mindset and analyzing the Klamath crisis through a lens that prioritizes humility, equity, and sustainability, our generation has the potential to progress the fight against environmental degradation and in the fight against the ongoing genocide of Indigenous peoples.

II. Crisis causes

Climate change

Climate change, an observable phenomenon that is inherently anthropogenic, has rendered many aspects of our natural world unrecognizable, and the Klamath river is no exception. Global warming kickstarted the cascading domino effect of the Klamath river, most notably leading to its once rushing water’s stagnation: global temperatures have been rising for the past century, causing severe drought in the Klamath (Collin). The U.S. Drought Monitor ranks the Klamath’s drought level as “extreme” and

“exceptional,” its two most severe categories (Heim). Since there is no longer enough water present for the river’s proper flow, the remaining water stagnates in the sun, heating up exponentially (Oaster 1). The resultant lower-leveled, hotter water in the Klamath basin leads to increased concentrations of harmful nutrients flowing from the unsanitary basin into lakes and rivers, and consequently causing a myriad of health problems for both fish and humans (Sinsabaugh 3:00).

Dam implementation

Another factor contributing to water stagnation in the Klamath river is the dam system implemented throughout the area. Six dams congest the length of the Klamath river. Constructed between the years 1911 and 1962, each dam poses its own myriad of negative ecological threats to the river and its dwindling salmon populations. Dams cause geomorphological changes throughout the entirety of a river—not just within the area in which they are situated—by exacerbating global warming conditions and “encroaching upon salmon spawning grounds” (Oaster 1). The Klamath region is home to three specific species of salmon: the Coho, the Steelhead, and the Chinook, and each species has been in sharp decline since the 20th century (Levy). Salmon migration has been altered and segmented, and disease has spread rapidly throughout salmon species, catalyzed by quickly warming water. Neumann writes, “97% of a sample of juvenile salmon captured on a stretch of the Klamath River last month was infected with *c. Shasta*, a fatal parasite that thrives in warm, shallow water” (Neumann). Moreover, if not already killed by bacteria, salmon who travel upstream between late June and early December are commonly met by lethal temperatures and die of heat asphyxiation alone.

Dams create reservoirs that trap sediments, depriving estuaries and deltas of necessary nutrients as a result (Dorning 4). The bottlenecking of river sediment increases the reservoir’s turbidity (a measurement indicating increased amounts of suspended particles (Hanna)), which “damages salmon spawning grounds, limits food quality, suffocates organisms, and changes river channel morphology, potentially eroding downstream river channels” (Dorning 5). Dams also decrease water flow: when water volume increases in the upper Klamath basin, the resultant riparian zones contain much less species diversity than is sustainable and healthy. Species occupying the bottom of the river’s valleys live in a harmful drought state while upstream, less-diverse riparian communities are harmed in turn by dramatic plant overgrowth, nutrient overrelease, and unsanitary water (Dorning 4).

Phosphorus loading

Agricultural runoff has played a feature role in the worsening water quality and poor salmon fertility throughout the Klamath. The Klamath area observes a century-long history of ranching and farming. Like most rural workers, Klamath farmers use Nitrate-rich fertilizers for crop production and cattle-grazing grasses. Extreme runoff of these harmful chemicals into the Klamath’s lakes and basins eventually contaminates the entire stream. (The river used to be protected and filtered by its fringe wetlands, which acted as a nutrient barrier, but these wetlands have likewise been destroyed.) Nutrient runoff leads to Phosphorus loading in the river, which catalyzes the growth of cyanobacteria and green algae. The algae then over-blooms, dies, and consumes all of the lake’s oxygen in its decomposition. The less water present, the more concentrated these effects become; the river’s anoxic conditions have now asphyxiated much of Klamath’s salmon population. The water is dangerous to other organisms as well,

including humans: its algae produces microcystins, neurotoxins, and carcinogens, which cannot be boiled or filtered out of the water. Therefore, submerging oneself into and/ or ingesting the river's water may lead to rashes, kidney failure, and sometimes death (Smith).

Policy & Colonization

American governmental policy, which is rooted in colonization, is yet another driving factor that has sent the Klamath river into drought and decay. From the seizure of Klamath land for monoculture and urban development, to the commodification of the food system, to the endangerment of keystone species, our government has shown time again that it will ignorantly ignore Indigenous practices of environmental respect; we are now unfortunately reaping the consequences of our own environmental neglect. Our capitalist system inherently prioritizes economic gain over equality; this is evident in countless historical political decisions, even those regarding conservation. For example, our government grants legal personhood to corporations but fails to lend that same safeguard to the very resources that give us life: our forests, our lakes, and our rivers (Smith). Before mass commodified monoculture began in the Klamath area, the upper Klamath basin was a thriving ecosystem, bountiful enough to sustain all tribes that were situated along the river, providing salmon for consumption and water for cooking. The symbiotic relationship existing between Indigenous tribes and the flowing river allowed for each entity to benefit from the other's presence—sustainability at its finest. Today 1,200 legal farms sit on top of the 240,000 acres of farmland that were once a wetland ecosystem (Smith) and both land and river have been irrevocably defiled, stripped of their once thriving life.

The Klamath Basin Restoration Agreement is an American multi-party legal agreement determining river usage and water rights regarding the Klamath river and Klamath basin (Wikipedia). In 2010, the Klamath Basin Restoration Agreement was signed by all river stakeholders, the Klamath tribes, the governors of Oregon and California, and the federal government (AKA the Federal Bureau of Reclamation, the department that makes decisions surrounding irrigation and water allocation). This agreement included plans to reintroduce salmon into the parts of the river in which they had gone extinct due to Klamath's six dams (dams whose very placement violated the Klamath tribes' treaty rights), among many other beneficial pieces of legislation. Thompson writes, "The agreement would have helped the tribes acquire 92,000 acres of land, started Klamath dam removal, provided water certainty for irrigators, curtailed litigation, and led to a drought-year plan" (Thompson). Finalizing the agreement, however, required congressional approval, which legislators "could not acquire" before the agreement's 2015 "expiration date" (Thompson). This failure, though unpublicized, cost countless lives.

The debate regarding **who gets irrigated water** and **how much they get** is inextricably linked to historic colonialism, which paved the way for the implementation of environmentally unsound dams and irrigation canals, which drained once thriving wetland ecosystems, and which displaced the Klamath, Yurok, Karuk, Hoopa, and Shasta tribes (Smith). Listening to and learning from Indigenous cultures is essential in every situation, but has specifically never been more important to the environmental movement than it is today. Indigenous value systems prioritize the protection of our environment and its resources in situations in which capitalism values economic gain. American culture has a history of cultivating irresponsible stewards—to our own demise—and something would need to shift systematically in order for us to secure a future for our next generation.

III. The Klamath crisis and Yurok people

The Yurok tribe is one of many Indigenous tribes who call the Klamath area home. Though this specific tribe will be the focus of this section, I want to briefly call attention to the Karuk, Hoopa, and Shasta tribes, who have all had their own experiences with this crisis that should not be erased.

Physical and financial well-being of the Yurok tribe

The Yurok people's quality of life has been depleted by the crises of the Klamath river; the Yurok have been being stripped of their water supply, their food supply, and their sovereignty. The Yurok people once centered their entire wellbeing around the two salmon species prevalent in the Klamath: the c'waam and koptu. Today there are 24,000 c'waam left and only 3,400 koptu; the c'waam population has dropped by 65% since 2002 (Smith), and specialists say that the endangered koptu are "on their way out" due to water quality and quantity issues. The koptu species has not seen any young survive since 1993 (Sowerwine).

Limited access to traditionally native foods results in higher rates of food insecurity (Sowerwine), as traditional foods are tied to the well-being of native land, identity, and physical health. The Yurok traditionally consumed 450 pounds of salmon *per person* per year (Thompson). By the early 2000s, **this number was reduced to five**. Today, eating salmon is extremely rare for the Yurok people. Thompson herself, a Yurok person native to the Klamath area, shares in her piece that she keeps a jar of unopened canned Klamath salmon in her refrigerator: "I don't dare eat it; I'm afraid it might be my last" (Thompson). With the nearest grocery store two hours away from the reservation, the tribe is now forced to rely on unhealthy, processed foods with a long shelf-life.

Native American food insecurity is a nation-wide epidemic, affecting communities far beyond the Klamath area. Native Americans make up less than 2% of the population in the United States but suffer from the highest levels of food insecurity and diet-related disorders: malnutrition, diabetes, obesity, and heart disease all disproportionately impact Native communities. Recall that the Klamath dams were built between 1911 and 1962, which is the same time period in which Diabetes appeared within the Kuruk tribe; today, Kuruk peoples are 21% more likely to have diabetes than the average US citizen (Thompson). Lack of salmon obviously affects the Yurok diet, but this shortage also reduces the Yurok people's daily exercise of fishing, further affecting their physical health. Thompson explains, "When tribal members cannot fish, hunt and gather wild food, it further reduces their daily exercise." Moreover, commercial fishing used to control the Yurok's economy. Today, considering the absence of both fish sales and sport-fishing eco-tourism income, the economic stability of the Yurok tribe has declined drastically (Thompson).

Spiritual and emotional well-being of the Yurok tribe

This economic collapse has resulted in a myriad of emotional and psychological problems for the Yurok people, who conflate the concept of physical health with mental and spiritual well-being. The Yurok have recently declared a state of emergency on tribal mental health. The lack of physical activity, which used to come naturally with fishing, has turned youth toward depression and drug use (Thompson). The salmon are more than just a food source to the Yurok people; the salmon are a staple in Native ceremonial, spiritual, and cultural practices. These practices have been disrespected by water-allocation

policy time and time again. Some have called the practices “frivolous” or mere “wants” in the face of agricultural “needs” (Thompson). Until the “American Indian Religious Freedom Act of 1978,” using salmon in cultural practices was even considered illegal (Thompson).

Thompson stresses that fighting for the reintroduction of salmon is less about the taste of the salmon and far more about the passing down of values from ancestor to child. Every tribal ancestor was raised fishing and canning salmon with their families, and every child was raised with the knowledge that, in doing this, they were a part of a century-long tradition that honors elders and knits their community together. Fishermen don’t consume all of the salmon they catch; in fact, most of it goes to community elders who are unable to fish for themselves. Everyone eats in the Yurok tribe; everyone is family. Yurok canoe builder Dave Severns explains, “We depend on each other, knowing we will not prosper individually until we all succeed as a community, strengthening our connection and mutual trust.” Thompson closes her piece with another powerful quote: “These salmon are a direct tie to my ancestors—the physical representation of their love for me. The salmon are my relatives.” For the Yurok people, watching mass salmon kills must feel like losing loved ones.

IV. Depletion of the Klamath river’s natural resources: farmers

Farmers are also stakeholders in the water-allocation debate and are regrettably suffering from the degradation of the Klamath river. Farmers once had free reign over Klamath water use, but after almost 100 years of unmonitored use, the extreme decline in the salmon population called for a shift in water-allocation ideology (Sowerwine). Today, a portion of the limited Klamath water is allocated to environmental protection of endangered salmon in the upper Klamath basin, and a portion is delegated as inherently sovereign to the indigenous peoples; this has left little water for farmers and therefore has engendered animosity and infighting among all Klamath residents.

This past summer, canal gates were—for the first time in history—closed *completely* under government policy, ceasing all Klamath water flow for farming use. This resulted in mass protesting from ranchers, in some cases through extremely racist avenues. Ana Smith explains, “During the last bad drought year in 200, three white men drove through the town of Chiloquin, shooting 12-gauge shotguns and screaming [racial slurs] in what the local sheriff called an ‘act of terrorism.’” (Smith). Tribal members also reported being physically assaulted and driven off the road. These types of violent acts have driven Yurok people to hypothesize that farmers intentionally attempted to eradicate the salmon population to, in turn, be “rid of” the Indigenous tribal population (Smith). The allegation of this alone is enough to depict just how severed the bond between farmers and the Native people of the Klamath is, which further intensifies the animosity of the water allocation debate that is occurring.

V. Potential solutions

In order to safeguard our future, conservation needs to be at the forefront of American concerns. We should implement efficient irrigation systems that use limited water, and we should correspondingly plant alternative crops that require less water to thrive, such as hemp (Smith). Supporting nonprofits, such as the organization called “Ducks Unlimited” that just received funding from the U.S. Department

of Agriculture to create the Klamath Basin Farming and Wetland Collaborative, is an easy way for the layperson to get involved. This program helps divert basin usage by paying farmers to flood irrigate their fields instead of using wasteful irrigation technology. This allows water to support migrating waterfowl and help revitalize soil (Smith). Likewise, the 2017 collaboration of 12 partners (including the Fish and Wildlife Service, a local landowner, and the Klamath Tribes) just successfully completed a 25-year project intended to reconnect Sun Creek, which empties in the upper Klamath basin, back to the Klamath river. This helped reintroduce the bull-trout population, which had been cut-off by the diversion and irrigation-use of Sun Creek for the past 100 years (Smith).

Moreover, our government should fund restorative Indigenous practices already in place. For example, for the last decade Klamath Tribes have begun to practice “genetic salvaging,” or the collecting of c’waam eggs in order to raise them in captivity and save their species (Smith). The Klamath Tribes are also implementing a solar-powered aerator to help oxygenate the upper Klamath basin to combat harmful algal blooms. The physical and mental health crises occurring in Native American communities along the Klamath need to be addressed in the short term through government funding of nearby groceries stores filled with healthy, traditionally native food sources and other resources (therapists, exercise materials, etc), which should be guaranteed as basic human rights.

VI. Conclusion

The Klamath river crisis represents the pitfalls of today’s systems, from anthropogenic climate change, to the practice of unsustainable monoculture, to inequitable policy. The destruction of the Klamath river—and the genocide of those who inhabited it sustainably for decades—should forever be on our collective conscience. The physical and spiritual toll that the Indigenous Klamath tribes have endured as a result of government policy is unforgivable. I challenge us to acknowledge these atrocities and engender change rather than stagnation.

It is imperative that all of humankind begin to follow the guidelines for respecting nature that are inherent within Indigenous value systems, for these guidelines weigh the value of human life and the value of every other organism and resource as equal. We need to start honoring treaties made with Indigenous peoples regarding water protection. We need to dismantle exclusive property ownership over water. And most importantly, we need to learn from past mistakes so as to never repeat them again.

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