

SALMON MEDICINE:
FEDERAL TRUST, THE ESA, AND THE TRINITY RIVER

By
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I. INTRODUCTION

The Trinity River originates in the creeks draining the Trinity Alps of northwestern California. Before becoming much more than a creek, it runs headlong into the Trinity Dam, creating a reservoir known as Trinity Lake.¹ Some of the flow from the incipient river escapes the reservoir, only to fall into another reservoir — Lewiston Lake. Lewiston Lake serves as a storage facility for the Central Valley Project.²

Through a series of tunnels, most of the water in the river is forced across mountain ranges to eventually flow into the Sacramento River. This water ultimately irrigates the once dry fields of the San Joaquin Valley.³ From its beginnings as potential coho and chinook habitat, most of the Trinity's water falls prey to the transformative powers of the Central Valley Project. The Project is an immense plumbing system that converts the water into an economic good bought by customers far removed from the original watershed.

The remaining water in the Trinity River drops through mountainous Trinity County into coastal Humboldt County, through the Hoopa Valley Reservation, joining the Klamath River at Weitchpec. Below the Columbia, the Klamath ranks second only to the Sacramento Delta for river flow into the Pacific.⁴ The

¹ Formerly known as "Clair Engle Lake" in honor of the district's Congressman, Clair Engle.

² The authorizing Act required the Central Valley Project be used "first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses; and, third, for power." Act of August 26, 1937, Pub. L. No. 75-392, 50 Stat. 850 (1937).

³ See TRINITY RIVER RESTORATION PROGRAM, U.S. FISH & WILDLIFE SERVICE, RESTORATION OF THE MAINSTEM TRINITY RIVER BACKGROUND REPORT 1 (1994).

⁴ See ARTHUR F. McEVoy, THE FISHERMAN'S PROBLEM 22 (1986).

Trinity is the largest tributary of the Klamath, playing host to a number of life forms.⁵ This Article will focus on the salmon.

Two types of salmon live in the Trinity River: chinook and coho. While populations of all the river's fish have generally declined from historic levels, the coho have recently been listed as threatened under the Endangered Species Act (ESA).⁶ This means that the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.⁷ Endangered means that the species is in danger of extinction throughout all or a significant portion of its range.⁸

The chinook have been proposed for listing as a threatened species as well.⁹ The fate of the endangered coho and chinook concerns, among others, the Hupa people who have historically depended upon the fish for survival, both economically and spiritually. This Article will briefly summarize some of the cultural ramifications of the salmon's decline and the causes of this decline. It will then review and compare some of the legal protections available for the fish under federal Indian law and the ESA.

II. THE HUPA INDIANS AND THEIR CULTURE: RECLAIMING THE PAST, IMAGINING THE FUTURE

The Hoopa Valley Reservation straddles the Trinity River, about an hour inland from Eureka in northwestern California.¹⁰ The Hupa are one of the few tribes still residing on their aboriginal homeland.¹¹ They have eaten salmon for thousands of years and continue to fish for it in the Trinity River.¹²

⁵ See TRINITY RIVER RESTORATION PROGRAM, *supra* note 3, at 1.

⁶ Threatened Status of Coho Salmon, 62 Fed. Reg. 24,588 (1997) (to be codified at 50 C.F.R. pt. 227).

⁷ 16 U.S.C. § 1532(20).

⁸ 16 U.S.C. § 1532(6).

⁹ Endangered and Threatened Species: Proposed Endangered Status for Two Chinook Salmon ESUs and Proposed Threatened Status for Five Chinook Salmon ESUs; Proposed Redefinition, Threatened Status, and Revision of Critical Habitat for One Chinook Salmon ESU; Proposed Designation of Chinook Salmon Critical Habitat in California, Oregon, Washington, Idaho, 63 Fed. Reg. 11,482 (to be codified at 50 C.F.R. pts. 222, 226, and 227) (proposed Mar. 9, 1998).

¹⁰ "Hoopa" refers to the geographical place name and legal tribal name. "Hupa" refers to the people themselves and their language. RICHARD KEELING, *CRY FOR LUCK: SACRED SONG AND SPEECH AMONG THE YUOK, HUPA, AND KAROK INDIANS OF NORTHERN CALIFORNIA* 4 (1992). This Article will alternate between the two spellings depending on context.

¹¹ See, e.g., BYRON NELSON, *OUR HOME FOREVER* (1978).

¹² *Id.*

A. *Salmon as Food*

Historically, the Hupa consumed a great amount of salmon. They ate it fresh and smoked it for later use.¹³ The Hupa fished for spring run chinook, but their major catch came in the fall.¹⁴

During the summer, river flows would drop to little more than a large trickle.¹⁵ The Hupa built long weirs or fish dams in preparation for the fall run.¹⁶ Two villages took turns operating the dam from year to year.¹⁷ After the first rains of the fall, the salmon began to run, providing literally tons of fish in good seasons.¹⁸

Along with the fish dams, the Hupa also used nets and traps.¹⁹ They ceased to use spears after mining fouled the Trinity, as will be discussed below.²⁰ Individuals possessed exclusive rights to fishing locations, which passed from father to son.²¹

B. *Salmon as Cultural Icon*

Not only did the salmon feed the Indians of northwestern California, these fish played a central role in the culture of the Hupa. Salmon were nearly mythical for the Hupa. Oral tradition and ceremonial ritual demonstrate the importance of the salmon to the Hupa identity.

1. *The Story of Salmon's Grandmother*

Linguist Edward Sapir transcribed the story of "Salmon's Grandmother" in 1927.²² In this story, salmon arrive in the Hoopa Valley only after being freed

¹³ See PLINY EARLE GODDARD, *LIFE AND CULTURE OF THE HUPA* 29 (1903).

¹⁴ *Id.* at 23.

¹⁵ See *Trinity County v. Andrus*, 438 F. Supp. 1368, 1372 n. 1 (E.D. Cal. 1977).

¹⁶ See GODDARD, *supra* note 13, at 24.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.* at 26.

²² See EDWARD SAPIR, 14 *THE COLLECTED WORKS* (Victor K. Golla & Sean P. O'Neill eds. and trans., forthcoming 1999).

from an upstream impoundment.²³ A bird named Salmon's Grandmother had trapped the salmon.²⁴ She had kept the salmon captive for her own undisclosed, presumably selfish, uses. In this story, the figure who finally freed the salmon proclaimed, "It should not be that only one person eats fish."²⁵

Regardless of this commandment's prescriptive significance, it does appear to describe the historical behavioral patterns of the different groups sharing the river. Although each community along the river had the capability to take the entire salmon run for itself with fish dams, villages consistently left some fish in the river for those upstream.²⁶ This practice was certainly more efficient than warring over scarce resources.²⁷

2. *The First Salmon and Its Ceremony*

The First Salmon of the spring run led the newly freed fish in the story of "Salmon's Grandmother." According to Hupa tradition, no salmon will come into the river unless the First Salmon comes, leading the others.²⁸ For many years, the First Salmon ceremony formed an important annual ritual.²⁹ A priest would pray for plenty of salmon, and "make medicine,"³⁰ exalting the power of the first salmon as a sustainer of not only life, but spirit.

The story "Salmon Medicine" accompanies this ritual, outlining its creation.³¹ This story illustrates the delicate relationship between the fish and the tribe. In this story, the salmon's creator asks a series of questions, regarding what the salmon will do if potentially "bad people" eat the salmon.³² The salmon responds by immediately dying.³³ At the close of the story, the salmon's creator determines to keep watch along the river and extract any salmon that a "bad person" would eat.³⁴

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ See McEVOY, *supra* note 4, at 53.

²⁷ See GODDARD, *supra* note 13, at 268.

²⁸ *Id.* at 78.

²⁹ *Id.*

³⁰ *Id.* at 268

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.* at 78.

The significance of the annual First Salmon Ceremony can be realized through the observation of the detailed requirements placed upon the officiating priest. This ceremonial officer could eat salmon only during the ten days of the spring feast.³⁵ During that time, various attendants undertook special preparations, and meals occurred at a scrupulously observed time or were forfeited altogether.³⁶ The purpose of the feast was to secure an abundance of good salmon for the year.³⁷ Pioneering California anthropologist Pliny Earle Goddard noted in 1903 that the First Salmon Feast occurred every year. The custom ceased after the arrival of white settlers, possibly linked to reduced numbers of salmon.³⁸

C. Modern Life on the Reservation

A contemporary concern in Indian-environmental discussions centers on the role of tradition in protecting the environment.³⁹ Many American Indian traditions throughout the country have disappeared forever. The disappearance of tradition stems, somewhat, from the systematic efforts at elimination of Indian culture through the federal policy of assimilation.⁴⁰ Under the federal policy, the Bureau of Indian Affairs banned Indian feasts, languages, marriage practices, dances, and any religious practices.⁴¹

Additionally, the unofficial policy of the wild west augmented the federal policy of assimilation. As gold fever swept the area, so did vigilantism, kidnapping, and rape.⁴² Along the Trinity River, the Chilula and the Whilkut were just two of the Indian groups that vanished forever due to unfortunate and unprovoked interactions with white settlers in the nineteenth century.⁴³ Arthur McEvoy reports that these depredations affected the Indians in the Lower Klamath cul-

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ The last Salmon Feast was held in 1910. See SAPIR, *supra* note 22.

³⁹ See Robert A. Williams, Jr., *Large Binocular Telescopes, Red Squirrel Pinatas, and Apache Sacred Mountains: Recolonizing Environmental Law in a Multicultural World*, in READINGS IN AMERICAN INDIAN LAW (Jo Carillo ed., 1998).

⁴⁰ See e.g., Larry A. DiMatteo & Michael J. Meagher, *Broken Promises: The Failure Of The 1920's Native American Irrigation And Assimilation Policies*, 19 U. HAW. L. REV. 1 (1997).

⁴¹ U.S. Commission on Human Rights, *A Historical Context for Evaluation*, in NATIVE AMERICANS AND PUBLIC POLICY 23 (Fremont J. Lyden & Lyman H. Legters eds., 1992).

⁴² *Id.*

⁴³ See McEvoy, *supra* note 4, at 53.

ture area more than anywhere else in California.⁴⁴ Ironically, survival rates in Hoopa were relatively high, with twenty-five percent of the pre-contact native population remaining after 1910.⁴⁵ This so-called high survival rate of the native population highlights the radical impact of white settlers.

The effects of the federal policies and cultural impacts linger today. In the Hoopa Valley, only a handful of elders still speak Hupa, and many tribal rituals have likewise disappeared.⁴⁶ Fishing still occurs, although to a relatively limited extent.⁴⁷ Whereas in the past, the Hupa served salmon with great frequency, tribal elder James Jackson, Jr. reports that they no longer eat it much at all.

III. THE FALL OF THE FISH

The population of Trinity River salmon has plummeted. Wild coho salmon have declined from an estimated 1 million fish at the end of the last century in coastal California streams, to around 5000 today.⁴⁸ Various causes have contributed to this decline.⁴⁹

A. Salmon Biology

Adult female salmon deposit their eggs in the coarse gravels found in riffles or gravel bars.⁵⁰ The relatively swift currents of the riffles maintain the high dissolved oxygen levels and low temperatures necessary for egg development.⁵¹ Water above 18°C creates uncomfortable conditions for salmon.⁵² Warmer water temperatures support the growth of infectious agents, as well as algae and phytoplankton, which lower the availability of oxygen.⁵³ Salmonids require a

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ However, the Jump Dance, the Brush Dance and the White Deerskin Dance still occur. Also, the tribe participates in a language mentorship program. Interview with Sean P. O'Neill, Hupa anthropologist, in Davis, Cal. (Mar. 11, 1999).

⁴⁷ *Id.*

⁴⁸ See T. Mills et al., *California Salmon & Steelhead: Beyond the Crossroads*, in *PACIFIC SALMON & THEIR ECOSYSTEMS* (Stouder et al. eds., 1997).

⁴⁹ See *infra* Part III.B (detailing the causes of salmon decline).

⁵⁰ *Salmon Disease*, THE IMPRINT (Willow Creek), Fall 1998 at 5.

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

minimum of 5 ppm dissolved oxygen.⁵⁴ Many obstacles to satisfying these conditions have arisen.⁵⁵

After twenty to forty days, the juveniles emerge, feeding on insects and plankton until they grow large enough to swim to the ocean.⁵⁶ Salmon are anadromous fish.⁵⁷ They live in the ocean for several years until they return to spawn in the same river where they hatched. After spawning, salmon die.⁵⁸

B. The Multiple Uses and Abuses of the Valley: Mining, Hydropower, Timber, and Fishing

Because of its natural resources and its distance from major metropolitan areas, the Trinity River Valley has experienced surges of resource development. These surges of resource development have had direct and indirect effects on the wildlife and the original human inhabitants of the valley, as well as its original human inhabitants. Various factors have contributed to the decline of the salmon, among them mining, dam construction, timber harvesting, and overfishing.

1. The Trinity Dam

The most obvious impact to the river came in 1963 when the floodgates closed on the newly constructed Trinity Dam.⁵⁹ Suddenly, historic flow amounts and patterns changed radically.⁶⁰ The Bureau of Reclamation had joined the ranks of those affecting fish habitat in the Trinity River.

The Trinity Dam's primary purpose was to provide "surplus" water to Central Valley farmers.⁶¹ Some of this surplus water has irrigated the Westlands

⁵⁴ *Id.*

⁵⁵ See *infra* Parts III.B.1-2,4.

⁵⁶ See JEFFREY F. MOUNT, CALIFORNIA RIVERS AND STREAMS 242 (1995).

⁵⁷ Anadromous means literally "running up again."

⁵⁸ See MOUNT, *supra* note 56, at 242-243.

⁵⁹ Act of August 12, 1955, Pub. L. No. 84-386, 69 Stat. 719.

⁶⁰ The consensus among fish biologists is that the presence and operations of the Trinity and Lewiston Dams are major factors in the decline. Trinity River Mainstream Fishery Restoration Environmental Impact Statement/Environmental Impact Report (EIS/EIR), *Trinity River Activities Update* (last visited Apr. 6, 1999) <<http://www.ccfwo.rl.fws.gov/ccfwo/treis.htm>> (on file with author).

⁶¹ Congressman Clair Engle vowed that "not a drop of water necessary to the watershed would be taken." Videotape: *The Waters of These Mountains* (Emelia Berol 1999) (on file with Prof. Peter Moyle, UC Davis). In fact, he was wrong, as subsequent remedial flow increases have occurred.

Water District, the soils of which have gained notoriety for their high selenium and saline content.⁶² The contaminated water then drains into the infamous Kesterson Reservoir.⁶³ At this writing, the Trinity County Board of Supervisors is involved in hearings with the State Water Resources Control Board to contest Westlands' use of Trinity River water.⁶⁴

The dam blocked 150 miles of anadromous fish spawning and rearing habitat.⁶⁵ According to one source, "the dam was the straw that broke the camel's back of the fishery."⁶⁶ Almost overnight, the fishery declined approximately ninety percent.⁶⁷ Historically, the Trinity had summer and fall waterflows of less than 800 cubic feet per second (cfs), dropping to less than 220 cfs in late summer.⁶⁸

Cubic feet per second is a measure of the amount of water passing a particular point in the river per second. The flow from a garden hose is probably not much more than 0.0005 cfs. A small creek has flows between 10 to 100 cfs. Kayaks generally need more than 200 cfs. A small raft requires at least 450 to 600 cfs.⁶⁹ Spring flooding on the Trinity brought flows of 2000 to 4000 cfs.⁷⁰ Winter flows exceeded 1200 cfs.⁷¹

With the closing of the floodgates in 1963, the Trinity's flow, like the fishery, dropped at times by ninety percent.⁷² Prior to the dam, mean flows had ranged from 500 cfs to 1500 cfs during fall spawning season.⁷³ During the salmon's winter incubation period, mean flows had ranged from 1500 cfs to 2500 cfs.⁷⁴ During the spring rearing stage, mean flows had ranged from 2500

⁶² A recent headline in the Hoopa Valley Tribe's newspaper decried this fact, noting: "Trinity water irrigates toxic soil." Rita Molhoek, *Trinity Water Irrigates Toxic Soil*, HOOPA VALLEY PEOPLE, Issue 4, at 1.

⁶³ The Kesterson Reservoir, of course, is the site of a failed wildlife refuge which succeeded in converting healthy ducks into dead, dying, and malformed ducks. See Tom Harris, *DEATH IN THE MARSH* 1-43 (1991); Felix E. Smith, *The Kesterson Effect: Reasonable Use of Water and the Public Trust*, 6 SAN JOAQUIN AGRIC. L. REV. 45 (1996); Cass Peterson, *Farm Water Poisons Wildlife California Refuge Contaminated*, WASH. POST, Mar. 10, 1985, at A1.

⁶⁴ Telephone Interview with Tom Stokely, Secretary of the Trinity River Task Force (Feb. 19, 1999).

⁶⁵ *Trinity River Hatchery: The Big Picture*, THE IMPRINT (Willow Creek), Fall 1998, at 3.

⁶⁶ Videotape: *The Waters of These Mountains*, *supra* note 61.

⁶⁷ *Id.* (statement of Arnold Whitredge, Trinity River Project Specialist).

⁶⁸ See *County of Trinity v. Andrus*, 438 F. Supp. 1368, 1372 (E.D. Cal. 1977).

⁶⁹ This information comes from my experience as a river guide on the Kern River during the drought years of 1991-1993.

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² See *TRINITY RIVER RESTORATION PROGRAM*, *supra* note 3, at 1.

⁷³ *Id.* at 3.

⁷⁴ *Id.*

cfs to almost 4000 cfs.⁷⁵ In contrast, the diversion of water to irrigators in the Central Valley left less than approximately 300 cfs in the river at all times.⁷⁶

The amount remaining in the river translates roughly to 120,000 acre-feet of water annually in the river.⁷⁷ An acre-foot is the volume of water that would cover one acre to a depth of one foot, enough to meet the needs of a family of four or five for one year. This ninety-percent diversion continued for almost two decades until 1981, with minor exceptions.⁷⁸ In 1981, the Secretary of the Interior ordered an increase in flows, raising the level to 340,000 acre-feet annually.⁷⁹

The reduced flow, particularly the spring flow, following dam construction has caused geomorphological changes to the river. Spring flooding renews deep channels in the river and its tributaries. These deep channels provide cool water for returning spawners and natural nurseries for small fry.⁸⁰ Spring floods also clear the silt from spawning gravel, creating porous areas for spawning to occur.⁸¹ Because the decreased spring floods were decreased after the dam was built, massive amounts of silt deposited by the 1964 flood have never been washed away.⁸²

2. Timber

Forests cover much of the land in the Trinity watershed. Much of this forested area belongs to the Six Rivers National Forest, while some land is privately held. Timber harvesting often leads to erosive runoff.⁸³ Over sixty percent of the soil erosion in the Trinity watershed comes from timber roads.⁸⁴ Clear-cutting exacerbates soil erosion, particularly when the local ethic is "to log to

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.* at 1.

⁷⁸ *Trinity Division History, Friends of the Trinity River Web Site* (last visited Apr. 8, 1999), <<http://www.fotr.org/history.html#Division>> (on file with author).

⁷⁹ See TRINITY RIVER RESTORATION PROGRAM, *supra* note 3, at 5.

⁸⁰ See McEVOY, *supra* note 4, at 47.

⁸¹ See MOUNT, *supra* note 56, at 329.

⁸² Videotape: *The Waters of These Mountains*, *supra* note 61.

⁸³ Erosion is exacerbated by leaving patches of soil bare. Clearcutting, the practice of removing all the trees from an area, causes the most erosion of the various types of timber harvest. See, e.g., *Study Links Landslides, Logging*, THE COLUMBIAN, May 14, 1996, at A.

⁸⁴ Videotape: *The Waters of These Mountains*, *supra* note 61.

infinity.⁸⁵ Clear-cutting has occurred throughout the Trinity watershed. Its patchwork pattern is obvious from Brush Mountain Fire Lookout outside the town of Willow Creek.⁸⁶

Significant clear-cutting occurred prior to 1980 on privately held land in the Grass Valley watershed, a tributary to the Trinity River.⁸⁷ As a result of this type of timber harvest, the silt load from the Grass Valley Creek watershed grew quite large. The destructive effects of the silt load necessitated the construction of a dam on Grass Valley Creek to prevent the silt's entrance into the Trinity River.⁸⁸

3. Fishing

Commercial fishing also affects salmon levels in the Trinity River. The municipal harbors in Eureka, Trinidad, and Crescent City boast worthy fleets of fishing vessels. Ocean harvest prevents the salmon from spawning.⁸⁹

Indian subsistence fishing also occurs in the Trinity River. Even before white settlement of the north coast, Indian fish dams could capture the entire population of returning spawners.⁹⁰ The decision by the Indians of the past not to take the entire population accounts for the present existence of salmon in the river. Now the Indians depend on regulations to allow enough salmon to escape the ocean nets and swim back upstream.

The Trinity's salmon are also subject to recreational fishing pressure. However, it is unclear what impact this type of fishing has on the salmon. The Americorps Fisheries Unit in Willow Creek encourages catch and release of chinook and steelhead.⁹¹

⁸⁵ Harry Merlo, former President & CEO of Louisiana Pacific, has been oft quoted as saying, "We need everything that's out there. We don't log to a ten-inch top, or an eight-inch top, or a six-inch top. We log to infinity. Because we need it all. It's ours. It's out there, and we need it all. Now." See, e.g., James Ridgeway, *Logging to Infinity: Louisiana-Pacific Makes the Government's Antitrust Policy Seem a Clear-cut Failure*, THE NATION, Dec. 12, 1997, at 19.

⁸⁶ Telephone Interview with Patrick Williams, Willow Creek resident (Feb. 28, 1999). (observing from Brush Mountain Fire Lookout).

⁸⁷ Videotape: *The Waters of These Mountains*, *supra* note 61.

⁸⁸ *Fish and Wildlife Restoration at Trinity River, 1995: Hearings on H.R. 2243 Before the House Resources Subcomm. on Fisheries, Wildlife and Oceans*, 103rd Cong., 1st Sess. (1995) (statement of David Cottingham, Counselor to the Assistant Secretary for Water and Science, Dep't Int.).

⁸⁹ As discussed above, salmon spawn and then die.

⁹⁰ See McEvoy, *supra* note 4, at 23.

⁹¹ *Here They Come!!*, THE IMPRINT (Willow Creek), August/September 1998, at 6.

Juggling the allotment of fish among these groups has proven an interesting task. The Departments of Commerce and Interior regulate the salmon harvest. Their approaches have varied over the years.

4. Mining and the Color of the Water

Before the Gold Rush of the 1850s, white settlement of northwestern California remained relatively inconsequential. However, after the uproar at Sutter's Mill subsided, miners ventured north to exploit the placer deposits on the Trinity River. Placers are mineral deposits, ranging in size from flakes to boulders, carried for a distance by streams. The deposits generally settle in the streambed. Mining occurs through the dredging, panning, or rerouting of the water to expose the mineral.⁹² Numerous mining settlements sprang up at places like Whiskeytown, Burnt Ranch, Junction City, Hawkins Bar, China Camp, and Big French Creek. Hydraulic mining occurred through targeting portions of hillsides for mineral exposure. A hydraulic pump uses river water to effectively blast or wash away the side of the hillside to expose the mineral.⁹³ A hydraulic pump sits near the highway west of Weaverville as a historic marker of a time when mountains were denuded and rivers rerouted in the pursuit of gold.

When mountainsides washed into the river, the resulting siltation radically affected the fish. In the nineteenth century, complaints of aboriginal inhabitants resulted in murder and mayhem by miners more concerned with the golden color of the rock than the muddy color of the river.⁹⁴ Large-scale mining has since given way to smaller dredging operations and occasional hobbyists out with their pans.⁹⁵

⁹² See *id.*

⁹³ See *id.*

⁹⁴ See CALIFORNIA STATE LANDS COMMISSION, CALIFORNIA'S RIVERS: A PUBLIC TRUST REPORT 9 (1993); McEvoy, *supra* note 4, at 54.

⁹⁵ Nonetheless, the legacy of the old days persists in Hoopa where the Celter Chemical Corporation still sits on the Superfund list. National Priorities List, 40 C.F.R. pt. 300, app. B (1999); see also *A Legacy of Troubled Mines Golden Land, Shattered Earth*, SACRAMENTO BEE, Mar. 21, 1990, at A9.

IV. NON-LEGAL ACTION TO PROTECT THE FISHERY

Various methods to rehabilitate the fishery have been attempted. Among these are increased flows, mechanical measures, and the creation of Lewiston Hatchery. An overview of these methods will follow.

A. Increased Flows

The original enabling legislation for the Trinity Dam purported to protect the fish. It stated that "the Secretary [of the Interior] is authorized and directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife. . . ." ⁹⁶ For close to two decades, the protective measures found in the authorizing legislation failed to allow for the adjustment of the water flow. Until relatively recently, only minor readjustments in flow had occurred. ⁹⁷ However, the U.S. Fish and Wildlife Service concluded, at least initially, ⁹⁸ that increased flows alone would not solve the problem of decreased habitat. ⁹⁹

Dams not only reduce flow, but they dramatically change the way a river maintains and regulates itself. ¹⁰⁰ Because of the dam, gravel deposits that provide juvenile and fry habitats gave way to sandbars or riparian vegetation. These sandbars and vegetation filled the cracks in the gravel and cobble, contributing to a loss of habitat. ¹⁰¹ Once the riparian vegetation established itself, mere flooding could not uproot it. ¹⁰² Furthermore, not only has riparian vegetation encroached on the flood plain, people have built their houses there. ¹⁰³ Human encroachment onto the floodplain limits the option of increasing flood flows just as riparian encroachment limits its effectiveness. ¹⁰⁴

The U.S. Fish and Wildlife Service completed the Draft Environmental Impact Statement (Draft EIS) in September 1999. The Service has identified five alternative courses of action. They include a maximum flow alternative, a flow

⁹⁶ Act of August 12, 1955, Pub. Law No. 84-386 (1955).

⁹⁷ See TRINITY RIVER RESTORATION PROGRAM, *supra* note 3, at 5.

⁹⁸ The U.S. Fish & Wildlife Service is currently preparing a flow study commissioned by Congress in conjunction with the task force authorized by Pub. Law No. 98-541.

⁹⁹ *Id.* at 5.

¹⁰⁰ See *supra* Part III.B.1.

¹⁰¹ *Id.* at 3.

¹⁰² See MOUNT, *supra* note 56, at 325.

¹⁰³ *Trinity River Hatchery: The Big Picture*, *supra* note 65, at 3.

¹⁰⁴ *Id.*

evaluation alternative, a percent inflow alternative, a mechanical restoration alternative, and a no action alternative.¹⁰⁵

The maximum flow alternative would keep all the natural flow in the river, ending diversions to the Central Valley. This alternative would most closely resemble the pre-dam condition of the river. However, the dam would still exist and presumably operate as a water storage facility.

The flow evaluation alternative would manage the flow in combination with adaptive management and mechanical stream restoration measures. Adaptive management is not easily defined. However, the general idea is that managers — fish and wildlife biologists — would monitor the effects of the operation and tinker with variables as necessary to achieve a desired outcome. Mechanical stream restoration measures include side channel enhancement and river edge feathering.¹⁰⁶ The mechanical restoration alternative would use mechanical restoration techniques only.

The percent inflow alternative would leave a straight percentage of water in the Trinity River. Forty percent of the water flowing into the Trinity Reservoir would be released back into the river. The Draft EIS on the flow alternatives is due imminently.

B. Mechanical Measures: Side Channel Enhancement and River Edge Feathering

In recent years, restoration projects have included side channel enhancement.¹⁰⁷ Where the river is deep and becomes armored through lack of silt flushing, it gains velocity, which is harmful to young salmon.¹⁰⁸ Recreating side channels allows spawners and juveniles to successfully spawn and mature, respectively. As of 1993, chinook salmon had been observed spawning in twelve of the eighteen side-channels built since 1988.¹⁰⁹ However, below a certain point, these channels filled in with gravel and sediment, vindicating local environmentalists' calls for increased flows.¹¹⁰

¹⁰⁵ Arcata United States Fish and Wildlife Service Homepage (last visited Oct. 22, 1999) <<http://www.ccfwo.r1.fws.gov/ccfwo/treis.htm>> (on file with author).

¹⁰⁶ See *infra* Part IV.B.

¹⁰⁷ See TRINITY RIVER RESTORATION PROGRAM, *supra* note 3, at 8.

¹⁰⁸ *Id.* at 4.

¹⁰⁹ *Id.* at 8.

¹¹⁰ *Id.* at 10.

Another geomorphologically manipulative restoration tool is river edge feathering.¹¹¹ Feather edge projects consist of removing the riparian sand berms that have developed along the riverbanks since the dam's construction.¹¹² Feathering allows the river to spread out across gravel and cobble bars and readjust itself, again creating slow water areas and more habitat diversity.¹¹³ The feathering project initially appeared to have no impact on fish habitat. However, in the last year or so, a biologist with the Fish and Wildlife Service has seen positive results with the feathering project.¹¹⁴

C. Lewiston Hatchery

Another restoration tool is simply creating more fish. In 1963, Congress authorized the Trinity River Hatchery just downstream of Lewiston Reservoir, (the storage facility below the Trinity Dam), to mitigate salmon losses from the Trinity Dam.¹¹⁵ The California Department of Fish and Game operates the hatchery. In an effort to satisfy fishing interests, the hatchery releases 1 million spring chinook and 2 million fall chinook as well as 500,000 coho.¹¹⁶ The hatchery often produces albino salmon, considered to have a negative effect on a salmon's survival.¹¹⁷ Hatchery fish may also transmit disease to wild stocks, behave differently, and water down the gene pool.¹¹⁸

V. TRADITIONAL MANAGEMENT AND MODERN POLICY: A SYNTHESIS

A. The Parties

Prior to white settlement, the policymakers were the influential members of the Hupa, Yürok, and Karok tribes.¹¹⁹ Their cultures had many similarities,

¹¹¹ See TRINITY RIVER RESTORATION PROGRAM, *supra* note 3, at 8.

¹¹² *Id.* at 10.

¹¹³ *Id.*

¹¹⁴ Telephone Interview with Jay Glase, United States Fish & Wildlife Service biologist (Feb. 18, 1999).

¹¹⁵ *Trinity River Hatchery: The Big Picture*, *supra* note 65, at 3.

¹¹⁶ *Id.*

¹¹⁷ *Trinity River Hatchery: The Big Picture*, *supra* note 65, at 4.

¹¹⁸ *Id.*

¹¹⁹ The Chilula, Whilkut, Chimariko, and others surely played a role, too. However, their numbers were much smaller than those of the three named groups. Furthermore, the available anthropological documentation consistently focuses on the three named groups. Interview with Sean O'Neill, Hupa anthropologist (Mar. 11, 1999).

though their languages were distinct.¹²⁰ Each tribe participated in its own First Salmon ceremonies. The groups depended on cooperative relationships with each other to sustain the natural bounty of the area. All three groups had similar customs regarding property rights.¹²¹

Today, decisions involve a much larger group. Currently, the number of participants and stakeholders is more diverse. In addition to the Yurok and Hoopa Valley tribes, management decisions on the Trinity River affect other entities. These entities include Humboldt and Trinity counties, the state of California, and the federal Departments of Interior and Commerce. San Joaquin Valley irrigators, commercial fishermen, and environmentalists also have an interest in what happens to the river.

B. The Broad Policies

In the pre-contact days, religion dominated salmon-oriented policymaking. The three tribal stakeholders held similar beliefs and practiced similar customs with regard to the fish.¹²² Where religion fell short, civil law bridged the gaps: a sort of tort system existed for offenses against people and their property.¹²³ The pre-contact quasi-tort system required payment to aggrieved parties for such things as killing another, adultery, or borrowing another's fishing grounds.¹²⁴ Criminal law now supplements torts on and off the reservation, i.e., the California Department of Fish and Game prosecutes those who fish without a license.¹²⁵

Where this civil law fell short, and unexplained resource shortages occurred, groups warred against each other.¹²⁶ In times of scarcity, the Hupa concluded that someone in a neighboring tribe had invoked a malicious and supernatural force. They addressed the conflict through war and the destruction of the evil force. Indeed, the sole recorded war between the Hupa and the Yurok occurred under just these circumstances.¹²⁷

¹²⁰ Hupa is an Athabaskan language, Yurok is Algic/Algonquian, and Karok derives from the Hokan stock. *Id.*

¹²¹ See GODDARD, *supra* note 13, at 26.

¹²² See A.L. KROEBER, *HANDBOOK OF THE INDIANS OF CALIFORNIA* 84 (1925).

¹²³ *Id.* at 20.

¹²⁴ See *id.* at 28-34.

¹²⁵ CAL. FISH & GAME CODE § 1054.2 (West 1999).

¹²⁶ See EDWARD CURTIS, *13 THE NORTH AMERICAN INDIANS* 4-5 (1907-1930).

¹²⁷ See, e.g., BYRON NELSON, *OUR HOME FOREVER* (1978).

Religion does not carry the same authority in American policymaking that it once did for the three tribes. However, a modern counterpart exists: science. Modern science may help inform current behavior, although its focus and immediacy may depend somewhat on the availability of funding and grants.¹²⁸

VI. THE LAW: FEDERAL INDIAN LAW AND THE ESA

Measures to protect the salmon will also indirectly benefit the continuance of tribal tradition and culture. Federal Indian law doctrines and the Endangered Species Act¹²⁹ may be useful in protecting both the fish and the native culture.

A. Federal Indian Law

1. Reserved Water Rights

The reserved rights doctrine in federal Indian law protects Indian water rights. In *Winters v. United States*,¹³⁰ the United States Supreme Court interpreted the agreements creating the Fort Belknap Indian Reservation. The agreements did not purport to claim any water rights. However, the Supreme Court held that the Federal Government had impliedly reserved a right to the amount of river water necessary to convert the Indians into farmers for assimilation purposes.¹³¹

The Court recognized that without irrigation, the potential farmlands were practically valueless.¹³² Most important, the Court applied a canon of interpretation resolving ambiguities in agreements and treaties in favor of the Indians.¹³³ This rule of interpretation arose from the power differential between the Indians

¹²⁸ See Tim Friend, *Co-Discoverer of Hale-Bopp Sour on Science as Career*, SALT LAKE TRIB., Apr. 17, 1997, at C1.

¹²⁹ 16 U.S.C. § 1531.

¹³⁰ 207 U.S. 564 (1908).

¹³¹ The *Winters* court stated:

The reservation was a part of a very much larger tract which the Indians had the right to occupy and use, and which was adequate for the habits and wants of a nomadic and uncivilized people. It was the policy of the government, it was the desire of the Indians, to change those habits and to become a pastoral and civilized people.

Id. at 576.

¹³² *Id.*

¹³³ *Id.*

and the federal government.¹³⁴ Since then the Court has recognized and applied the *Winters* reserved rights doctrine in other contexts.¹³⁵

The *Winters* doctrine also applies to reservations created outside the treaty context. In *Arizona v. California*, the Court applied this doctrine in interpreting an executive order that created an Indian reservation.¹³⁶ Among other things, the Court held that the quantity of water intended to be reserved should be construed to satisfy the future, as well as the present, needs of the Indian reservation.¹³⁷ The Court ruled that enough water must be reserved to irrigate all land that could be practicably irrigated.¹³⁸ The Court based its decision on considerations of feasibility and fairness.¹³⁹

Thus, the creation of the Hoopa Valley Reservation necessarily included reserved water rights. President Grant's Executive Order of 1876 formalized the Hoopa Valley Reservation.¹⁴⁰ The cases affecting the Hoopa Valley Tribe do not appear to have specifically quantified the tribe's reserved water rights. However, a recent case assumes that these reserved rights apply.¹⁴¹

2. Reserved Fishing Rights

In addition to water rights, reserved fishing rights may also be imputed under the canon of construction discussed above. Hunting and fishing rights arise by implication when a reservation is set aside for Indian purposes.¹⁴² Indeed, the Ninth Circuit specifically recognized the Hoopa Valley tribe's reserved fishing rights in *Parravano v. Babbitt*.¹⁴³ The court reasoned that because the Hoopa Valley reservation had been created for "Indian purposes," it included fishing rights.¹⁴⁴ The court stated that it had "never encountered difficulty in

¹³⁴ *Id.*

¹³⁵ See also *United States v. New Mexico*, 438 U.S. 696, 698 (1978); *Cappaert v. United States*, 426 U.S. 128, 138 (1976).

¹³⁶ See *Arizona v. California*, 373 U.S. 546, 598 (1963).

¹³⁷ *Id.* at 600.

¹³⁸ *Id.*

¹³⁹ *Id.* at 601.

¹⁴⁰ See I.C. KAPPLER, *INDIAN AFFAIRS: LAWS AND TREATIES* 815 (1904). Hunting and fishing rights generally arise by implication when a reservation is set aside for Indian purposes. See *Menominee Tribe of Indians v. United States*, 391 U.S. 404 (1968).

¹⁴¹ *Klamath Water Users Association v. Patterson*, 15 F. Supp.2d 990, 993 (D. Or. 1998).

¹⁴² See *Menominee Tribe v. United States*, 391 U.S. 404, 406 (1968).

¹⁴³ *Parravano v. Babbitt*, 70 F.3d 539, 546 (9th Cir. 1995) *cert. denied*, 518 U.S. 1016 (1996).

¹⁴⁴ *Id.* at 545.

inferring that the Tribes' traditional salmon fishing was necessarily included as one of those 'purposes.'"¹⁴⁵

3. Federal Trust Responsibilities

For this discussion, a more significant aspect of *Parravano* lies in its acknowledgment that the federal trust responsibility toward Indian tribes extends to the federal government as a whole.¹⁴⁶ The Bureau of Indian Affairs in the Department of Interior has historically been the agency with primary responsibility for carrying out these trust duties. The federal trust relationship with Indian tribes dates back to the 1831 case of *Cherokee Nation v. Georgia*, where Chief Justice Marshall described the relationship between the tribes and the federal government as "resembl[ing] that of a ward to his guardian."¹⁴⁷ The trust doctrine stems from the Court's unwillingness to recognize Indian nations as foreign nations, rather characterizing them as "domestic dependent nations."¹⁴⁸ This capacity of dependence places a responsibility on the federal government to essentially protect the interests of the tribes from state overreaching.¹⁴⁹

In *Parravano*, the Ninth Circuit upheld limitations on commercial fishing against a challenge by commercial fishing interests.¹⁵⁰ The Secretaries of Commerce and Interior had placed emergency limits on commercial ocean fishing due to insufficient escapement levels in previous years.¹⁵¹ These limits protected the Yurok and the Hoopa tribes against overfishing in the ocean. The court held that the federal government's trust responsibility toward the Indian tribes ex-

¹⁴⁵ *Id.*

¹⁴⁶ Secretary of Interior Bruce Babbitt recently stated: "Today the principal mission of the Department is the conservation and management of natural and cultural resources, the protection and encouragement of Indian self-determination, and the fulfillment of Federal trust responsibilities to American Indians." *Fiscal Year 2000: Hearing Before the House Subcomm. on Energy and Water Development*, 106th Cong. (1999) (statement of Bruce Babbitt, Secretary of the Interior).

The current policy of self-determination comes in a long line of succeeding federal Indian policies including conquest, removal and relocation, allotment and assimilation, reorganization, and termination. For an overview of these policies, see DELORIA, *AMERICAN INDIANS, AMERICAN JUSTICE* 1-14 (1983).

¹⁴⁷ *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 17 (1831).

¹⁴⁸ *Id.*

¹⁴⁹ See, e.g., Kathleen M. O'Sullivan, *What Would John Marshall Say? Does the Federal Trust Responsibility Protect Tribal Gaming Revenue?* 84 *Geo. L.J.* 123, 128.

¹⁵⁰ *Id.*

¹⁵¹ See STEPHEN H. SUAGEE, *A Tribal Strategy Increases Streamflows to Restore a Facility*, *NAT. RESOURCES & ENV'T*, Winter 1995, at 23.

tends beyond the Department of Interior to the government as a whole.¹⁵² The court cited to a concurrence in an earlier decision, emphasizing the necessity of total government responsibility in order to preserve the fishery.¹⁵³ In *Parravano*, the exercise of this trust responsibility justified the Secretaries' emergency limitations not only on the reservation, but on the commercial interests as well.

Tribes and environmentalists should not ignore the *Parravano* court's willingness to protect tribal fisheries from harm caused off the reservation. If *Parravano* truly extends to off-reservation impacts, the government's federal trust responsibilities toward the Indian fishery should also reach its Central Valley Project water contracts. Just as ocean overfishing takes place off the reservation, irrigation contracts encompass off-reservation activity also. Accordingly, as ocean overfishing contributes to salmon loss, so do irrigation contracts harm Trinity River salmon.

As stated earlier, the Central Valley Project contracts divert most of the Trinity River's water to irrigation districts in California's Central Valley. Some of the water irrigates the Westlands Water District, which drains into the Kesterson Reservoir, as discussed above. The diversion of water from the Trinity River, during critical times of the year for salmon spawning and development, has contributed to the salmon's decline. Additionally, the lack of flow has altered the river geomorphologically with detrimental effects on salmon habitat.

The irrigation contracts are currently up for renewal. The Bureau of Reclamation is preparing an analysis of the proposed renewal, as required by the National Environmental Policy Act.¹⁵⁴ The *Parravano* decision should require the Bureau of Reclamation to uphold its federal trust responsibilities to protect the fishery.

B. *The Endangered Species Act*

Not only is the Bureau of Reclamation bound by its trust responsibility toward the Hoopa, but it also must comply with the "no jeopardy" requirements of the Endangered Species Act.¹⁵⁵ The ESA currently protects the coho salmon in the Trinity River, which the National Marine Fisheries Service (NMFS) has

¹⁵² *Parravano v. Babbitt*, 70 F.3d 539, 546 (9th Cir. 1995) *cert. denied*, 518 U.S. 1016 (1996).

¹⁵³ *United States v. Eberhardt*, 789 F.2d 1354, 1363 (9th Cir. 1986).

¹⁵⁴ 42 U.S.C. § 4321 *et seq.*

¹⁵⁵ 16 U.S.C. § 1536(a)(2).

listed as threatened.¹⁵⁶ The listing prohibits federal agencies from jeopardizing them, as well as degrading critical habitat.¹⁵⁷

1. Critical Habitat

Critical habitat for the Trinity River coho was designated on May 5, 1999.¹⁵⁸ The area encompasses accessible reaches of all rivers between the Mattole River in California and the Elk River in Oregon, inclusive, as well as all waterways, substrate, and adjacent riparian zones below long-standing, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years).¹⁵⁹ The NMFS has not designated areas blocked by dams as critical habitat, believing that the downstream areas are sufficient for habitat conservation.¹⁶⁰

The NMFS is currently considering a petition for listing the Trinity's chinook as threatened under the ESA.¹⁶¹ NMFS has determined that substantial scientific disagreements exist regarding the sufficiency and accuracy of data relevant to final listing determinations for southern Oregon and California coastal fall-run chinook salmon evolutionarily significant units (ESUs).¹⁶² These scientific disagreements concern the consistency of analysis used to identify temporal runs of chinook salmon in the same basin, the data needed to determine the geographic boundaries of certain ESUs, and information related to the risk assessment for some chinook salmon ESUs. Therefore, NMFS extended the final listing determination deadline for these four ESUs for six months to collect and analyze the additional data.¹⁶³ Until listing occurs, the chinook salmon remain unprotected.

¹⁵⁶ Threatened status for Southern Oregon/Northern Oregon California Coast Evolutionarily Significant Unit of Coho Salmon, 62 Fed. Reg. 24,588 (1997) (to be codified at C.F.R. 50 pt. 227).

¹⁵⁷ 16 U.S.C. § 1536(a)(2).

¹⁵⁸ Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon, 64 Fed. Reg. 24,049-02 (1999) (to be codified at 50 C.F.R. pt. 226).

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ Endangered and Threatened Species: Proposed Endangered Status for Two Chinook Salmon ESUs, *supra* note 9.

¹⁶² Memorandum from U. Varanasi and M. Tillman to W. Stelle and W. Hogarth (Oct. 30, 1998) (on file with author).

¹⁶³ Endangered and Threatened Species: Notice of Partial 6-Month Extension on Final Listing Determinations for Four Evolutionarily Significant Units (ESUs) of West Coast Chinook Salmon, 64 Fed. Reg. 14,329 (1999).

2. No Jeopardy

The duty to insure that agency action is not likely to jeopardize the continued existence of the coho requires the agency to initiate necessary tests or studies.¹⁶⁴ It further requires the agency to wait for the results of these tests or studies before taking action.¹⁶⁵

In *Natural Resources Defense Council v. Houston*, the Ninth Circuit determined that negotiating and executing water contracts constitutes "agency action" under the ESA.¹⁶⁶ In this case, environmental groups prevented the Bureau of Reclamation from entering renewal contracts with irrigators. These groups sought to leave more water in the San Joaquin River for the endangered winter-run chinook salmon. The Ninth Circuit upheld the rescission of Bureau of Reclamation contracts under the authority of the ESA.

The court found that these federal irrigation contracts constituted an agency action, unlawfully jeopardizing the fish in violation of the ESA.¹⁶⁷ The court determined that because the Bureau of Reclamation executed forty-year irrigation contracts without first consulting the NMFS, the Bureau acted arbitrarily and capriciously and not in accordance with the law.¹⁶⁸ The court stated that the forty-year water contracts constituted an irreversible and irretrievable commitment of resources in violation of the ESA.¹⁶⁹

VII. CONCLUSION

The Trinity River has experienced much change in the character of its neighboring inhabitants and the quantity and quality of its flow. The changes have adversely affected the coho and chinook salmon in the river. Current physical measures to protect the salmon may be supplemented by the invocation of legal doctrines. In addition to the ESA, federal Indian law provides a vantage point from which to address the situation of the salmon. Indeed, federal Indian law

¹⁶⁴ See *Village of False Pass v. Watt*, 565 F.Supp. 1123 (D.C. Alaska 1983) *aff'd* 733 F.2d 605.

¹⁶⁵ *Id.*

¹⁶⁶ *Natural Resources Defense Council v. Houston*, 146 F.3d 1118, *cert. denied*, Lower Tule River Irrigation Dist. v. *Natural Resources Defense Council*, 119 S.Ct. 1754 (1999) and *cert. denied*, *Chowchilla Water Dist. v. Natural Resources Defense Counsel*, 119 S.Ct. 1754 (1999).

¹⁶⁷ 16 U.S.C. § 1536(a)(2).

¹⁶⁸ 146 F.3d at 1127.

¹⁶⁹ *Id.*

may fill a significant gap left in the ESA: the federal Indian trust obligation does not require such extremes as “threatened” or “endangered” before it may be used to help the fishery. In the instance of the Trinity River, both environmental and Native American doctrinal bases may be used to prevent the Salmon’s Grandmother of extinction from finally withholding all the fish.

