



Salmon Feeds Our People: Challenging Dams on the Klamath River

Ron Reed and Kari Marie Norgaard

Quick Facts

Country: United States of America

Geographic Focus: Klamath River Basin on the California Oregon border

Indigenous Peoples: The Klamath River Basin is a national ecological treasure, encompassing steep mountains and canyons, high desert, lush rainforests and wetlands, and salmon spawning streams.

Author Information

Ron Reed is a traditional Karuk Dipnet Fisherman and Cultural Biologist for the Karuk Tribe of California. He works for the Department of Natural Resources.

E-mail: rreed@karuk.us

Dr Kari Marie Norgaard is a Sociologist and Professor of Environmental Studies at Whitman College in Walla Walla, WA.

E-mail: norgaakm@whitman.edu

Introduction

This is a story of how an impoverished northern California tribe challenged a massive Goliath—a huge private utility corporation. It is about one piece in the current struggle of the Karuk People in the Klamath River Basin to retain cultural traditions and restore their river ecosystem. Here we describe how a study was conducted that articulated a formerly unseen connection between human and environmental health, and which became an important piece in legal proceedings underway that may result in the largest dam removal effort in history.

With over 3,200 members, the Karuk Tribe is the second-largest American Indian tribe in California. The Karuk are a fishing people, who have managed their Klamath River fishery in a way that provides for its sustainability through the use of ceremony and harvest techniques in coordination with neighboring tribes. This they have been doing for tens of thousands of years or, as the Karuk say, since the beginning of time. However, the salmon populations have been damaged by over-fishing and the degradation of their habitats since the arrival of non-Indians in the 1850s. Today, farmers in the upper reaches of the river basin remove so much water for agriculture that river flow drops to very low levels during summer and fall when water temperatures are highest. A series of five dams, built from 1917 to 1962 and operated by PacifiCorp, blocks access to 90% of the spawning habitat of the most important salmon run, the Spring Chinook. As a result, the populations of this and many other aquatic species, such as lamprey and sturgeon, which are so important to the Karuk people, have plummeted.

Interestingly, despite more than 100 years of onslaught, salmon populations maintained numbers sufficient to continue as a significant food supply for the Karuk until the 1980s. Because the area is remote and many Karuk people retain their traditional culture, a large number of people were able to continue eating salmon several times a day

when in season, right up to this time. In 2005 however, the entire tribe caught less than 100 fish all year. Since that time fish consumption has averaged less than five pounds per person per year. Consumption has been estimated at 450 lbs per person per year—over one pound per person per day—prior to European contact (Hewes 1973). This gives the Karuk the dubious distinction of suffering one of the most dramatic recent diet shifts of any tribe in North America. Due to the absolute degree to which Klamath river-dams are squelching the salmon runs, and despite the ongoing tribal traditions, surviving only by a thread, it is the belief of the authors that the dams on the Klamath are currently responsible for the most significant human rights violation resulting from any dam construction in the United States.

Power companies are granted licenses to operate dams in the public interest by the Federal Energy Regulatory Commission (FERC). In 2006, the current license application for the dams on the Klamath River expired. If these licenses are not renewed, the dams that have so damaged the river ecosystems and the tribal people who depend upon them can be removed. Fisheries, biologists and tribal people have viewed this license expiration as the largest restoration opportunity of their lifetimes, and the only chance for the survival of the salmon. Many fear that by granting another 30- or 50-year license for dam operation, the FERC would effectively eliminate the salmon—and with them many fundamental aspects of Karuk culture and livelihood.

The relicensing process involves years of scientific investigation and input and discussion from the communities that have been affected by the dam. Beginning in 2001, the first author, a traditional Karuk dipnet fisherman and a cultural biologist for the tribe, served as the Karuk tribal representative for the relicensing process. Reed attended meetings for one week of every month for five years. During that time his mother and several of his aunts died, all of them in their seventies or younger. Reed became convinced that the lack of healthy food, specifically the loss of salmon, was directly affecting the health of his people, leading to high rates of diabetes and heart disease and a decreased life expectancy. He spoke passionately about this problem in the meetings. In February 2004, PacifiCorp filed their final license application for the operation of the five dams. Despite years of meeting with the Karuk and other tribes who gave extensive

Figure 1. The Karuk are a fishing people who have sustainably-managed their Klamath River fishery through the use of ceremony and harvest techniques for tens of thousands of years. Since the arrival of non-Indians in the 1850s, however, the salmon populations have been damaged by over-fishing and the degradation of their habitat. Photo © Karuk People.





Figure 2. Ron Reed served as the Karuk tribal representative for the relicensing process. Reed became convinced that the lack of healthy food, specifically the loss of salmon, was directly affecting the health of his people, leading to high rates of diabetes, heart disease and a decreased life expectancy. Photo © Karuk People

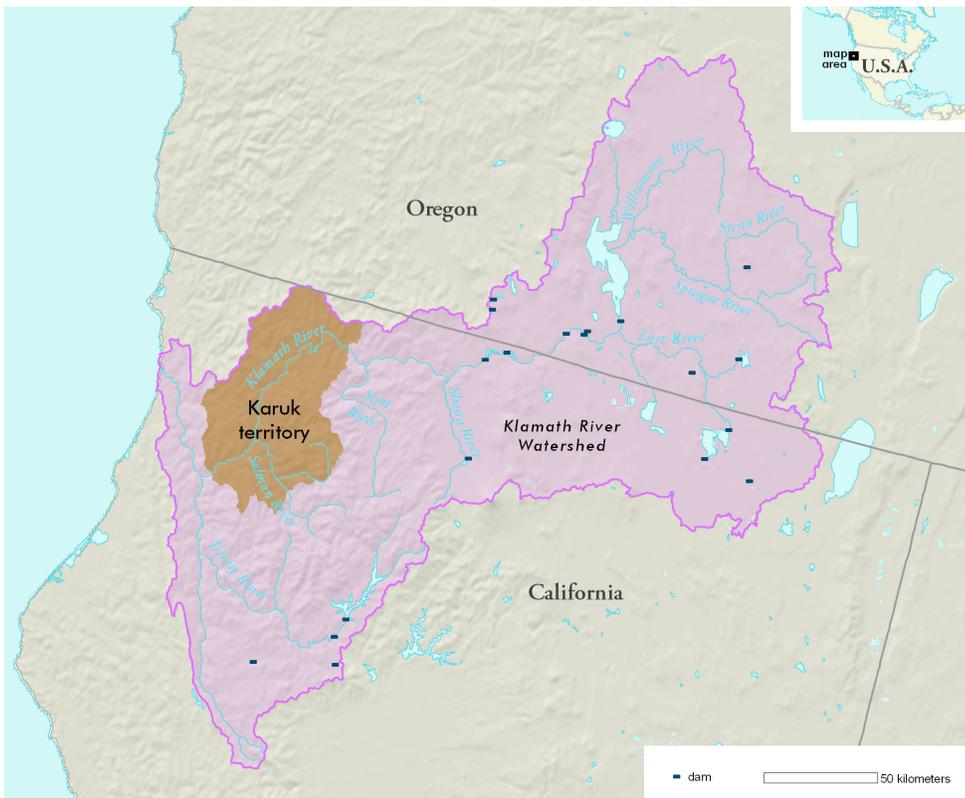


Figure 3. Klamath River Watershed with the designated dams and the Karuk Territory. Map courtesy of Conservation International.

testimony as to the ecological and cultural impacts of the dams (not to mention testimony by commercial fishermen, scientists and environmental groups), the power company claimed that there were no impacts from their operation below the dams. In the words of Reed, “the document was five feet tall and contained no mention at all of our needs.”

It was at this time that the authors of this essay began working together. Ron Reed approached Kari Norgaard and asked whether, as a professor of sociology, she could document, in scientific terms, how the loss of salmon affected the health of tribal members. Together we conducted a study and produced a report that made visible the relationship between ecological and human health in an entirely new way. Our report, the preliminary draft of which was written in a few short months, became the first example of a tribe articulating how the denial of access to traditional foods led to a spike in the rate of diabetes. It was also the first example of research that showed how dams led to major diet-related disease. The tribe has seen new doors open at decision-making tables as a result of these findings.

The Invisible Struggle

Since time immemorial Karuk people have relied directly on the land and rivers for food. With the invasion of their lands by European Americans, the circumstances of the Karuk people changed considerably. They suffered systematic, state genocide followed by decades of extreme discrimination and human rights violations. Today, the Karuk Tribe still struggles to recover from past genocide and ongoing discriminatory policies instituted by local, state and federal governments. As is the case for many native peoples around the world, much of their struggle is invisible. This invisibility is perpetuated by myths that American Indians are gone, or that they are fully assimilated.

The recent political history of the Karuk Tribe is a story of success in the face of continued injustice. Despite direct genocide, forced relocation, economic hardship, and the lack of a reservation, a high percentage of tribal members continue to live in their ancestral territory. The Karuk did not gain Federal Recognition as an American Indian Tribe until 1979. The Karuk still have no reservation and no hunting and gathering rights, and only have rights, besides, to fish at one specific site for subsistence and ceremonial purpose. Beginning in the 1960s, as federal recognition accompanied changes in the political climate and gains in the courts for Indian people across the United States (for example, concerning fishing rights), the Karuk people experienced a political, economic and ethnic renewal (Nagel 1996; Bell 2002; Wilkinson 2005). Tribal members are now actively recovering cultural traditions, including the use of their language, ceremonial practices and traditional basket weaving. The Karuk Tribe today has an active Department of Natural Resources, which has a Fisheries Program, and is prominently involved in local land management.

The present-day struggles of the Karuk people, however, are still significant. Poverty, food insecurity, diabetes, and emotional challenges plague them. As of 2007, the fundamental cultural, political and economic issues faced by the Karuk Tribe revolve around environmental policies affecting the Klamath River anadromous fishery and related cultural and natural resources. The Klamath River was once the third-largest salmon-producing river in the western United States. Early anthropologists marveled at the enormous abundance of natural resources available to the people living there. The Karuk, together with their neighboring tribes the Yurok and Hoopa, are considered to have been the wealthiest of all Indian people in California, and this wealth was a direct result of the Klamath River's year-round abundance of food resources, particularly salmon. Today Karuk tribal members are amongst the poorest Californians; median income for Karuk families is US\$13,000, and 90% of tribal members in Siskiyou County live below the poverty line (Norgaard 2005).

According to both Karuk observations and the scientific literature, a number of factors either deny or limit the access of people to their traditional foods. Genocide and forced assimilation over the past century have led to a loss of traditional knowledge of the land (including the preparation and acquisition of traditional foods), and a change in the

people's tastes and desires. Yet, despite dramatic events early in the century, the testimonies of elders about foods they ate indicate that considerable changes have also occurred just within the last generation. These most recent changes are largely due to denied access to traditional foods. In particular, a series of four dams block the access of fish and other species to some 350 miles of spawning habitat in the upper basin. The Spring Chinook was a most important source of food for the Karuk people, not just in terms of the salmon species, the decline of which is most visibly linked to the construction of the dams, but because of many other species. At least 25 species of plants, animals and fungi that formed part of the traditional Karuk diet are currently limited or denied outright to the Karuk people (Norgaard 2005). The two foods that were most central to the Karuk diet, providing the bulk of energy and protein — salmon and tan oak acorns — are among the missing elements. The Karuk people are currently denied access to foods that represented upwards of 50% of their traditional diet.

Until quite recently, the abundance of freshwater and upslope forest resources to which Karuk people had access provided a safety net of foods should one or other species fail to produce a significant harvest in a given year. Thus, while salmon were centrally important, other foods were also available, fresh and preserved, to provide nutrition throughout the year. Yet in 2006, populations of every freshwater food species consumed by Karuk tribal members were in decline. Now, so few fish exist that even ceremonial salmon consumption is limited. The elimination of traditional foods, including multiple runs of salmon, Pacific lamprey, sturgeon and other aquatic species, has had extreme adverse health, social, economic, and spiritual effects on the Karuk people. A series of health problems has emerged as the presence of healthy traditional foods has declined in the Karuk diet.

Although ruination of their principal source of food was not employed as an intentional means of genocide of the Karuk people in the way that the destruction of the buffalo was for the Plains Indians the effect is very much the same. The Karuk People have a sacred inherent responsibility to protect salmon, which are even viewed as part of one big family with the people. The annual return of the salmon defines the reciprocal spiritual relationship between the Karuk people, the “Great Creator” and “Mother Earth.” On a material level they are an abundant, healthy food source, and their loss has had a profound effect on the physical health, economic circumstances and cultural practices of the Karuk. This is the perspective from the Karuk country. This is the perspective that the power company disregarded in their report on the impacts of their dams.

What We Did: Changing the Discourse with the Altered Diet Study

Previous research on the loss of traditional foods and tribal health focused on environmental contaminants such as mercury and Persistent Organic Pollutants. The focus of our work was different, however. People described their situation as a case of “denied access” to traditional foods. The inability to continue to eat their traditional foods — and the corresponding rise in diet-related diseases — was neither coincidental nor the fault of the Karuk people (who had somehow, it was implied, mysteriously become “poorly educated” with respect to healthy eating); rather it occurred because the state failed to protect tribal trust resources, despite their mandate to do so.

We began our research by contacting anyone who might help us: diabetes researchers, medical practitioners, and traditional food experts and advocates. These people shared important research perspectives, medical data, and reports that formed the basis of our research design. We also began a series of interviews. We spoke to elders and gathered their testimony in oral interviews, including elders whose declining heart conditions had improved after eating salmon. To evaluate the prevalence of diet-related disease among the Karuk, in 2005 we obtained medical data on current rates of diabetes, heart conditions, high blood pressure, and obesity from the records of the Happy Camp Tribal Office, Happy Camp, California (see Norgaard 2005).

In-depth interviews were conducted with 18 tribal members, gathering information on health, diet, food access and consumption, and economic conditions. Information was also gathered on family history and health conditions over time. These individuals served as “key informants” regarding a range of cultural and fisheries topics. Interviewees were women and men, ranging from age 30 to the mid-70s, and representative of various aspects of the community (members of Tribal Council and Staff, as well as people who had no role in the tribal organization).

We also conducted a survey to obtain a wider view of community experience. The 2005 “Karuk Health and Fish Consumption Survey” had a response rate of 38% (90 of 238 questionnaires in all) (see Karuk Tribe 2005). Although we are unable to know the views of those who did not respond, we speculated, given the community demographics, that many of the non-respondents were more traditional, and had lower incomes than those who did respond. Through the survey we were able to see that, as suspected, there was a direct relationship between the disappearance of the Spring Chinook salmon and the emergence of diet-related diseases.

What We Found

In October 2004, the preliminary study, “The Effects of Altered Diet on the Health of the Karuk People”, was released; the full report was completed one year later (see Karuk Tribe 2005). The central thesis of the report was that the Karuk people were facing significant and costly health consequences as a result of *denied access* to many of their traditional foods. Not only does a traditional diet *prevent* the onset of conditions such as obesity, diabetes, heart disease, kidney trouble and hypertension, but, a traditional diet of salmon and other foods is one of the best *treatments* for such conditions. Salmon was estimated to have made up almost 50% of the energy and total protein intake in the diet of the Karuk before European contact (Hewes 1973). Limited access to traditional food forces the present Karuk population to buy most of their food in stores and/or rely on government commodities. These changes represent a major dietary shift. Through our survey we learned that, despite the reduced availability of salmon and other fish, a high percentage of Karuk families reported that someone in their household still fishes or hunts for food (Fig. 4).

In 2004–2005, fishing for eels (Pacific lamprey and other lamprey species), Spring and Fall Chinook salmon, Coho and sturgeon all reached record lows. As shown in Figure 5, over 80% of the tribal members surveyed indicated that they were unable to gather adequate amounts of eel, salmon, stonehead, or sturgeon to fulfill their family needs.

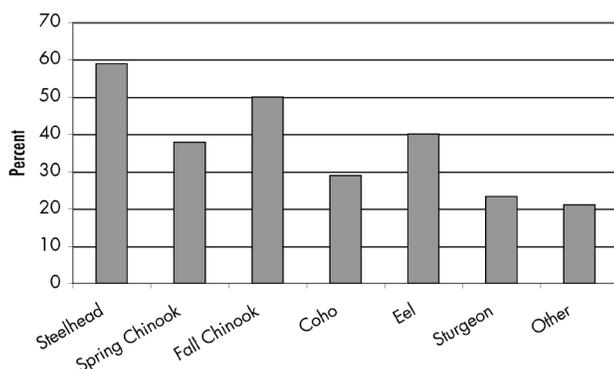


Figure 4. Results of the 2005 Karuk Health and Fish Consumption Survey (n = 90 households). Fish diversity in the Karuk diet. The graph shows the percent of households that reported fishing for the different species in 2005. Source: Karuk Tribe (2005).

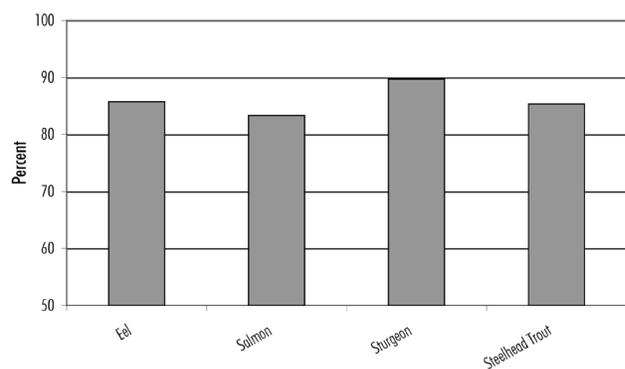


Figure 5. Results of the 2005 survey of Karuk tribal members (n = 18). Percent of members recording a shortfall in the Karuk People's requirements for the four major fishery species in 2005. Source: Karuk Tribe (2005).

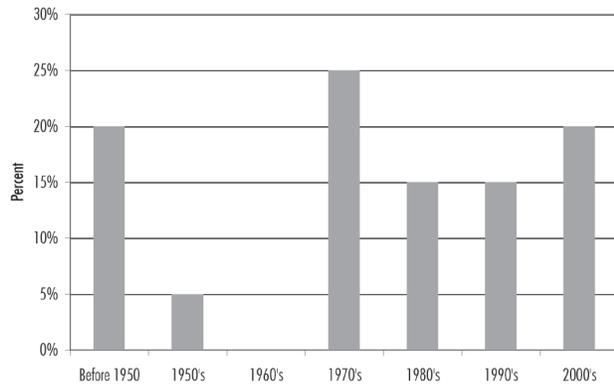


Figure 6. Results of the questionnaire survey (n = 90). Dates when the households perceived that Spring Chinook was no longer a significant food source. The marked increase in the 1960s and 1970s, was associated with the completion of Iron Gate dam, the lowest of the five dams on the Klamath River. Source: Karuk Tribe (2005).

Furthermore, 40% of tribal members reported that there are species of fish that their family gathered in the past, but which they can no longer harvest. For most of these species the decline is quite recent. For example, over half the respondents reported that Spring Chinook lost significance as a food source during the 1960s and 1970s, within a decade of the completion of Iron Gate dam, the lowest of the five dams on the Klamath (Fig. 6), and only a few families continued to fish significant amounts into the 1980s and 1990s.

Based on medical, survey and interview data, the identified health consequences of an altered diet for the Karuk people included high rates of Type II diabetes, heart disease, and hypertension. The estimated diabetes rate for the Karuk Tribe in 2005 was 21%; nearly four times the US average (Fig. 7) (CDC 2003; Karuk Tribe 2005; Karuk medical data since 2005). The estimated rate of heart disease for the Karuk Tribe in the same year was 39.6%—three times the US average (Norgaard 2005). Despite the current epidemic levels, diabetes has only recently appeared in the Karuk population. Self-report data from the Karuk Health and Fish Consumption Survey (see Norgaard 2005) indicate that diabetes first appeared in most families (over 60%) after the 1960s (Fig. 8).

It was during the 1960s and 1970s that Spring Chinook dropped out of the diets of most Karuk tribal members (Fig. 6), and shortly following this event, that diabetes was reported in high numbers (Fig. 8). Note below that diabetes begins to appear in about 30% of Karuk families roughly ten years following the loss of Spring Chinook salmon as a significant food source.

The relationship between loss of fish in the diet and the incidence of diabetes may or may not be causal. The drop in Spring Chinook harvests and the rise in diabetes could be happening by chance, or due to some other outside force

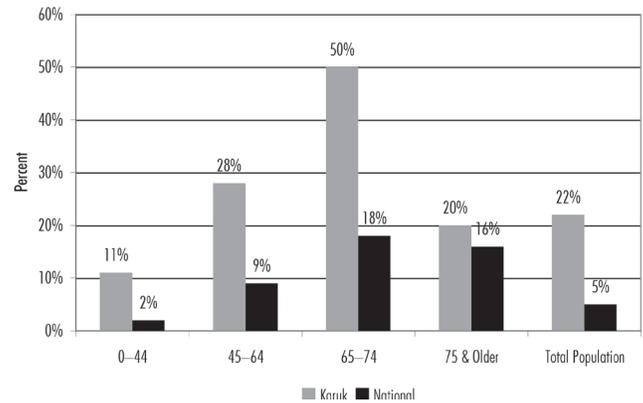


Figure 7. The percent incidence of diabetes in the Karuk by age group and in the entire population (gray columns) compared to the statistics for the entire USA (black columns). Sources: CDC (2003), Karuk Tribe (2005).

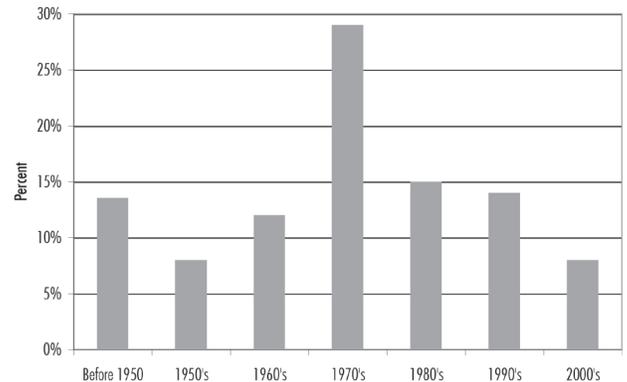


Figure 8. The occurrence of diabetes rose significantly in families during the 1970s when Spring Chinook salmon dropped out of the diets of most Karuk people. Source: Karuk Tribe (2005).

(such as people moving away from the river, or some dramatic event). Causality cannot be determined from the statistical analysis itself, but can be inferred from available information. First there was the fact that Native people around the world have experienced skyrocketing rates of diabetes concurrent with shifts from a traditional to a western diet. Second, doctors would recommend salmon as the ideal food to both prevent and cure diabetes. These two facts, together with the close temporal association between the two events, make a very compelling case for a causal relationship (Fig. 9). Lack of traditional food affects tribal members not only in that it decreases their nutritional intake related to specific foods, but also due to an overall lack of food. Poverty and hunger rates for the Karuk Tribe are among the highest in the state and nation. The poverty rate is between 80 and 85% (Data from 2004 Karuk Demographic Survey¹).

Finally, that Karuk tribal members are denied access to the healthy foods that have supported them since time immemorial also has costs for the broader society. Research by the American Diabetes Association has revealed that diabetics incur an average annual per capita health care cost of US\$13,243 per person per year in the USA (American Diabetes Association 2003). Given the 148 diabetic tribal members in 2004, we calculated an estimated annual cost for Karuk tribal members at over 1.9 million dollars (ibid.). PacifiCorp does not reimburse the Karuk Tribe, nor do the Siskiyou and Humboldt Counties, for the increased health care costs. We argued that any cost-benefit analysis of the dams should include \$1.9 million annually to provide medical services for the artificially high incidence of diabetes in the Karuk Tribe (Karuk Tribe 2005).

The Difference It Made: A Place at the Table

The above information was submitted to the Federal Energy Regulatory Commission. In 2005, we also released the report “The Effects of Altered Diet on the Health of the Karuk People” to the general public (Karuk Tribe 2005). It represents the first time in a dam re-licensing process that a tribe has described how dams have led to an environmental decline that, in turn, led to loss of traditional food sources and declining human health. It was a key moment when allies in the environmental movement put Reed in touch with a reporter at the *Washington Post*, who came for a full day visit and wrote a story that made the paper’s front page. That first story generated a second in the Associated Press, which was widely reprinted; there were dozens of additional news stories as well as coverage by local and regional radio stations.

Since the release of the report and the political pressure it brought to bear, we found that our requests on behalf of the Karuk Tribe carried considerably more weight in meetings with PacifiCorp and other players. We spoke publicly on the report’s findings, and through contacts from these speaking engagements and as a result of the news coverage people

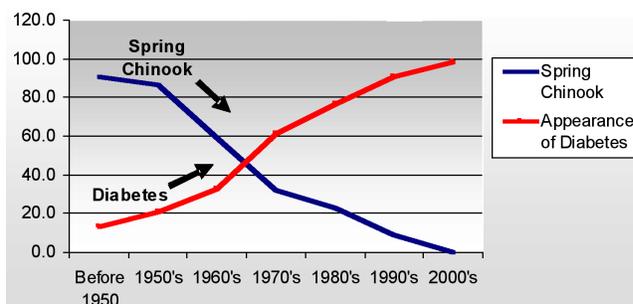


Figure 9. Graph showing the relationship between the decline in Spring Chinook salmon populations after the building of the Iron Gate dam (the furthest downstream of the five built on the Klamath River during the period 1917–1962) and the rise in the incidence of diabetes among the Karuk. For more information on the dams, see <<http://www.karuk.us/press/press.php>>. Source: Karuk Tribe (2005).

¹ An internal survey conducted by the Karuk Tribe of California, Happy Camp Tribal Office, Happy Camp, CA.

stepped forward offering resources, political connections and opportunities for future speaking. Reed now sits on the California Environmental Justice Advisory Board and was one of a handful of California delegates to the World Social Forum in 2007.

Conclusion and Next Steps

The Karuk and other Native American tribes in the United States and around the world are seeking to continue their traditional activities, including the use of their language, their ceremonial practices, land management systems and the consumption of traditional foods. The Karuk Tribe, in particular, is a poor people fighting one of the largest energy companies in the world. Many other tribes are also engaged in such fights against large corporations. Although their issues may vary according to the region, the type of environmental threat, and the extent the tribe has remained land-based, native peoples around the world face common challenges to their human rights, religious freedom, and access to traditional resources. What they all face, additionally, is the invisibility of their reality and their daily lives to the general public. This lack of awareness works together with outright racism, such as that which denied legitimacy to Reed's voice until it was backed with evidence resulting from Norgaard's research.

Most Americans are so removed from the land that the concept of incurring real health effects from the loss of traditional foods is foreign to them. They are unaware of the connection between human and ecological health. One of the reasons our work was successful in changing the terms of the debate for the Karuk is that it made this connection visible along with the reality of daily life for Karuk people in ways that the dominant society could not ignore.

As of this writing, Reed is participating in settlement negotiations that are now geared towards the real possibility of removing the dams. Reed and his family are working on many fronts to restore the river and the Karuk tribal culture, including continuing the practice of dipnet fishing at their ceremonial site and distributing fish to the community. They hope to begin culture camps for the youth and develop a facility for tribal members returning from prison to become involved in cultural practices. Norgaard is a Professor of Sociology and Environmental Studies at Whitman College, a small liberal arts school in eastern Washington. During the summer she takes her students to the Klamath area where they participate in research for the tribe. We continue to work together on research projects designed to increase the visibility of tribal needs in terms of diet and health.

It has been no small task for a poor tribe such as the Karuk to challenge the will of a large multinational corporation. One important step was a media campaign and a trip overseas. In June of 2004, some two dozen members of four tribes, the Pacific Coast Federation of Fisherman's Association and an environmental group, Friends of the River, traveled to Edinburgh, UK, to attend the shareholders meeting of Scottish Power, then owner of PacifiCorps. They captivated the Scottish media. On the day of the meeting, they rallied outside, obtained permission to speak inside the meeting and secured a private meeting with the CEO.

If the dams on the Klamath River are removed it will be the largest peacetime dam removal project in history. This victory will be the achievement of the extended efforts of many people—we are just a few of the small army dedicated to the restoration of the river. We hope that other tribal people will be able to use some aspects of our approach as a template for their own work and to communicate the relationships between environmental and human health, and their circumstances within the continuum of genocide.

Acknowledgments

Our work was supported by many people who shared their time and knowledge in the survey, interviews and throughout the research process. We thank all who made this project possible through their assistance. We are grateful to our families and also to Malcolm Terence for his editing.

Literature Cited

- American Diabetes Association. 2003. Economic costs of diabetes in the U.S. in 2002. *Diabetes Care* 26(3): 917–932.
- Bell, M.K. 1991. *Karuk: The Upriver People*. Naturgraph Publishers, Happy Camp, CA.
- CDC. 2003. *Diabetes Prevalence Among American Indians and Alaska Natives and the Overall Population—United States 1994–2002*. Center for Disease Control (CDC), Atlanta. 2003/52 (30): 702–704.
- Hewes, G. 1973. Indian fisheries productivity in pre-contact times in the Pacific Salmon Area. *Northwest Anthropological Research Notes* 7(2): 133–155.
- Karuk Tribe. 2005. The Effects of Altered Diet on the Health of the Karuk People. Report on the Karuk Health and Fish Consumption Survey, Karuk Tribe, Happy Camp Tribal Office, Happy Camp, CA. 116pp. [Filed on behalf of the Karuk Tribe in the Federal Energy Regulatory Commission process on the relicensing of the Klamath Hydro Electric Project, November, 2005]
- Nagel, J. 1996. *American Indian Ethnic Renewal*. Oxford University Press, New York.
- Wilkinson, C. 2005. *Blood Struggle: The Rise of Modern Indian Nations*. W.W. Norton & Co., New York.