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Fish, Farms, and the Clash of Cultures in the Klamath Basin

Holly Doremus
Berkeley Law

A. Dan Tarlock

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Holly Doremus* and A. Dan Tarlock**

In the drought summer of 2001, a dramatic event occurred in the obscure Klamath region of northern California and Southern Oregon: the Bureau of Reclamation closed the headgates of the Klamath Project, halting irrigation deliveries in order to protect endangered fish. For the first time, the Endangered Species Act had caused a large-scale curtailment of water delivery from a federal project. Several months later, a National Academy of Sciences/National Research Council committee issued a report critical of the scientific basis for the decision to cut off water deliveries, fueling controversy in the already deeply polarized region. The Klamath crisis and its continuing aftermath provide an important case study of the key challenges facing many communities in the arid West: how to move beyond a long history of inefficient irrigation, remedy the ecosystem degradation that system has produced, and make the transition from a colonial commodity-production economy to a modern, globally integrated one. The Klamath is a classic degraded, unsustainable basin, exhibiting all the environmental and economic woes of the "new" West. It is also a place where the ESA, which has been widely regarded as an important tool for forcing states and local populations to take into account new social realities, has been aggressively applied.

This article explores the choices that led to the Klamath crisis, the crisis itself, and its aftermath. Although there are many ways to tell the Klamath story, the narrative we find most compelling is one of a clash of cultures that must be resolved as the arid West confronts its future. Farmers, environmentalists, and Indians are all fighting to protect their ideal of the landscape and their relationship to it. A similar culture war is

* Professor of Law and Chancellor's Fellow, University of California at Davis School of Law. B.Sc. Trinity College (CT), Ph.D. Cornell University, J.D. University of California at Berkeley (Boalt Hall). Thanks to Mona Badie for diligent research assistance. Professor Doremus also thanks J.B. Ruhl and participants in a faculty workshop at the Florida State University College of Law for their helpful comments.

** Professor of Law, Chicago-Kent College of Law. A.B., LL.B. Stanford University. Professor Tarlock would like to thank Professor Hope Babcock of the Georgetown University Law Center for inviting him to present this paper in her Environmental Law Research Seminar. The final version benefited from the comments of the seminar participants. The authors also thank Reed Benson, Assistant Professor of Law, University of Wyoming, and formerly Executive Director, Waterwatch of Oregon, for comments on an earlier draft.

played out within the federal government, as the Bureau of Reclamation and the wildlife agencies fight for supremacy in the Basin.

We draw several lessons from the Klamath experience, all of which we believe apply more broadly. First, the pressing question, one that is complex from both a social and a scientific perspective, is how to manage the transition to a sustainable landscape in a fair and equitable manner. The deep cultural divide between groups affected by the use of water and lands in the region, and the pervasive uncertainties about the legal rights and responsibilities of those groups, have made the transition extremely difficult. Second, overemphasis on science as the arbiter of the legal, and indirectly of the cultural, disputes has deepened the cultural divide. Science plays a major role in the resolution of environmental disputes; it is often seen as the only potential unifying standard among parties with very different world views. Unfortunately, because of data gaps, uncertainties, and disagreement about values rather than facts, science frequently does not eliminate disagreement among opposing parties. In those circumstances, the intense battle for the high scientific ground that typically results is ultimately counter-productive, diverting attention from the difficult social choices that must be made. Third, solving conflicts with deep cultural implications over water (or other limited resources) is difficult and painful, so delay and avoidance have been common tactics. The Klamath experience teaches us that delay only serves to make the conflicts sharper, and therefore more difficult to resolve, when they can no longer be avoided. That lesson goes for irrigators as well as the government agencies. Finally, a more comprehensive ecosystem-based approach than is currently available is needed to encourage and support the transition to sustainability. State and federal agencies must work toward common solutions, and resource use issues (such as water allocation) must not be treated as separable from pollution issues (such as water quality control). The ESA can catalyze, but ultimately cannot force, a move to a more comprehensive approach. We offer the process that led to the current Florida Everglades restoration experiment as one possible model for that transition.

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INTRODUCTION

"The old West rubs elbows with the new in Klamath Falls."

Works Progress Administration, OREGON: END OF THE TRAIL 183 (1940).

In 1978, the Supreme Court held that the Endangered Species Act[1] (ESA) required all federal agencies to avoid jeopardizing the continued existence of listed species regardless of the opportunity costs. *Tennessee Valley Authority v. Hill*[2] gave the United States Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) the legal equivalent of a nuclear arsenal. Because the ESA is both substantive and procedural, it allows these agencies, and other interested persons, to compel federal agencies to broaden their traditional single-minded missions to include species conservation. However, massive power can be a mixed blessing. As the United States and the Soviet Union discovered during the Cold War, the costs of using nuclear weapons can become "unacceptably high."[3] The same lesson applies to the application of the ESA. As the Clinton administration discovered, the political costs of strict enforcement can be very high when the needs of a little-known or uncharismatic creature conflict with those of a vocal or politically powerful group of people. These costs are especially high when the ESA is applied to water resources, since compliance with ESA mandates may require the holders of state-created water rights to reduce or even forego long established entitlements.

The ESA became a focal point for opponents of environmental regulation after the Republicans gained control of the Congress in the 1994 midterm elections. The Clinton Administration had to defend the ESA from efforts to roll it back drastically.[4] Opponents of the Act portrayed it as scientifically and economically irrational legislation because it precluded private property owners from enjoying their common law rights and public commodity users from receiving their expectation-backed entitlements. The press was well supplied with appealing "horror" stories of property owners victimized by the protection of insects and non-fuzzy creatures.[5]

Interior Secretary Bruce Babbitt was acutely aware of the political costs of using the full force of the ESA to conserve species and biodiversity because the Clinton Administration inherited the ESA "train

1. Endangered Species Act, 16 U.S.C. §§ 1531-1544 (2000).

2. 437 U.S. 153 (1978).

3. WARREN I. COHEN, THE CAMBRIDGE HISTORY OF AMERICAN FOREIGN RELATIONS: VOLUME 4, AMERICA IN THE AGE OF SOVIET POWER, 1945-1991 88 (1993).

4. For insider accounts of the Department of Interior's efforts to maintain the Act, *see* Joseph L. Sax, *Environmental Law at the Turn of the Century: A Reportorial Fragment of Contemporary History*, 88 CAL. L. REV. 2375 (2000); John D. Leshy, *The Babbitt Legacy at the Department of Interior: A Preliminary View*, 31 ENVTL. L. 199 (2001).

5. Support for the ESA depends upon public familiarity with and affection for the listed species. STEPHEN R. KELLERT, THE VALUE OF LIFE: BIOLOGICAL DIVERSITY AND HUMAN SOCIETY (1996). Kellert identifies nine basic values at stake in species preservation and finds that despite expressions of ethical concerns for biodiversity "most Americans remain fixed on a narrow segment of the biotic community—largely vertebrate animals, particularly creatures of special historical, cultural, and aesthetic significance." *Id.* at 62.

wreck" that followed the listing of the Northern Spotted Owl in old growth forests of the Pacific Northwest. To avoid future train wrecks and to save the Act, Babbitt devised a series of strategies, such as habitat conservation plans and adaptive ecosystem management, to show that the Act's objectives could be achieved without displacing traditional resource exploitation. Secretary Babbitt achieved this goal during his watch. Republicans beat a strategic retreat of their rollback efforts, especially after influential segments of the Christian Right characterized the ESA as a modern day Noah's Ark. Many innovative ecosystem management experiments were launched, and in many cases states responded to these initiatives with unprecedented levels of federal-state cooperation.[6]

While it may have prevented (or at least delayed) some train wrecks, the Babbitt strategy did not address others. The administration concentrated on land-based habitat conservation plans that cobbled together public and private lands to create habitat reserves,[7] and ad hoc basin-wide processes to create instream flow and ecosystem restoration programs on major river systems such as the Platte, Rio Grande and Sacramento-San Joaquin. These large river basin processes increased the risk of future curtailments to existing right holders but they did not shut headgates. The first major clash between fish and property rights occurred, instead, in the little-known Klamath Basin, on the Oregon-California border, during the drought summer of 2001.[8]

For the first time in its history, the United States Bureau of Reclamation, which administers the Reclamation Act of 1902,[9] closed the headgates of a reclamation project, the Klamath Project.[10] The Bureau took this drastic action in response to biological opinions issued by FWS

6. Todd H. Votteler, *Raiders of the Lost Aquifer? Or the Beginning of the End of the Fifty Years of Conflict over the Texas Edwards Aquifer*, 15 TULANE ENV'TL. L. J. 257, 276-78 (2002) (ESA litigation requiring protection of endangered species living in springs in Edwards Aquifer triggered Texas legislation to regulate pumping from the aquifer for the first time in the state's history).

7. Section 10 of the ESA allows the agencies to issue permits for incidental take if the applicant prepares an adequate habitat conservation plan (HCP). For discussions of the HCP process, see, e.g., Shi-Ling Hsu, *The Potential and Pitfalls of Habitat Conservation Planning Under the Endangered Species Act*, 29 ENV'TL. L. REP. 10592 (1999); Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L. J. 279 (1998).

8. Between October, 2000 and August, 2001, the Basin received only 54 percent of its normal rainfall. Michael Milstein, *Clearing Up Water Issues on Klamath Basin*, PORTLAND OREGONIAN, Aug. 29, 2001, at B8.

9. Ch. 1093, 32 Stat. 388 (1902) (codified at scattered sections of 43 U.S.C.).

10. Until recently, a detailed description and history of the Klamath Project could be found on the Bureau of Reclamation web site. Bureau of Reclamation, *Project Dataweb*, http://dataweb.usbr.gov./html/klamth.html (last visited March 4, 2003). Since September 11, 2001, however, the Department of Interior has restricted access to its web site on an irregular basis because the site contains information about water resources projects that may be of interest to terrorists.

and NMFS concluding that irrigation releases would threaten the survival of the Lost River and shortnose suckers, and coho salmon.[11] The result was a 90 percent cutback in normal spring and summer deliveries from the Klamath Project to some 1,400 farmers who plant approximately 210,000 acres[12] of pasture, grass hay, barley, alfalfa, wheat, potatoes, sugarbeets, onions, mint and horseradish in the basin.

The Bureau's action created both winners and losers. The most immediate winners were Indian Tribes in Oregon and California who have long suffered injustices at the hands of the federal government and their non-Indian neighbors. The Klamath in Oregon and the Yurok and Hoopa along the Lower Klamath in California were elated that the government was finally moving to support the restoration of traditional sacred fisheries that had long been in decline. Irrigators were the biggest losers. Many fields could not be planted and some crops turned brown at the end of the summer. The local farmers did not take the loss of their water quietly. They were able to draw on our nostalgia for the Jeffersonian yeoman farmer and the cowboy to present themselves as victims of modern environmentalism.[13]

The Klamath story is an on-going one,[14] but a dramatic event, which will shape the future of this and other water conflicts, occurred in February 2002. A National Research Council (NRC) committee commissioned by Secretary of the Interior Gale Norton to review the science behind the 2001 Biological Opinions issued its preliminary report.

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11. *See* Reed D. Benson, *Giving Suckers (And Salmon) An Even Break: Klamath Basin Water and the Endangered Species Act*, 15 TUL. ENVTL. L. J. 197 (2002) for a history of the legal events that led to the 2001 shut down.

12. Figures vary somewhat from source to source, but there is general agreement that the Klamath Project has the capacity to irrigate about 240,000 acres, Project Dataweb, *supra* note 10, and that about 210,000 have been in fact irrigated since the project was fully developed. Harry L. Carlson and Rodney Todd, *Effects of the 2001 Water Allocation Decisions on the Agricultural Landscape and Crop Production in the Klamath Reclamation Project*, *in* WATER ALLOCATION IN THE KLAMATH RECLAMATION PROJECT: AN ASSESSMENT OF NATURAL RESOURCE, ECONOMIC, SOCIAL, AND INSTITUTIONAL ISSUES WITH A FOCUS ON THE UPPER KLAMATH BASIN, Special Report by Oregon State University Extension Project [hereinafter OSU REPORT], *available at* http://eesc.oregonstate.edu/agcomwebfile/edmat/html/sr/sr1037/report.pdf.

13. The Klamath is a marginal agricultural area, lacking the large corporate farms found in the Great Plains, California and the Midwest. In 1997, the average net return per farm was $36,904.00 or about $34.00 per acre. More than one third of the farms had a net average loss of $19,139. These figures are taken from ERNIE NIEMI ET AL., ECO NORTHWEST, COPING WITH COMPETITION FOR WATER 12 (2001), *available at* http://www.salmonandeconomy.org/pdf/klamathwater.pdf (last visited Mar. 3, 2003) [hereinafter COPING WITH COMPETITION].

14. This article reflects events through mid-November, 2002. Many legal and political initiatives still in progress, together with the course of natural events, may dramatically alter the situation in the basin.

That report's conclusion, that the biological opinions which led to the irrigation cut-off did not have a sound scientific basis,[15] proved explosive.

The Klamath crisis and its aftermath provide an important case study of the difficulty of simultaneously addressing both the long history of inefficient irrigation and ecosystem degradation in the West and the modern problems many rural Western areas face in the transition from a colonial commodity production economy to a modern, globally-integrated economy.[16] The Klamath is a classic degraded, unsustainable basin, exhibiting all the environmental and economic woes of the "new" West. It must be re-envisioned as a different landscape, one which strikes a new, dynamic balance between human use of the land's resources and maintenance of the ecosystem's historic functions.

The ESA has been widely regarded as an important catalyst, with the ability to convince states and local populations to adjust to the new reality of societal support for environmental protection. The Klamath story illustrates the Act's limits as a catalyst of local change. The ESA cannot easily force changes in state water law, or in the other areas of state and federal law that could help bolster the status of dwindling species. It can encourage the desire to change, but even in the face of crisis it does not necessarily provide sufficient motivation to accomplish change.

This article explores the catalyst strategy, and possible alternatives, through the lens of the many narratives to which the events of 2001 lend themselves.[17] The drought summer of 2001 might ultimately be seen as an anomaly, a small perturbation in a remote, non-urban area that has historically been able to support both irrigation and wildlife.[18] But as

15. NATIONAL RESEARCH COUNCIL, INTERIM REPORT FROM THE COMMITTEE ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN, SCIENTIFIC EVALUATION OF BIOLOGICAL OPINIONS ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN 2 (2002), *available at* http://www.nap.edu/books/0309083249/html/ (last visited March 12, 2003) [hereinafter NRC INTERIM REPORT].

16. *See generally* THOMAS MICHAEL POWER AND RICHARD N. BARRETT, POST-COWBOY ECONOMICS: PAY AND PROSPERITY IN THE NEW AMERICAN WEST (2001); THOMAS MICHAEL POWER, LOST LANDSCAPES AND FAILED ECONOMIES: THE SEARCH FOR THE VALUE OF PLACE (1996); Thomas Michael Power, *The Changing Economic Role of Natural Landscapes in the West: Moving Beyond an Extractive and Tourist Perspective*, 31 ENVTL. L. REP. 10438 (2001).

17. We use the definition of narrative or story employed in ANTHONY AMSTERDAM & JEROME BRUNER, MINDING THE LAW 141 (2000) ("Narrative . . . differs from purely logical argument in that it takes for granted that the puzzling problems with which one deals do not have a single 'right' solution—one and only one answer that is logically permissible.").

18. The return of El Nino produced a wet 2001-2002 winter. In mid-December 2001, the Bureau of Reclamation released water for winter field flooding. Todd Kepple, *Bureau Sends Water to Farms*, HERALD & NEWS (Klamath Falls), Jan. 13, 2001. Eagles and the necessary waterfowl to sustain them were abundant in the basin, and normal water deliveries were projected for the summer of 2002. Eric Bailey, *Eagles Back at Winter Home*, L.A. TIMES, Jan. 15, 2002. By early summer, however, one-third less water than expected had flowed into Upper Klamath Lake, making the year nearly as dry as 2001. The Bureau of Reclamation was reducing

demands on the West's water resources grow ever greater, it seems more likely that conflicts between irrigation and environmental protection will recur frequently, punctuated perhaps by occasional wet years of peace.[19] Thus, the plight of the Klamath irrigators can be seen as one of the last stands of the West's "Cowboy" economy. Mineral extraction, timber harvesting, livestock grazing and irrigated agriculture sustained the West until the 1970s, but these activities now generate an ever-shrinking percentage of local, state and regional economies. This coldly rational view can be recast as a struggle by an embattled cultural minority to buffer itself against political and economic forces which will inevitably result in its displacement. Native Americans and small Hispanic communities usually assume this role, but economically marginal farmers have increasingly adopted the rhetoric of more traditional minorities to protect their way of life.[20]

Another equally compelling narrative is to see the Klamath conflict as an example of partial, indirect reparations for the remnant Indians in the basin. The history of Indians in the United States had been a tragic one until late nineteenth century reforms laid the foundation for the preservation of Indians on permanent remnants of their traditional or replaced homelands. Indians in the Klamath basin have benefited far less than other tribes, if one can speak of benefits at all, because they were a small,[21] scattered group, directly in harm's way.

The principal narrative of the Klamath Basin conflict depicted in the national media pitted farmers against lowly fish and soaring eagles. The Endangered Species Act was portrayed either as the nation's only effective biodiversity conservation law or as a weapon used by urban environmentalists to cleanse the rural landscape of all human imprint. This narrative makes for good press, but it obscures the subtler, more significant issues. The Klamath Basin, like other Western landscapes, must be shared by humans and non-humans. The issue is not whether sharing should occur but rather how it should evolve in the future.

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river flows and asking farmers to conserve water. Jonathan Brinckman, *Klamath Water Supply Shrinks*, PORTLAND OREGONIAN, July 12, 2002, at A1. In June of 2002, the Bureau released 20,000 acre-feet of water to protect downstream salmon fisheries used by Indian tribes. The Bureau planned to purchase non-project water to continue the deliveries. Ryan Harper, *Feds Send More Water Downstream*, HERALD & NEWS (Klamath Falls), June 20, 2002.

19. The mass deaths of returning Chinook salmon in the fall of 2002, despite a water year that began with great optimism bear out the claim that conflict is far more likely than peace. *See infra* text accompanying note 319-322.

20. *See* A. Dan Tarlock, *Can Cowboys Become Indians? Protecting Western Communities As Endangered Cultural Remnants*, 31 ARIZ. ST. L. J. 539 (1999).

21. The 1990 census reported 2,370 tribal members. Oregon Historical County Records Guide, *Klamath County History, at* http://www.sos.state.or.us/archives/county/cpklamathhome.html (last visited March 5, 2003).

The Klamath narrative we find most compelling goes directly to the source of the problem—the clash of cultures that must be resolved as the arid West confronts its future. Farmers, fishing communities, environmentalists, and Indians are all fighting to protect their ideal of the landscape and their relationship to it. The culture wars are also played out within the federal government as the Bureau of Reclamation and the wildlife agencies fight for supremacy in the basin.

We draw several lessons from the Klamath experience about the relationship between environmental law, science, economics and the sustainability of irrigated agricultural communities in the West. Current agricultural practices in the Klamath Basin are not compatible with ecological protection. The pressing question is how to fairly and equitably manage the transition to a sustainable landscape. The transition poses complex social and scientific problems. First, the deep cultural divides between groups affected by the use of water and lands in the region, and the significant uncertainties about the legal rights and responsibilities of those groups, greatly complicate the necessary transition.[22]

Second, overemphasis on science as the arbiter of the legal, and indirectly of the cultural, disputes has deepened the cultural divide. Science plays a major role in the resolution of environmental disputes because it is often seen as the only potential unifying standard for parties with very different world views. Unfortunately, science often does not eliminate disagreement among opposing parties because of the inherent limitations of the scientific method, the difficulty of adapting science to the demands of environmental regulation, and the law's recognition of nonscientific alternative bases for legitimate decisionmaking.[23] The battle for the high scientific ground is often strongly contested, but it is ultimately not a productive battle, diverting attention from the difficult social choices that must be made.

Third, those choices must be made and implemented through a more comprehensive ecosystem-based approach than is currently available. State and federal agencies must work toward common solutions, and resource use issues (such as water allocation) must be integrated with pollution issues (such as water quality control). The ESA can catalyze,

22. Nature can be a harsh but effective teacher. Even Texas farmers who have overpumped the Ogallala aquifer for years by resisting state regulation of groundwater use have come to realize that not all possible High Plains land can be sustainably farmed. *See* Douglas Jehl, *Saving Water, U.S. Farmers are Worried They'll Go Dry*, N. Y. TIMES, Aug. 28, 2002, at A1.

23. The widespread acceptance of science does not alone ensure its privileged position. The tension between expertise and democratic control traces back to Plato and Aristotle, but it is a particularly troublesome problem for environmental law, which is an unstable mix of the rational and emotional. Not surprisingly, modern students of political legitimacy, such as John Rawls and Jergen Habermas, have reached radically different views on the role of experts in democratic decisionmaking. *See* Walter F. Baber & Robert V. Bartlett, *Toward Environmental Democracy: Rationality, Reason, and Deliberation*, 11 KAN. J. L. & PUB. POL'Y 35 (2001).

but ultimately cannot force, a move to a more comprehensive approach that can produce a more sustainable landscape. The Klamath story shows that the ESA's narrow focus, and the crisis mentality under which it is often implemented, encourage piecemeal and short-term administrative and legislative responses. Those responses do not address the deeper problem: that western society rests on a foundation of consumption of environmental capital. We need new institutions to respond to both the biodiversity and the cultural survival issues raised by resource conflicts like that in the Klamath. The ESA alone has not succeeded in building such institutions.

Fourth, addressing conflicts like this one over limited resources is difficult and painful. Not surprisingly, delay and avoidance are common tactics. The Klamath experience, though, teaches us that delay only sharpens the conflicts, making them more difficult to resolve when they can no longer be avoided. That lesson applies to irrigators as well as government agencies. Although some level of crisis may be necessary to induce any change in the regulatory status quo, courting a train wreck is not a strategy either side should see as appealing. In the short term, irrigators in the Klamath Basin may believe they are winning the battle. In the long run, however, by refusing to give ground gradually they may be setting up a conflict in which they cannot hope to prevail. Unless irrigated agriculture can find a way to integrate itself into the changing landscape of the new West, it may be overrun by growing societal demands for water for cities and environmental restoration.

I
SETTING THE STAGE

A. The Klamath River Basin

1. Geography

The Klamath Basin is distinguished by its remoteness from population centers, its aridity, and the intensity of the competing demands for its limited water supplies. The area's remote location made it one of the last parts of the Pacific Northwest investigated by trappers[24] and one of the last areas opened to white settlement. During World War II, the United States chose the California portion of the isolated region as the site of a Japanese-American internment camp. Today, the largest

24. Peter Skene Odgen led the first trapper party into the area between 1826–1827. *See* JEFF LALANDE, FIRST OVER THE SISKYOUS: PETER SKENE OGDEN'S 1826-1827 JOURNEY THROUGH THE OREGON- CALIFORNIA BORDER (1987).

community in the Basin is Klamath Falls, Oregon, a city of less than 20,000.[25]

The Klamath River originates in Upper Klamath Lake, a broad shallow lake fed by snow melt from high in the Cascade Mountains of Oregon. Augmented by the flow of the Scott, Trinity, and Salmon Rivers which join it in California, the Klamath flows out to the Pacific Ocean within the boundaries of Redwood National Park. The Klamath watershed covers a vast, remote region in south central Oregon and extreme Northern California. The watershed consists of two regions of nearly equal size but very different geography.

The Lower Klamath Basin, lying entirely in California, is dominated by timber-covered slopes and mountainous wilderness areas. The Klamath River and its tributaries in the Lower Basin once teemed with coho and chinook salmon,[26] allowing the Indians along the river to harvest a million pounds annually.[27] Commercial harvest began in the early 1800s and continued until the mid-1990s, when the severely declining coho fisheries were essentially closed.[28] Recreational harvest of coho salmon in the Klamath River and its tributaries continued until the coho were listed under the ESA in 1997. A small tribal coho harvest, affecting about 70 naturally spawning fish per year, continues in spite of the ESA.[29] Recreational fishing for chinook salmon is still permitted in the Lower Klamath Basin.[30]

25. CITY OF KLAMATH FALLS, OREGON, *at* http://www.ci.klamath-falls.or.us/ (last visited April 7, 2003).

26. The Klamath Basin was "the third most important salmon producing river system in the nation, producing an estimated 660,000 to 1,100,000 million adult fish annually." *Klamath Basin Water Issues and the Lower Klamath Economy, Hearings Before the House Resources Comm.* (2001) (statement of William F. "Zeke" Grader, Jr. on Behalf of the Pacific Coast Federation of Fishermen's Associations), *available at* http://resourcescommittee.house.gov/resources/107cong/fullcomm/2001june16/grader.htm (last visited Mar. 13, 2003).

27. TUPPER ANSEL BLAKE, MADELEINE GRAHAM BLAKE, AND WILLIAM KITTREDGE, BALANCING WATER: RESTORING THE KLAMATH BASIN 35 (2000) [hereinafter BALANCING WATER].

28. Threatened Status for Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) of Coho Salmon, 62 Fed. Reg. 24,588, 24,593-94 (May 6, 1997). NMFS regulations allow incidental take of coho in chinook-directed fisheries off California consistent with Pacific Fishery Management Council regulations. Restrictions Applicable To Threatened Marine And Anadromous Species, 50 C.F.R. § 223.204 (2003). Coho are not to be retained, but are impacted by "hook and release." National Marine Fisheries Svc., Biological Opinion: Klamath Project Operations 29 (May 31, 2002) [hereinafter NMFS 2002 BiOp], *available at* http://www.mp.usbr.gov//mp150/envdocs/kbao/KpopBO2002FinalMay31.pdf (last visited March 4, 2003).

29. NMFS 2002 BiOp, *supra* note 28, at 29.

30. CAL. CODE REGS. Tit. 14, 2002 Sport Fishing Supplemental Regulations (Freshwater and Marine Fishing) § 7.50(b)(91.1).

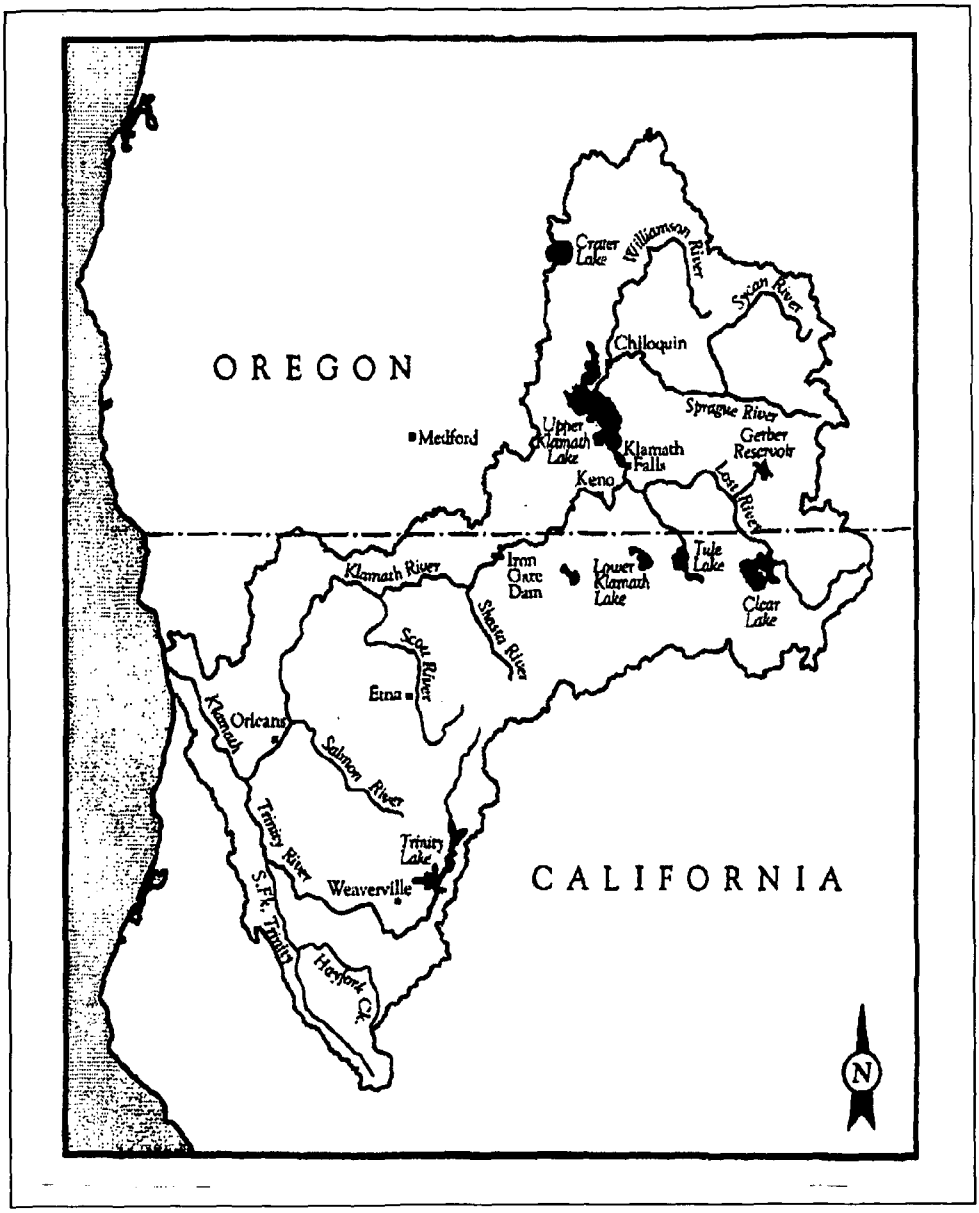

Figure 1. The Klamath River Watershed. Reprinted with permission from Interim Report from the Committee on Endangered and Threatened Fishes in the Klamath River Basin, Scientific Evaluation of Biological Opinions on Endangered and Threatened Fishes in the Klamath River Basin. Copyright 2002 by the National Academy of Sciences. Courtesy of the National Academies Press, Washington, D.C.

The Upper Basin, site of the conflicts of 2001, is often referred to simply as the Klamath Basin. It straddles the border between Oregon and California. Although it includes high peaks in the Cascade Mountains that receive more than 40 inches of precipitation annually,[31] the Upper Basin's dominant feature is a flat agricultural valley lying just west of the ridge that marks the beginning of the forbiddingly arid Great Basin of the Intermountain West. The valley gets little rainfall; water demand exceeds supply about seven out of every ten years.[32] Agriculture is made even more challenging by the area's high elevation and short growing season. Because of the severe climatic conditions, none of the lands in the region fall in the U.S. Department of Agriculture's highest productivity class (Class I).[33]

Despite its aridity, the valley portion of the Upper Basin was once a vast system of interconnected shallow lakes and wetlands. Evidence of this history is perpetuated in place names like Tule Lake, but the vast majority of the region's wetlands were long ago drained for conversion to agriculture.[34] Upper Klamath Lake is the largest remnant of that wetland glory. It covers a vast surface area, making it the largest lake in Oregon,[35] and reportedly the largest freshwater lake in the West.[36] But it is extremely shallow, as much marsh as lake, averaging only eight feet deep when full, and falling to as low as three feet on average in a dry year.[37] Other large lakes and marshes remaining in the Upper Basin include Lower Klamath, Tule, and Clear Lakes.

2. *Wildlife*

The marshlands of the Upper Basin historically supported robust populations of two large, long-lived fish called qapdo and c'wam by the

31. Kenneth Rykbost and Rodney Todd, *An Overview of the Klamath Reclamation Project and Related Upper Klamath Basin Hydrology*, 47 *in* OSU REPORT, *supra* note 12.

32. *See Willing Sellers* (editorial), PORTLAND OREGONIAN, Aug. 12, 2001, at F4. Agriculture is the only important consumptive use of water in the basin, accounting for more than 95% of consumptive water use. *See* U.S. DEPT. OF INTERIOR, BUREAU OF RECLAMATION, FINAL BIOLOGICAL ASSESSMENT: THE EFFECTS OF PROPOSED ACTIONS RELATED TO KLAMATH PROJECT OPERATION (APRIL 1, 2002 - MARCH 31, 2012) ON FEDERALLY-LISTED THREATENED AND ENDANGERED SPECIES 25 (Feb. 25, 2002) [hereinafter FINAL 2002 BIOLOGICAL ASSESSMENT], *available at* http://www.mp.usbr.gov/kbao/docs/Final_Biological_Assessment_02-25-02.pdf.

33. Harry Carlson et al., *Soil Resources in the Klamath Reclamation Project*, 155 *in* OSU REPORT, *supra* note 12.

34. Before white settlement, there were about 185,000 acre of wetlands in the basin; today only 36,000 remain. COPING WITH COMPETITION, *supra* note 13, at 19.

35. Harry Carlson, et al., *Soil Resources in the Klamath Reclamation Project, in* OSU REPORT, *supra* note 12, at 153.

36. BALANCING WATER, *supra* note 27, at 26.

37. George Woodward and Jeff Romm, *A Policy Assessment of the 2001 Klamath Reclamation Project Water Allocation Decisions, in* OSU REPORT, *supra* note 12.

Klamath Indians, for whom they provided a major food source.[38] The Lost River and shortnose suckers, as they are now known, once inhabited all the major lakes of the Upper Basin and their tributaries,[39] supporting multiple canneries.[40] These fish remained the target of a recreational as well as a tribal fishery until catches sharply declined in the 1980s.[41]

Fish have been the focus of the recent Klamath conflict, but the most striking biotic feature of the Klamath marsh has always been the astonishing array of birdlife. In the early 20th century, the abundance of birdlife made the Klamath marsh a prime site for the wholesale slaughter of birds by market hunters. It also became one of the first places the federal government took concrete steps to respond to the dual pressures of market hunting and the draining of marsh habitat. The Lower Klamath Lake National Wildlife Refuge, created by Theodore Roosevelt in 1908, was one of the earliest refuges in the West. It was also one of the first to be created on land with agricultural potential, and the first to fall within a federal reclamation district.[42]

That combination turned out to be a disaster for the wildlife. A drainage district organized with the help of the Reclamation Service shut the Lower Klamath Lake area off from the Klamath River, turning it into a peat and alkali desert. But what technology had destroyed, technology could recreate. In the early 1940s, a tunnel was built to allow irrigation return flows from the Tule Lake area to flow to the Lower Klamath wetlands, restoring the marshes. The birds returned in force, so that by the mid-1950s the U.S. Fish and Wildlife Service described the Klamath Basin as supporting the greatest concentration of waterfowl in North America and probably the world.[43]

By today's standards,[44] the birds of the Klamath Basin are impressive enough to draw hundreds of thousands of visitors each year.[45] There are now four National Wildlife Refuges in the area, managed together as the

38. The suckers grow up to two feet long, and live up to 40 years. *See* BALANCING WATER, *supra* note 27, at 137, 39; 53 Fed. Reg. 27,130, 27,131 (July 18, 1998).

39. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 21.

40. *See* U.S. Fish & Wildlife Service, Biological/Conference Opinion Regarding the Effects of Operation of the U.S. Bureau of Reclamation's Proposed 10-Year Operation Plan for the Klamath Project and Its Effect on the Endangered Lost River Sucker (*Delistes luxatus*), Endangered Shortnose Sucker (*Chamistes brevirostris*), Threatened Bald Eagle (*Haliaeetus leucocephalus*) and Proposed Critical Habitat for the Lost River and Shortnose Suckers 35 (2002) [hereinafter FWS 2002 BiOp], *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Final_2002_KPOP_BO.pdf.

41. 53 Fed. Reg. at 27,131.

42. BALANCING WATER, *supra* note 27, at 77.

43. *Id.* at 79.

44. William Kittredge reminds us that only a few generations ago our ancestors were accustomed to see as ordinary "wildlife spectacles" that are now nearly beyond our imaginations. *Id.* at 4.

45. *See id.* at 128 (noting that Tule Lake NWR had nearly 200,000 visitors in 1995, while Lower Klamath NWR had about 164,000).

Klamath Basin Refuge Complex. Four-fifths of the birds that migrate along the Pacific Flyway stop at the Klamath Basin. The best known visitors are bald eagles; the Klamath Basin harbors the largest wintering population in the continental United States,[46] and one fourth of Oregon's nesting bald eagles.[47]

3. *Environmental Problems in the Basin*

Well before the 2001 crisis, both the Upper and Lower Klamath Basins were experiencing environmental stress. In her landmark book, *Silent Spring*, Rachael Carson linked a large bird kill in 1960 in Tule Lake and Lower Klamath Lake Refuges to the presence of agricultural chemical residues. She prophetically observed that "[a]ll of the waters of the wildlife refuges established on .... [Upper Klamath and Tule Lakes] represent the drainage of agricultural lands. It is important to remember this in connection with recent happenings."[48] Forty years after the publication of Silent Spring, the Upper Basin included sites with "some of the worst water quality in the state."[49] Naturally nutrient-rich, Upper Klamath Lake had become hypereutrophic,[50] leading to massive algal blooms, largely due to agricultural runoff.[51] In 1986, oxygen levels in the upper Klamath River fell low enough to kill thousands of fish,[52] prompting the Klamath Tribe to close its c'wam fishery.[53] The shortnose and Lost River suckers were both listed as endangered in 1988, after "drastic declines" in their populations were observed and a scientific report concluded that there had been "no significant recruitment of young" into the populations for 18 years.[54] Additional Upper Klamath

46. Jeffrey A. Manning & W. Daniel Edge, *Relationships Between Bald Eagle Biology and Federal Environmental Decisions on the Klamath Reclamation Project* 286, *in* OSU REPORT, *supra* note 12. Eagles from Alaska to Southern California travel to the Klamath Basin to winter. *Id.* at 290-91.

47. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 15-16.

48. RACHAEL CARSON, SILENT SPRING 49 (1962).

49. OREGON PROGRESS BOARD, OREGON STATE OF THE ENVIRONMENT REPORT 178 (2000), *available at* http:// www.econ.state.or.us/opb/soer2000/ch4_4.pdf.

50. Hypereutrophic lakes receive very high levels of nutrient inputs, leading to extreme algal blooms, which in turn result in fish kills. Hypereutrophic lakes are "unstable, unsustainable and cannot be rehabilitated, unless drastic measures are undertaken." DIV. OF TECH., INDUS., AND ECON., UNITED NATIONS ENV'T PROGRAMME, PLANNING AND MANAGEMENT OF LAKES AND RESERVOIRS: AN INTEGRATED APPROACH TO EUTROPHICATION, *available at* http://www.unep.or.jp/ietc/Publications/TechPublications/TechPub-11/1-3-2a.asp (last visited Mar. 5, 2003).

51. *See* Woodward et al., *supra* note 37, at 7.

52. BALANCING WATER, *supra* note 27, at 135.

53. *See* Kandra v. United States, 145 F. Supp. 2d 1192, 1197 (D. Or. 2001).

54. 53 Fed. Reg. 27,130, 27,131 (July 18, 1988). Interestingly, in light of recent events, no one submitted comments opposing the listing. *See id.* at 27,131. It is also interesting to note that both Oregon and California listed the suckers under their state endangered species laws prior to federal listing. *See id.* at 27,132. In 1991 and 1993 the suckers experienced successful recruitment,

Lake fish kills occurred in 1995, 1996, and 1997.[55] During the same period, siltation, algal blooms, and agricultural pollution made the Tule Lake Refuge unsuitable for fish and waterfowl.[56]

The Lower Basin also showed signs of environmental trouble well before the irrigation shutoff of 2001. The Klamath River in California has been listed as water quality impaired under the Clean Water Act since 1993. It suffers from both high summer temperatures and excessive nutrient loading.[57]

Salmon, the best known and most important fish of the Lower Basin, have been struggling to survive for years. Coho in the Southern Oregon/Northern California evolutionary significant unit,[58] a group which includes runs in the Rogue and Eel Rivers as well as the Klamath, were listed as threatened in 1997.[59] From historic levels of 150,000 to 400,000 spawning salmon annually, these stocks had declined to only about 10,000 wild fish.[60] Two years later, the Klamath mainstem from its mouth to Iron Gate Dam just below the Oregon border was designated as critical habitat.[61] Only a small population of wild coho remain in the Klamath system, spawning primarily in the small tributaries, which are less degraded than the large ones.[62] Other fish in the lower Klamath area are also in decline, although none are yet listed.[63]

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but fish kills in the late 1990s appear to have offset the population benefits. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 39-40.

55. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 17.

56. BALANCING WATER, *supra* note 27, at 149.

57. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 36.

58. "Evolutionarily significant unit" (ESU) is the term NMFS uses for distinct population segments of salmon, that is for stocks that qualify for listing as species under the ESA. *See* 16 U.S.C. § 1532(16) (2000); Policy on Applying the Definition of Species Under the Endangered Species Act to Pacific Salmon, 56 Fed. Reg. 58,612 (Nov. 20, 1991). To qualify as an ESU a stock "must be substantially reproductively isolated" from other stocks of the same species, and it must "represent an important component in the evolutionary legacy of the species." *Id.*

59. 62 Fed. Reg. 24,588 (May 6, 1997).

60. *Id.*

61. 64 Fed. Reg. 24,049 (May 5, 1999).

62. NRC INTERIM REPORT, *supra* note 15, at 17.

63. NMFS includes the fall-run chinook near the mouth of the Klamath in the Southern Oregon/California Coastal evolutionarily significant unit (ESU), which is considered not to warrant ESA listing because of reasonably high escapement in Oregon streams. *See* Endangered and Threatened Species: Threatened Status for Two Chinook Salmon Evolutionarily Significant Units (ESUs) in California, 64 Fed. Reg. 50,394, 50,404 (Sept. 16, 1999). Coastal chinook runs south of the Klamath, which are closely enough related that NMFS originally classified them with the more northerly runs, are extremely depressed and have been listed as threatened. *Id.* at 50,934, 50,412; *see* 50 C.F.R. § 223.102(a)(21). Upstream of the confluence with the Trinity River, spring- and fall-run chinook are both classified to the Upper Klamath and Trinity River ESU. Spring-run chinook, once the dominant type, are nearly gone; several runs are extinct, and the remaining populations are isolated and small. 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

B. The Cultural Landscape

The Upper Basin is an area of relatively small farms, ranches and towns characterized by a long-established irrigation culture[64] that has been struggling economically. Like the northern Great Plains, it did not share in the boom times experienced by much of the "New" West.[65] By the late 1990s, the human population was declining and aging, unemployment rates were high, and per capita income was below the national average.[66]

The region's precarious economic position is perhaps best illustrated by the fact that the largest share of household income is imported from outside the Basin through government transfer payments, dividends, and wages from jobs outside the area, rather than locally produced.[67] Within the Upper Klamath basin, agriculture, forest products, and public administration (government employment and federal and state payments to local governments) are the largest generators of jobs and income.[68] Agricultural income has fallen along with prices for agricultural commodities.[69]

Farming remains an important part of the basin's self-identity despite the global forces that continue to undermine its economic vitality. The basin has 2,239 farms, 1,744 of which are irrigated.[70] Farm and ranch families have more than money at stake. Many of them have chosen the farming life knowing that they could make more money if they moved elsewhere and pursued other livelihoods. They have a strong preference

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Critical Habitat in California, Oregon, Washington, Idaho, 63 Fed. Reg. 11,482. 11,493 (Mar. 9, 1998). Fall-run chinook frequently fail to meet escapement goals NMFS describes as "modest," and face habitat blockages as well as severe habitat degradation. *Id.* at 11,493. Nonetheless, fall-run populations appear to be stable or increasing slightly, although an abundance of hatchery fish may be masking a decline in natural ones. *Id.* On that slender basis, NMFS has determined that the Upper Klamath-Trinity chinook as a whole do not warrant listing. *Id.* A petition has been filed seeking listing of the green sturgeon in the Klamath, Sacramento, and Rogue River systems. NMFS missed the deadline to respond to the petition, leading to yet another lawsuit. *See* Ryan Harper, *Sturgeon Lawsuit Filed*, HERALD & NEWS (Klamath Falls), Nov. 15, 2002.

64. *See* NATIONAL RESEARCH COUNCIL, A NEW ERA FOR IRRIGATION 20-45 (1996) (concluding that irrigated agriculture is both an industry and a culture).

65. *See* PETER D. NICHOLS ET AL., WATER AND GROWTH IN COLORADO: A REVIEW OF LEGAL AND POLICY ISSUES 1-4 (2001).

66. *See* Denise Lach *et al.*, *Effects on Project-Area Communities*, *in* OSU REPORT, *supra* note 12, at 184.

67. Bruce Weber et al., *Upper Klamath Basin Economy*, *in* OSU REPORT, *supra* note 12, at 219-20.

68. *See id.* at 219. The next section discusses the significance of the current agricultural base.

69. *See* COPING WITH COMPETITION, *supra* note 13, at 15.

70. COPING WITH COMPETITION, *supra* note 13, at 9. Of those, 1400 are irrigated by the Klamath Project. *See* Jonathan Brinckman, *Klamath Water Supply Shrinks*, PORTLAND OREGONIAN, July 12, 2002, at A1. The irrigated acres represent only about one fourth of the total farm acreage, but they are the most productive acres. Weber et al., *supra* note 67 at 381, 398.

for the farming lifestyle, which they do not consider fungible with money. As one farmer put it, "I feel like my life is your target . . . I am going to fight for my lifestyle."[71] For many, this attachment to farming is tied to a sense of heritage and obligation to preceding and succeeding generations.[72]

The Lower Basin, together with much of the coast around it, has experienced its own economic woes. According to a fishing advocacy group, closure of the ocean salmon fisheries has cost the coastal economy some 4,000 jobs and $78 million annually for the last decade.[73] Like the farmers, the fishing communities believe that more than money is at stake; they too seek to continue pursuing their chosen livelihoods and lives.

The Native American tribes of the Upper and Lower Basin have never been part of the economic or social mainstream, but they are important to the story of the 2001 water crisis. Like farmers and white fishing communities, the tribes have lifestyle and heritage values, as well as purely economic values, at stake. The tribes face great obstacles to becoming equal players with the farmers in shaping the basin's future.

The history of Indians in the United States has been a tragic one, although late nineteenth century reforms laid the foundation for their survival on remnant homelands. Indians in the Klamath basin benefited far less from these reforms than other tribes because they were a small group,[74] scattered and in harm's way. In the Upper Basin, the Klamath Tribe was given a reservation by the 1864 Treaty of Council Grove. To further the policy of white settlement, the Modoc Indians of northern California were forced to share the reservation with the Klamath.[75] Neither group was happy. The Klamaths didn't want the irrigation,[76] and the Modocs didn't want to live with the Klamaths. Futile attempts to force the Modocs to remain on the reservation led to a brief war in 1871. The Modocs holed up in the border lava beds. They managed to kill General Canby before they were subdued and their leaders hanged. The

71. Klamath Basin Crisis, *Klamath River Basin Fisheries Task Force met in Klamath Falls with Hatfield Upper Klamath Basin Working Group*, (Oct. 16, 2002), *at* http://klamathbasincrisis.org/articles/fisheryhatfield101602.htm.

72. *See* COPING WITH COMPETITION, *supra* note 13, at 16.

73. Glen Spain, *Public Property Rights Must Prevail*, THE ENVTL. FORUM, March/April 2002, at 50.

74. The 1990 census reported 2,370 tribal members. Oregon State Archives, Klamath County History, *at* http://arcweb.sos.state.or.us/county/cpklamathhome.html (last visited March 5, 2003).

75. *See* FRANCIS PAUL PRUCHA, THE GREAT WHITE FATHER: THE UNITED STATES GOVERNMENT AND THE AMERICAN INDIANS 536-38 (1984).

76. In 1860, "the Klamath . . . told federal authorities that their forefathers had managed to live without agriculture and that they could as well, if whites would only leave them alone." R. DOUGLAS HURT, INDIAN AGRICULTURE IN AMERICA: FROM PREHISTORY TO THE PRESENT 108 (1987).

Modoc War opened the area to white settlement. The tribes' footprint on the landscape diminished almost to the point of disappearance[77] as their federal Indian law rights were ignored by the Department of Interior, which favored reclamation over tribal survival and development.[78] Today, incomes in the Klamath Tribe are among the lowest in Oregon.[79]

In the Lower Basin, the Klamath River flows through the Yurok Reservation and the Trinity River flows through the Hoopa Valley Reservation just before it discharges into the Klamath. The original Yurok Reservation was created in 1855, and the Hoopa Valley Reservation in 1864.[80] Federal reserved fishing rights for ceremonial, subsistence and commercial purposes were created with the reservations.[81] The Yurok and Hoopa tribes were once "the wealthiest of all California Indians in terms of disposable resources."[82] Salmon provided that wealth,[83] and formed the center of tribal culture.[84] The tribes of the lower Klamath, aided by the remoteness of their region, withstood white settlement of California far better than most other tribes.[85] Nonetheless, today both their economies and their cultures are in disarray. The vast majority of the Yurok, for example, live below the poverty level; four-fifths are unemployed, and nearly one-half of their homes do not have electricity or phone service.[86]

The human conflict in the Klamath Basin, in sum, has pitted farm communities and the farming way of life against fishing communities and tribes, each with their own dearly held cultural traditions. It is a struggle for cultural supremacy in which environmentalists have been only peripheral combatants.

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77. The Klamath reservation was formally terminated in 1954, at the height of the termination movement, to allow access to forest lands on the reservation. Klamath Termination Act, 25 U.S.C. § 564.

78. *See* Harold Shepherd, *Conflict Comes to Roost! The Bureau of Reclamation and the Federal Indian Trust Responsibility*, 31 ENVTL. L. 901 (2001).

79. *See* Michael Milstein, *Fish Center of Swirling Crisis Series: High and Dry in the Klamath*, PORTLAND OREGONIAN, May 8, 2001, at A1.

80. *See* Department of Interior Solicitor's Memorandum M-36979, Fishing Rights of the Yurok and Hoopa Valley Tribes, Oct. 4, 1993, at 4-5, *available at* http://www.doi.gov/sol/M36979.pdf (last visited Mar. 13, 2003). The two were combined and extended in 1891, because of doubts about their legal validity, and partitioned into their current form in 1988. *Id.* at 5-6.

81. *See id.* at 14-15; United States v. Eberhardt, 789 F.2d 1354, 1359 (9th Cir. 1986).

82. ARTHUR F. MCEVOY, THE FISHERMAN'S PROBLEM: ECOLOGY AND LAW IN THE CALIFORNIA FISHERIES, 1850-1980 at 25 (1986).

83. *See id.* at 25-26.

84. For a vivid description of the historical significance of salmon in the culture of the Hoopa, see Anne M. Hartridge, *Salmon Medicine: Federal Trust, the ESA, and the Trinity River*, 23 ENVIRONS 107, 110-112 (1999).

85. MCEVOY, *supra* note 82, at 42, 51-61.

86. *See* John M. Glionna, *Rural Tribe Gives New Meaning to 'Wireless,'* PORTLAND OREGONIAN, Aug. 12, 2001, at A25, *cited in* Robert J. Miller, ECONOMIC DEVELOPMENT IN INDIAN COUNTRY: WILL CAPITALISM OR SOCIALISM SUCCEED?, 80 OR. L. REV. 757, 759 n.3 (2001).

C. The Klamath Project

The early white settlers of the Upper Basin were livestock ranchers who cut wild hay from the lakeshores to feed their stock in the lean seasons.[87] When the livestock population outgrew that natural supply, the settlers began building irrigation works so that they could grow more hay and produce row crops. The earliest irrigation projects were constructed privately by landowners for their own use. By the late 1880s, private irrigation works served several thousand acres.[88]

In 1902, the federal government jumped enthusiastically into the irrigation business with passage of the Reclamation Act.[89] To further the Reclamation Act's goal of promoting viable family farms, federal funds were initially used to help existing, struggling irrigation communities. The Klamath Project, authorized in 1905,[90] was part of the first wave of federal reclamation projects. Construction began in 1906, leading to the first water deliveries in 1907.[91] Existing private irrigation works were folded into the Project.[92] Despite their designation as National Wildlife Refuges, Tule Lake and Lower Klamath Lake were substantially drained so that their lands could be "reclaimed" for agriculture in connection with project construction.[93] Reclaimed lands were opened for homesteading periodically between 1917 and 1949.[94]

The Klamath Project diverts about 1,345,000 acre feet to irrigate approximately 240,000 acres in Oregon and California. An additional 175,000 acres in the Upper Klamath Basin are irrigated by private irrigation works upstream of the Project.[95] The Project, however, irrigates the best lands and the highest-value crops in the Upper Basin.[96] Statistics

87. BALANCING WATER, *supra* note 27, at 51.

88. *Id.* at 52.

89. Ch. 1093, 32 Stat. 388 (codified at scattered sections of 43 U.S.C.) The leading history of the Reclamation program is DONALD J. PISANI, WATER AND AMERICAN GOVERNMENT: THE RECLAMATION BUREAU, NATIONAL WATER POLICY, AND THE WEST 1902-1935 (2002).

90. See Act of Feb. 9, 1905, 33 Stat. 714.

91. Peter G. Scott, *State Certification of Inchoate Water Rights on the Upper Lost River: A Prelude to Klamath Adjudication*, 13 J. ENVTL. L. & LIT. 475, 487 (1998).

92. Reed Marbut, *Legal Aspects of Upper Klamath Water Allocation*, *in* OSU REPORT, *supra* note 12, at 80.

93. Tule Lake historically ranged from 55,000 to 110,000 acres, depending upon the year, while Lower Klamath Lake ranged from 85,000 to 94,000 acres, much of it marsh rather than open water. Today, Tule Lake covers only about 10,000 to 13,000 acres, while Lower Klamath Lake covers a mere 4,700 acres. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 22.

94. Homesteaders were required to pay construction charges ranging from $45 to $90 per acre. U.S. DEPT. OF THE INTERIOR, BUREAU OF RECLAMATION, KLAMATH PROJECT HISTORIC OPERATION 6 (Nov. 2000), *available at* http://www.mp.usbr.gov/kbao/docs/Historic%20Operation.pdf [hereinafter KLAMATH PROJECT HISTORIC OPERATION].

95. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 26.

96. BILL JAEGER, ALTERNATIVE APPROACHES TO WATER MANAGEMENT IN THE KLAMATH BASIN 1 (2001) (draft report), *available at* http://www.klamathbasincrisis.org/pdf-files/alternatives.pdf (last visited Mar. 3, 2003).

are not available for the Project or the Upper Klamath Basin as a whole, but just over half of the irrigated acres in Klamath County, Oregon, produce harvestable crops, mainly hay and alfalfa. The rest of the irrigated land is livestock pasture. The most valuable cash crop is potatoes, but potato acreage in the basin has been declining. Potatoes are a thirsty crop, using 4.1 acre feet of water per growing season compared to 3.6 acre feet for most other crops.[97] Water use in the Klamath Project is inefficient by western irrigation standards; two acre feet are lost for every acre foot actually consumed by crops.[98]

Unlike most reclamation projects, the Klamath is not back-stopped by a carry-over storage reservoir. Upper Klamath Lake serves as the main storage facility for the Klamath Project, typically supplying between 350,000 to 450,000 acre feet annually to irrigate Project lands.[99] However, because it is so shallow, Upper Klamath Lake cannot store surplus water during wet years to buffer the system in critically dry years.[100] Thus, unlike many Reclamation projects, the Klamath Project is at the mercy of the weather every year; a single dry year can threaten water supplies. The pre-project surface elevation of Upper Klamath Lake varied from a maximum of 4143 feet above sea level to a minimum of about 4140 feet. Operation of the Project has brought Upper Klamath Lake as low as 4137 feet.[101] That difference may seem small, but it drastically reduces wetland habitat at the lake's margins. At 4140 feet, some forty percent of the maximum potential wetland area is inundated, but at 4137 feet all but three percent is dry.[102]

Link River Dam, located at the head of the Klamath River, regulates flows out of Upper Klamath Lake. The A Canal is the major irrigation diversion, taking water from Upper Klamath Lake for delivery to project lands.[103] There are no fish screens at Link River Dam or A Canal; those facilities entrain a large proportion of the endangered sucker larvae and juveniles each year.[104]

Return flows from irrigation in the Tule Lake area flow to the Tule Lake NWR, where they irrigate refuge lands leased for farming. Return flows from those lands pass via the Tule Lake Tunnel to Lower Klamath

97. COPING WITH COMPETITION, *supra* note 13, at 10.

98. *Id.* at 11. The Western Water Policy Review Advisory Commission estimated that western irrigated agriculture consumed about 54% of all withdrawals. WESTERN WATER POLICY REVIEW ADVICORY COMMISSION, WATER IN THE WEST: CHALLENGE FOR THE NEXT CENTURY 2-24 (1998), *available at* http://www.den.doi.gov/wwprac/reports/final.htm (last visited Mar. 13, 2003).

99. *See* FWS 2002 BiOp, *supra* note 40, at 21.

100. *See* Kandra v. United States, 145 F. Supp. 2d 1192, 1197 (D. Or. 2001).

101. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 22.

102. *See id.* at 24.

103. KLAMATH PROJECT HISTORIC OPERATION, *supra* note 94, at 17, 23.

104. *See* FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 28.

Lake NWR, where they again supply leased lands and finally refuge needs. Eventually water that has not been consumed flows back into the Klamath River through the Straits Drain.[105]

The Klamath Irrigation Project is closely intertwined with a hydroelectric project. PacifiCorp owns and operates a series of hydropower dams on the Upper Klamath River, from Link River Dam in the north downstream to Iron Gate Dam, just below the California border. Historically, salmon ranged as far as Upper Klamath Lake, but by 1917 the dams had blocked salmon access to the upper reaches of the Klamath.[106] Although owned by the United States, Link River Dam is operated by PacifiCorp under contract with the Bureau of Reclamation and subject to minimum flow requirements imposed by the Federal Energy Regulatory Commission to protect fish in the lower Klamath River.[107]

The Bureau of Reclamation delivers Project water to irrigation districts and individuals under more than 250 contracts of perpetual duration. The contracts do not specify the amount of water to be delivered; instead, they obligate the U.S. to provide available water for use on specified lands.[108] Water surplus to these contracts flows to lands leased for agricultural purposes within the Lower Klamath and Tule Lake National Wildlife Refuges, and to a small amount of other Project lands. The acts authorizing the Klamath Project required beneficiaries to repay project costs, which they have done, with the exception of the costs of "reserved works facilities."[109] Water users currently pay operation and maintenance fees to the irrigation districts, but nothing for the water they take. Irrigators also enjoy highly favorable prices for the electricity they use to pump water, paying less than 10% of the going commercial rate.[110]

D. The Legal Landscape

Any change in the Klamath will involve reallocation of existing water use entitlements. Thus, the question of who holds the right to use water is crucial. Three fundamental legal questions, easy to state but difficult to answer, underlie the Klamath controversy. First, who owns the water rights in the Klamath basin? Second, regardless of ownership, what authority and obligation does the United States Department of Interior have to curtail water deliveries for the benefit of endangered species?

105. KLAMATH PROJECT HISTORIC OPERATION, *supra* note 94, at 24.

106. *See* FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 34.

107. PacfiCorp's Klamath River hydroelectric operations are currently undergoing FERC relicensing.

108. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 6.

109. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 3.

110. Rykbost, *supra* note 31, at 62 .

And third, under what circumstances, if any, would the U.S. be required to compensate project beneficiaries for resulting injuries?

1. *Water Rights in the Basin*

a. Water Rights Under State Law

Ownership of water rights in reclamation projects varies widely by the date and type of project. Early projects such as the Klamath were basically super-imposed over the existing allocation framework of state water law. Thus, project landowners hold beneficial ownership of the underlying water rights. The federal government delivers the water as trustee for those beneficiaries.[111] State entitlements are subject both to climate variability, which can substantially reduce the amount of water available to junior right-holders, and to federal law, although the current federal administration is quite unwilling to push federal supremacy. Project deliveries are made subject to competing rights, including Indian water rights, other federal statutes such as the Endangered Species Act, and the Bureau's power to manage the project consistent with other objectives of the federal reclamation program.

The basic question remains, what are the project beneficiaries' state law rights? This question cannot be answered with any certainty in the Klamath. The irrigators' rights have never been quantified. In 1905, the United States filed a notice of intent with the state of Oregon "to completely utilize all the waters of the Klamath Basin in Oregon."[112] Almost 100 years later, the Project rights remain unadjudicated, a fact that many outside the western water community may find amazing.

One of the distinguishing features of appropriative water rights is that their precise extent often is not determined until long after they have been claimed and enjoyed. An appropriation is perfected by claiming a quantity of unappropriated water and putting it to beneficial use.[113] The amount of historic beneficial use, not the amount specified in a state

111. Ickes v. Fox, 300 U.S. 82, 95-96 (1937) (The Court's statement that project irrigators are beneficial owners of water and the Bureau of Reclamation is only "a carrier and distributor" does not capture the full extent of the Bureau-project beneficiary relationship. One of us has argued elsewhere that characterizing the federal government as a trustee is a more accurate statement of the relationship. A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 5:81 (1988 with annual updates)); Nevada v. United States, 463 U.S. 110 (1983); *see* Reed D. Benson, *Whose Water Is It? Private Rights and Public Authority Over Reclamation Project Water*, VA. ENVTL. L. J. 363, 385-86 (1997).

112. Notice of Intention to Utilize All Waters of the Klamath Basin (May 19, 1905), *reprinted in* KLAMATH PROJECT HISTORIC OPERATION, *supra* note 95, at C-5.

113. *See* A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 5.66 (1988 with annual updates).

water license or previous decree, is the measure of the right.[114] In effect, water rights are quasi-customary entitlements rather than clearly demarcated property rights.[115] Transforming them into firm, semi-exclusive property requires a watershed or basin-wide adjudication. To complicate matters, federal claims, on behalf of federal land management agencies and Indian tribes, can only be joined if the adjudication is a general one.[116]

Oregon has been slow to quantify water rights in the Klamath Basin. A general adjudication begun in 1976 remains unfinished.[117] Oregon follows a mixed administrative-judicial model, and the scope of that process was not settled until 1994, when the Ninth Circuit held that the state can compel both the United States and Indian tribes to adjudicate their claims in its system.[118] The slowness of the adjudication, which is typical of western water rights general adjudications, reflects the high costs of due process. Each individual claimant must prove her claim, subject to challenge by third parties and the state on a wide range of grounds. Challenges are costly, and the long lead time effectively preserves the status quo. In the 1970s and 1980s, many western states largely accepted the argument that quantifying all federal and state rights in large river basins would lead to efficient basin management. General adjudications, however, have failed to deliver on that promise, and western states are beginning to question the cost-effectiveness of the general adjudication strategy. The adjudication of the Klamath certainly helped precipitate the 2001 crisis rather than avoid it; because federal rights remained unquantified, no limitations were imposed on project irrigators. Essentially, the adjudication process so far has protected the

114. Farmers's Reservoir and Irrigation Co. v. Consolidated Mut. Water Co., 33 P.3d 799 (Colo. 2001). The measure becomes critical when the right is transferred. As Justice Hobbs explained, "Over an extended period of time, a pattern of historic diversions and use under the decreed right for its decreed use at its place of use will mature and become the basis of the water right for change purposes." *Id.* at 807.

115. *See* A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RESOURCES J. 769 (2001); A. Dan Tarlock, *Prior Appropriation: Rule, Principle or Rhetoric?*, 76 N. D. L. REV. 881 (2000).

116. A general adjudication determines all water rights on a stream system. *See* Dugan v. Rank, 372 U.S. 609, 618 (1963). The McCarren Amendment, 43 U.S.C. Section 666, was originally intended to allow states to join the federal government in general adjudications on the assumption that the federal government would claim rights under state law. After the Supreme Court recognized federal non-Indian reserved rights in 1963, the Court ultimately held that federal non-Indian reserved rights could be adjudicated in state proceedings, but that federal law would apply. Indian tribes strongly resisted state jurisdiction, but the Court rejected the argument that only federal courts could resolve questions of federal Indian law. Colo. River Water Conservation Dist. v. United States, 424 U.S. 800, 809-10 (1976).

117. *See* Benson, *supra* note 11, at 210; Marbut, *supra* note 92, at 79.

118. United States v. State of Oregon, Water Resources Dep't., 44 F.3d 758 (9th Cir. 1994).

status quo, allowing other potentially valid, superior rights to be ignored.[119]

b. Federal Reserved Rights

The federal government can claim water rights for environmental purposes in two ways. First, it can claim reserved water rights. Federal reserved rights are mixed appropriative-riparian rights. They have a priority date, like typical appropriative rights, but do not require that water be put to a beneficial use to maintain the right. Like riparian rights, they are based on land ownership rather than water use. Federal reserved rights arise by reason of the creation of an Indian reservation or federal land management unit, such as a National Wildlife Refuge, for a water-related purpose. The Supreme Court has limited federal reserved rights to the minimum amount of water necessary to accomplish the primary purposes of the reservation.[120] The U.S. claims reserved rights for the four National Wildlife Refuges in the Klamath Basin.[121]

The U.S. also claims Indian reserved rights in the basin.[122] The distinguishing feature of aboriginal peoples is that they have an historical and spiritual connection to a specific land base rather than a group identity maintained through language, religion or other cultural ties or fidelity to an abstraction such as a Constitution.[123] The determination of Indian rights in Klamath waters is complicated by the fact that the

119. Reed D. Benson, *Maintaining the Status Quo: Protecting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 ENVTL. L. 881, 902 (1998).

120. United States v. New Mexico, 438 U.S. 696 (1978). Federal reserved rights may be adjudicated in state courts. Colo. River Water Conservation Dist. v. United States, 424 U.S. 800, 809-10 (1976). State courts must apply federal law, but have considerable discretion to shape the law. For example, Idaho has developed a substantial anti-federal reserved rights jurisprudence based on its highest court's "reading" of history. In denying a federal reserved right for a wildlife refuge in the Snake River, the court brushed aside the question of whether water was necessary to fulfill the primary purpose of waterfowl conservation:

> The reclamation projects . . . assured that there would be sufficient water to maintain the islands without a federal reserved right . . . The only way that this reality fails is if there is a catastrophic drought or other natural disaster that threatens to dry up the river. . . . It is inconceivable that President Roosevelt in 1937, in the context of the dust bowl years intended to give preference to waterfowl, or other migratory birds, over people.

United States v. Idaho, 23 P.3d 117, 128-129 (Idaho 2001).

121. *See* Memorandum from Regional Solicitor, Pacific Southwest Region, to Regional Director, Bureau of Reclamation, Mid-Pacific Region, Certain Legal Rights and Obligations Related to the U.S. Bureau of Reclamation, Klamath Project for Use in Preparation of the Klamath Project Operations Plan (KPOP) 3 (July 25, 1995), *reprinted in* KLAMATH PROJECT HISTORIC OPERATION, *supra* n. 95, Appendix A, *available at* http://www.mp.usbr.gov/kbao/docs/Historic%20Operation.pdf.

122. *See id.* at 4-7.

123. This idea is clearly articulated in Australia's recent aboriginal rights jurisprudence. *See, e.g.*, Wik Peoples v. Queensland, 187 CLR 1 (1996).

Klamath reservation was dismembered and disestablished in 1954.[124] The Klamaths were among the victims of the idea that Indians should be fully assimilated into American society, and thus did not need a land base. After the 1954 termination, the federal government eventually bought or condemned almost all remaining tribal lands. When tribal status was restored in the 1980s, no land was returned to the tribe. To complicate matters further, reservation lands had passed to individual tribal members as well as non-Indians under the assimilationist General Allotment Act of 1887.[125]

After the reservation had been "essentially extinguished,"[126] the federal government sought a determination of its rights in the Williamson River, which feeds Upper Klamath Lake. Oregon objected, arguing that the Termination Act of 1954 extinguished any tribal water rights and that any federal claims must be heard in the state adjudication of the Klamath Basin. In *United States v. Adair*, the Ninth Circuit Court of Appeals rejected this interpretation, holding that the Termination Act preserved pre-existing water rights,[127] including an instream flow right necessary to effectuate the hunting and fishing rights reserved to the Klamath by the 1864 treaty creating the reservation.[128] That water right, the court ruled, dated to time immemorial, not merely to the 1864 treaty.[129]

With respect to allotted lands, the court held that Indian successors to the lands had a right to a portion of the tribal reserved right.[130] Non-Indian successors enjoy a slightly less secure right. Their lands carry only an 1864 priority to water sufficient to irrigate both the actual acreage under irrigation at the time of transfer and any additional acreage that may be reasonably irrigated.[131] The district court subsequently expanded *Adair* to hold that the Tribe's treaty water entitles it to water levels sufficient to support a productive aquatic habitat.[132]

Although *United States v. Adair* was a significant and lasting tactical victory for the Klamath Tribe, the Court of Appeals did not quantify the tribe's reserved rights. Until they are quantified in the state adjudication, the tribe's rights remain largely inchoate. For example, the instream flow right allows the tribes to enjoin depletions of the river only when those depletions threaten protected hunting and fishing rights. This is an important right, but the basic practice of prior appropriation—use until

124. *See supra* note 77.
125. 24 Stat. 388 (1987).
126. United States v. Adair, 723 F.2d 1394, 1398 (9th Cir. 1983).
127. 25 U.S.C. § 564m (2001).
128. *Id.*
129. *Adair*, 723 F.2d at 1414.
130. *Id.* at 1416-17.
131. The rights of non-Indian allottees had been previously recognized in *Colville Confederated Tribes v. Walton*, 647 F.2d 42 (9th Cir. 1981).
132. United States v. Adair, 187 F. Supp. 2d 1273 (D. Or. 2002).

someone objects—remains the real rule of the river.[133] Thus, Indian water uses remain effectively subordinate to use by Klamath Project beneficiaries. The Klamath Tribe's water rights are a powerful bargaining chip in the evolution of the basin, but they will not benefit the Tribe qua tribe unless reunified with a portion of the former tribal land.[134]

In some cases, the federal government can also claim instream flow rights under state law.[135] Instream flow rights can allow the government to maintain minimum stream flows necessary to support fish and wildlife. Where the federal government has claimed instream flow rights, however, those rights are so junior as to be of little value in dry years. In addition, many states have statutes that allow only state agencies to hold instream rights.[136] No reported case has yet decided whether those statutes can effectively limit federal claims.

2. *Federal "Regulatory Water Rights"*

Federal environmental mandates offer a potential, but inconsistent, source of watershed protection because they allow the federal government to protect the quantity and quality of stream flows.

Restrictions on water diversion due to federal statutes such as the Clean Water Act and the Endangered Species Acts have been characterized as federal regulatory water rights. These "rights" bear none of the characteristics of appropriative water rights and so have remained outside general adjudications. The federal government has been criticized for failing to claim all possible environmental rights in general adjudications,[137] but the poor fit between regulatory claims and traditional property rights, coupled with the extreme resistance of western states to including public values in general adjudications, make these criticisms ring hollow.

133. *See* Reed D. Benson, *Maintaining the Status Quo: Permitting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 ENVTL. L. 881, 891- 893 (1998) (arguing that enforcement of existing water rights infrequent and excess diversions common).

134. Restoration of land is not inconceivable. The federal government is considering returning 690,000 acres of the tribe's former lands which are now in the Fremont and Winema national forests. *See* Michael Milstein, *Swap May Hold Answer for Klamath*, PORTLAND OREGONIAN, April 22, 2002, at A1.

135. *See, e.g.*, State v. Morros, 766 P.2d 263 (Nev. 1988).

136. *See* Robert W. Adler, *Fresh Water—Toward a Sustainable Future*, 32 ENVTL. L. REP. 10167 (2002).

137. Bennett W. Raley, *Chaos in the Making: The Consequences of Failure to Integrate Federal Environmental Statutes with McCarran Amendment Water Adjudications*, 41 ROCKY MTN. MIN. L. INST. 24-1 (1995).

a. The Endangered Species Act

Protecting biodiversity in river corridors requires the recognition of rights to some level of minimum flow. Some state laws create in-stream flow rights for conservation purposes, but these rights are typically too junior to provide much protection in dry years. The ESA gives the federal government substantial power to mandate conservation flows even at the expense of senior water right holders.

i. Overview

Responsibility under the ESA is divided between FWS, which is responsible for terrestrial species and freshwater fish like the Lost River and shortnose suckers, and NMFS, which has charge of marine species and anadromous fish such as the coho. The Services are directed to list species[138] as endangered if they are in danger of extinction throughout all or a significant part of their range,[139] or as threatened if they are likely to become endangered in the foreseeable future.[140] Listing decisions must be based solely on scientific criteria.[141] At the time of listing, the Services are supposed to designate "critical habitat," defined as those areas requiring special protection where physical or biological features essential to the species are found.[142] This obligation, which FWS regards as providing little benefit, has frequently been ignored.[143]

Once listed, species are protected in two ways. First, ESA section 9 forbids "take" of an endangered animal.[144] Section 9 applies to both the federal government and private parties. The statute and implementing regulations define "take" broadly, including not only capturing or killing the animal, but harming it by altering its habitat in a way that causes injury.[145] Threatened animals are protected more flexibly; section 4(d) gives the Services discretion to impose regulations necessary or advisable for their conservation.[146] FWS typically relies on a general regulation

138. For purposes of the ESA, "species" include subspecies and distinct population segments of vertebrate species. 16 U.S.C. § 1532(16) (2000).

139. *Id.* § 1532(6).

140. *Id.* § 1532(20).

141. *Id.* § 1533(b)(1)(A).

142. *See id.* § 1532(5)(A).

143. Critical habitat designation requires economic impact analysis. The Clinton Administration took the position that this economic analysis could be fairly perfunctory because most economic effects would follow from listing alone, regardless of whether or not critical habitat were designated. The Bush Administration, however, has supported recent judicial decisions requiring broader economic analysis. *See, e.g.*, New Mexico Cattle Growers Ass'n. v. U.S.Fish & Wildlife Serv., 248 F.3d 1277 (10th Cir. 2001).

144. 16 U.S.C. § 1538(a)(1)(B), (C).

145. *See id.* § 1532(19); 50 C.F.R. § 17.3 (2002).

146. 16 U.S.C. § 1533(d). For a detailed discussion of the use and requirements of section 4(d) rules, see Robert L. Fischman and Jaelith Hall-Rivera, *A Lesson for Conservation from*

applying the full force of section 9 to threatened species,[147] but NMFS has made more aggressive use of the flexibility allowed by section 4(d). NMFS has issued an interim rule under section 4(d) prohibiting take of Southern Oregon/Northern California coho with exceptions for state-regulated coastal fisheries, hatchery operations in Oregon, fisheries research activities, and habitat restoration activities.[148]

Second, ESA section 7 requires that all federal agencies ensure that actions they carry out, fund, or authorize are not likely to jeopardize the continued existence of any listed species or adversely modify its designated critical habitat.[149] Unlike section 9, section 7 applies only to activities with a federal nexus. FWS and NMFS have jointly defined jeopardy to include actions "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the species in the wild.[150] They have defined adverse modification of critical habitat in a very similar manner,[151] essentially collapsing the two duties of section 7(a)(2) into one. The Fifth Circuit, however, has held that definition invalid, reasoning that Congress would not have enumerated two separate duties if it intended them to be equivalent.[152]

Flow reduction in the mainstem Klamath does not necessarily "adversely modify" coho critical habitat. Establishing adverse modification, like establishing jeopardy, is not simply a mechanical process. The critical habitat designation identifies water quality, quantity, and temperature, all of which are affected by flow rates, as essential features of the critical habitat, but it does not identify specific required values for those features.[153] In order to show adverse modification, therefore, the agency must demonstrate that the conditions pose a threat to the species. Lack of information about the status and needs of endangered species complicate that determination.

In close cases, the ESA requires that the benefit of the doubt go to listed species; agencies "must ensure" that their actions are "not likely"

Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act, 27 COLUM. J. ENVTL. L. 45 (2002).

147. *See* 50 C.F.R. § 70.3 (2002).

148. 62 Fed. Reg. 38,479 (July 18, 1997).

149. 16 U.S.C. § 1536(a)(2).

150. 50 C.F.R. § 402.02 (2001).

151. "Destruction or adverse modification [of critical habitat] means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." *Id.*

152. Sierra Club v. U.S. Fish & Wildlife Service, 245 F.3d 434 (5th Cir. 2001). For an excellent discussion of the meaning and significance of critical habitat under the ESA and implementing regulations, see Jason M. Patlis, *Paying Tribute to Joseph Heller with the Endangered Species Act: When Critical Habitat Isn't*, 20 STAN. ENVTL. L. J. 133 (2001).

153. *See* 64 Fed. Reg. 24,049, 24,059 (May 5, 1999).

to jeopardize listed species or adversely modify critical habitat.[154] The Services' Section 7 Consultation Handbook implements this requirement by directing Service personnel to document the importance of missing information and give the benefit of the doubt to species if biological opinions must be completed in the face of "significant data gaps."[155] In practice, though, because the courts are strongly inclined to defer to the Services' "scientific" determinations, the Services enjoy substantial discretion to determine both the extent of risk and the degree of confidence in the available information needed to justify a jeopardy opinion.[156]

An elaborate procedure has been developed to satisfy section 7(a)(2). A federal agency contemplating action must first request from FWS and NMFS lists of species that may be in the action area.[157] The action agency then prepares a "biological assessment" (BA) to determine whether the action is likely to affect those species, and if so to what extent. If the BA finds that an adverse effect is likely, the action agency must formally consult with the appropriate Service.[158] Consultation culminates in issuance by the Service of a formal biological opinion (BiOp) stating that the action either is or is not likely to jeopardize the continued existence of the species or adversely modify its critical habitat.[159]

Biological opinions include "incidental take statements" detailing the expected level of take and "reasonable and prudent measures" (RPMs), consistent with the action's basic design, that must be taken to minimize and mitigate the impacts of that take.[160] Actions in compliance with an incidental take statement are insulated from liability for take under section 9.[161] That protection extends not only to the action agency but also to any other entities whose actions fall within the scope of the BiOp,[162] such as the beneficiaries of a Reclamation water project.

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154. *See supra* note 149.

155. U.S. FISH & WILDLIFE SERVICE & NATIONAL MARINE FISHERIES SVC., ENDANGERED SPECIES CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING SECTION 7 CONSULTATIONS AND CONFERENCES 1-6 (1998), *available at* http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm (last visited March 11, 2003).

156. *See, e.g.*, Ctr. for Marine Conservation v. Brown, 917 F. Supp. 1128, 1145-48 (S.D. Tex. 1996)(deferring to Natinal Marine Fisheries Service interpretation of endangered sea turtle data); American Rivers v. NMFS, No. 96-384-MA (D. Or. 1997). *See generally* Daniel J. Rohlf, *Jeopardy Under the Endangered Species Act: Playing a Game Protected Species Can't Win*, 41 WASHBURN L. J. 114, 146-150 (2001).

157. *See* 50 C.F.R. § 402.12(c) (2001).

158. *See* 16 U.S.C. § 1536(a)(2) (2000); 50 C.F.R. § 402.14(a).

159. *See* 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.14(g)(4).

160. *See* 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(h). Under the Act, The Fish and Wildlife Service must find that a proposed activity will minimize the impacts of a taking to the maximum extent practicable. Gerber v. Norton, 294 F.3d 173, 184-86 (D.C. Cir. 2002).

161. *See* 16 U.S.C. § 1536(o)2.

162. Ramsey v. Kantor, 96 F.3d 434 (9th Cir. 1996).

If the Service issues a "jeopardy" opinion, it must offer any "reasonable and prudent alternatives" (RPAs) it believes will avoid jeopardy.[163] RPAs are limited to actions "that can be implemented in a manner consistent with the intended purpose of the [proposed] action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, [and] that [are] economically and technologically feasible."[164]

The duty to consult under section 7 applies so long as "discretionary Federal involvement or control" remains.[165] Following the reasoning of the Supreme Court in *Tennessee Valley Authority v. Hill*,[166] the federal courts have construed section 7 broadly. The duty to consult applies unless and until the action agency has no discretion to make or require changes that might alter the action's effects on listed species.[167] It applies, for example, to renewal of Reclamation Act contracts,[168] and determination of the amount of water available for irrigation under those contracts. Operation under existing contracts is also subject to the ESA. The Ninth Circuit has specifically held that operation of the Klamath Project remains subject to the ESA's consultation requirements despite the fact that Project water contracts significantly pre-date the ESA.[169] Even after a BiOp has been issued, consultation must be reinitiated if the specified level of take is exceeded, if new information reveals effects on the species that were not considered in the BiOp, if the action is modified in a way that changes the effects on listed species, or if additional species in the action area are listed.[170]

Section 7(a)(1) imposes an additional but less well-defined duty. The Department of Interior must use all its programs to further the purposes of the ESA, and other federal agencies must carry out programs for the conservation of listed species.[171] FWS has taken the position that this duty does not mandate any particular action, leaving considerable discretion to each agency.[172] The federal courts have deferred to this view,[173] essentially

163. *See* 16 U.S.C. § 1536(b)(3)(A); 50 C.F.R. § 402.14(h)(3).

164. 50 C.F.R. § 402.02.

165. 50 C.F.R. § 402.03.

166. 437 U.S. 153, 172-74, 193-94 (1978) (holding that closing the gates on a federal dam that was nearly complete before enactment of the ESA was a federal action subject to Section 7).

167. *E.g.*, Sierra Club v. Babbitt, 65 F.3d 1502, 1512 (9th Cir. 1995).

168. *See* NRDC v. Houston, 146 F.3d 1118 (9th Cir. 1998).

169. Klamath Water Users Prot. Ass'n v. Patterson, 204 F.3d 1206, 1213 (9th Cir. 1999).

170. 50 C.F.R. § 402.16.

171. 16 U.S.C. § 1536(a)(1) (2000).

172. *See* Interagency Cooperation - Endangered Species Act of 1973, as Amended, Final Rule, 51 Fed. Reg. 19,926, 19934 (June 3, 1986).

173. *See, e.g.*, Pyramid Lake Paiute Tribe v. U.S. Dept. of the Navy, 898 F.2d 1410 (9th Cir. 1990); Coalition for Sustainable Res., Inc., v. U.S. Forest Serv., 48 F. Supp. 2d 1303, 1315 (D. Wyo. 1999) (rejecting 7(a)(1) challenge; deferring to agency discretion); Hawksbill Sea Turtle v. Fed. Emergency Mgmt. Agency, 11 F. Supp. 2d 529 (D.N.J. 1998).

turning section 7(a)(1) into a procedural requirement mandating consideration and planning for the needs of listed species but not specifying particular substantive conservation measures.[174] Nonetheless, Section 7(a)(1) permits federal agencies to take any and all steps they choose, within the limits of their existing statutory authority, to aid listed species.[175]

ii. The ESA and State Water Rights

Putting aside new construction, water projects tend to harm aquatic species through depletion of water and entrainment.[176] Not surprisingly, the survival of aquatic species often depends upon the amount of water in a stream or lake, either directly or because the quantity of water is closely related to temperature and other important water quality characteristics. To protect listed species against excessive depletions, it is often necessary either to limit diversions during crucial times of the year or to require the release of water from upstream reservoirs. Such conservation requirements can directly or indirectly limit the enjoyment of state water rights. Because case law is limited, the scope of federal discretion to impose such regulatory limits on those rights through the ESA remains somewhat murky.

The issue first arose when the Corps of Engineers denied a permit under Clean Water Act section 404[177] for a small dam on a tributary of the South Platte River because the dam would decrease flows several hundred miles downstream, threatening endangered whooping cranes. *Riverside Irrigation District v. Andrews*[178] held that the Corps had to consider the effect of the proposed withdrawals on the cranes, despite the Irrigation District's argument that both an act of Congress and an interstate compact prevented the Corps from interfering with state-created water rights. The District relied on the Wallop Amendment,

174. *See, e.g.*, Sierra Club v. Glickman, 156 F.3d 606, 617 (5th Cir. 1998) (sustaining citizen suit over procedural violations in spite of USDA's broad substantive discretion); Defenders of Wildlife v. Babbitt, 130 F. Supp. 2d 121 (D.D.C. 2001); Fla. Key Deer v. Stickney, 864 F. Supp. 1222, 1238 (S.D. Fla. 1994).

175. *See* Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257 (9th Cir. 1984).

176. Entrainment refers to the trapping of fish in project facilities, such as irrigation canals or through hydropower turbines. Entrainment can harm fish directly by subjecting them to mechanical insults (such as grinding by turbines or pumps, or battering against screens) or indirectly by channeling them to areas unsuitable for spawning or too dry to support aquatic life (such as the crop fields to which irrigation canals may lead). Entrainment can often be reduced by installing protective technology such as fish screens, or by changing the amount or timing of water withdrawal through pumps. No similar technological fix exists for excessive diversions.

177. 33 U.S.C. § 1344 (2000).

178. 758 F.2d 508 (10th Cir. 1985). The *Riverside* court also rejected the claim that requiring the Corps to consider downstream effects on cranes before granting a permit would abrogate the interstate Platte River Compact. The court found that argument premature because plaintiffs had not yet even applied for, much less been denied, individual permits. *Id.* at 513-14.

Section 101(g) of the Clean Water Act, which states that "[i]t is the policy of Congress that the authority of each state to allocate quantities of water within its jurisdiction shall not be superseded, abrogated, or otherwise impaired . . . [and] that nothing in the Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State."[179] To paraphrase Justice Holmes, the vague amendment, a sop to western water interests, was too "slender a reed"[180] to uphold state supremacy. The court held that the clear declaration of agency duties in ESA section 7 trumped the general policy statement of the Wallop Amendment.

The ESA itself contains a policy statement even weaker than that in the Wallop Amendment, providing simply that it is "the policy of Congress that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species."[181] This provision was adopted in lieu of a proposed amendment directly modeled on the Wallop Amendment, which would have stated that the ESA did not supersede or abrogate either state authority to allocate water or existing state water rights.[182] The only court to directly address its effect has written:

> This provision does not require, however, that state water rights should prevail over the restrictions set forth in the Act. Such an interpretation would render the Act a nullity. The Act provides no exemption from compliance to persons possessing state water rights, and thus the District's state water rights do not provide it with a special privilege to ignore the Endangered Species Act.[183]

Another significant case arose at about the same time as *Riverside Irrigation District v. Andrews*. This one involved unallocated project water. The Secretary of Interior ordered the Department to operate a federal reservoir on a California tributary of the Truckee to conserve endangered trout at the river's end in Nevada. The reservoir, typical of those built during the height of the Reclamation Era, was intended to provide extra drought protection for Reno and back-up irrigation supplies for the Truckee-Carson Irrigation District. Water users challenged the decision to hold its water for the fish. The district court held that Interior was "required to give the [endangered species] priority over all other purposes" of the project until they were no longer listed,

179. 33 U.S.C. § 1251(g) (2003).

180. Missouri v. Holland, 252 U.S. 416, 434 (1920).

181. 16 U.S.C. § 1531(c)(2) (2000).

182. *See* A. Dan Tarlock, *The Endangered Species Act and Western Water Rights*, 20 LAND & WATER L. REV. 1, 19 (1985).

183. United States v. Glenn-Colusa Irrigation Dist., 788 F. Supp. 1126, 1134 (E.D. Cal. 1992). This statement could be considered dicta, as the court went on to note that enforcement of the Act in this case, against entrainment damage by irrigation pumps, "does not affect the District's water rights but only the manner in which it exercises those rights."

but that any water "not required under the Endangered Species Act" must be stored for the water users.[184]

On appeal, the Ninth Circuit somewhat modified that holding. All parties conceded that preventing jeopardy under the ESA took precedence over the Bureau of Reclamation's obligations under the reclamation laws.[185] The water users argued that once that requirement was satisfied Interior had no further authority to provide water to the fish. The Ninth Circuit disagreed, holding that the duty to conserve under section 7(a)(1) allowed Interior to direct the water to conservation purposes rather than selling it to the water users. The court reasoned that the project's enabling legislation did not require sale of all available water to recoup construction costs.[186] No long-term contracts required the sale of water either. Essentially, the case stands for the proposition that Reclamation, like other federal agencies, can choose to devote any resources within its discretionary control to endangered species protection.

The *Carson-Truckee* court expressly did not determine whether, if the project legislation had required the selling of water, section 7(a)(1) would have superseded that requirement, either permitting or requiring devotion of water to conservation purposes.[187] Subsequent cases suggest that it would not. Section 7(a)(1) has been held to operate only within the limits of the agency's pre-existing statutory authority,[188] leaving substantial discretion within those limits to the agency.[189] Short of a jeopardy determination, therefore, it is unlikely that Reclamation could withhold water it was bound by statute or contract to deliver, or that it could be forced to withhold water it chose to deliver.

If project water deliveries would fail the jeopardy test, however, the ESA requires that they be withheld, notwithstanding any water contracts. The first decision to that effect came in 1995, in *O'Neill v. U.S.*[190] Westlands Water District held a long-term water contract obligating the U.S. to furnish it with 900,000 acre-feet of water annually from the Central Valley Project, subject to shortages arising from drought or any other causes. After NMFS issued a biological opinion concluding that operation of the Central Valley Project would jeopardize the Sacramento winter-run chinook, Reclamation cut delivery to Westlands by fifty

184. Carson-Truckee Water Conservancy Dist. v. Watt, 549 F. Supp. 704, 710 (D. Nev. 1982).

185. Carson-Truckee Water Conservancy Dist. v. Clark, 741 F.2d 257, 259 (9th Cir. 1984).

186. *Id.* at 262.

187. *See id.* at 262 n.5.

188. Platte River Whooping Crane Critical Habitat Maintenance Trust v. FERC, 962 F.2d 27 (D.C. Cir. 1992).

189. *See supra* text accompanying notes 172-175.

190. 50 F.3d 677 (9th Cir. 1995).

percent. Westlands sued, but the Ninth Circuit held that the requirements of the ESA excused Reclamation from its obligations under the contract.

The Ninth Circuit reiterated that view in *Klamath Water Users Protective Association v. Patterson*,[191] rejecting a challenge to operation of the Link River Dam to protect endangered species. In affirming the district court's holding that irrigator's water rights must yield to the ESA, the court wrote:

> It is well settled that contractual arrangements can be altered by subsequent Congressional legislation. The ESA was enacted in 1973 to halt and reverse the trend toward species extinction, whatever the cost. Even in circumstances where the ESA was passed well after the agreement, the legislation still applies as long as the federal agency retains some measure of control over the activity. Therefore, when an agency, such as Reclamation, decides to take action, the ESA generally applies to the contract.[192]

In a 1995 memorandum specifically addressing the Klamath Project, the Regional Solicitor's Office of the Department of Interior had expressed the same view. The Regional Solicitor wrote:

Reclamation has an obligation to deliver water to the project water users . . . subject to the availability of water. . . . Water would not be available, for example, due to drought, a need to forego diversions to satisfy prior existing rights, or *compliance with other federal laws such as the Endangered Species Act*.[193]

O'Neill and *Klamath Water Users* leave open the possibility that some Reclamation project authorizations could preclude adjustment of deliveries under the ESA. *Klamath Water Users* depended in part on the court's determination that Reclamation had authority to manage the dam as required by the ESA.[194] Because ESA section 7 applies only to federal "actions," Reclamation might claim that authorizing legislation leaves it no discretion to adjust deliveries for conservation purposes, and that therefore section 7 does not apply. Indeed, Reclamation appears to have

191. 204 F.3d 1206 (9th Cir. 1999).

192. *Id.* at 1213.

193. Memorandum from Regional Solicitor, Pacific Southwest Region, to Regional Director, Bureau of Reclamation, Mid-Pacific Region, Certain Legal Rights and Obligations Related to the U.S. Bureau of Reclamation, Klamath Project for Use in Preparation of the Klamath Project Operations Plan (KPOP) 7 (July 25, 1995), *reprinted in* KLAMATH PROJECT HISTORIC OPERATION, *supra* note 95, at Appendix A (emphasis added), *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Final_2002_KPOP_BO.pdf.

194. *See* 204 F.3d at 1213.

taken this position in irrigation disputes on the Rio Grande.[195] In the Klamath, however, *Klamath Water Users* forecloses that argument.[196]

Moreover, water users might not want to argue that section 7 does not apply to operation of Reclamation projects. Section 9, which covers all actions, federal or private, would clearly apply to use of Project water if section 7 did not. That might not be a happy change for irrigators. Without section 7 consultation, they would not get the protection of an incidental take statement. Larger users, at least, would risk liability for take if they did not prepare a habitat conservation plan and apply for an individual incidental take permit.

3. Monetary Liability for Water Restrictions Imposed Under the ESA

As explained above, the Bureau of Reclamation must withhold water even from those holding valid water rights and water delivery contracts when necessary to protect endangered species.[197] The question remains whether the Bureau must pay damages to irrigators for those shortages. Although not entirely certain, the answer with respect to the Klamath Project seems to be no.

In *O'Neill v. United States*,[198] the Ninth Circuit held that a clause in a water delivery contract absolving the U.S. of liability for water shortages "on account of errors in operation, drought, or any other causes" precluded an award of damages against the U.S. for water delivery reductions to protect the Delta smelt. Klamath Project contracts include a similar shortage clause.[199]

The U.S. Supreme Court appears likely to agree that the U.S. would not be liable for ESA-induced water shortages in Klamath Project deliveries. The Court has stated that changes in the law can excuse the United States from contractual obligations, provided those changes are "relatively free of Government self-interest."[200] The ESA obviously was

195. *See* Holly Doremus, *Water, Population Growth, and Endangered Species in the West*, 72 COLO. L. REV. 361, 399-400 (2001); Joan E. Drake, Note, *Contractual Discretion and the Endangered Species Act: Can the Bureau of Reclamation Reallocate Federal Project Water for Endangered Species in the Middle Rio Grande?*, 41 NAT. RESOURCES J. 487, 497-98 (2001).

196. The claim that lack of discretion restricts application of the ESA is unlikely to prevail outside the Klamath Basin either. So long as Reclamation maintains some control over the extent and allocation of water deliveries, operation of water projects will continue to be a federal action for section 7 purposes.

197. *See supra* text accompanying notes 190-193.

198. 50 F.3d 677, 682 (9th Cir. 1995).

199. Memorandum from Regional Solicitors to Regional Directors, Oregon Assistant Attorney General's March 18, 1996, Letter Regarding Klamath Basin Water Rights Adjudication and Management of the Klamath Project, Jan. 9, 1997, at 9, n.10, *reprinted in* KLAMATH PROJECT HISTORIC OPERATION, *supra* note 95, at Appendix A, *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Final_2002_KPOP_BO.pdf.

200. United States v. Winstar Corp., 518 U.S. 839, 896 (1996); *see also id.* at 898 (stating that "governmental action will not be held against the Government for purposes of the impossibility

not adopted to free the government from financial liability under Klamath Project contracts; any effect of the ESA on those contracts is merely incidental.

A recent decision in the Court of Claims suggests that in certain circumstances the United States might face constitutional takings liability for ESA-inspired water restrictions. In *Tulare Lake Basin Water Storage District v. U.S.*, the court held that the U.S. had taken plaintiffs' property by restricting water deliveries from the California State Water Project to protect the threatened Delta smelt.[201] The restrictions reduced the water available to plaintiffs by a maximum of three percent.[202]

The *Tulare* decision appears to have applied the wrong test. It held that regulatory restrictions on water delivery amounted to a physical taking of the plaintiffs' property interest in the water, making the restrictions per se takings. That approach, though, would make the government liable for damages for any regulatory restriction of water deliveries, no matter how small. That sort of categorical rule may well be appropriate for physical intrusions on land, given the special importance of the right to exclude others from one's land, but should not be applied in the context of restrictions on water deliveries.

In *Loretto v. Teleprompter Manhattan CATV Corporation*, Justice Marshall wrote for the Court that a permanent physical intrusion not only "chops through the bundle [of property rights], taking a slice of every strand,"[203] but also that "an owner suffers a special kind of injury when *a stranger* directly invades and occupies the owner's property."[204] *Loretto*'s per se compensation rule should not be extended to water shortages for three reasons. First, holders of water rights, unlike owners of land, do not own the physical manifestation of their property, the molecules of water that pass through their pipes or channels. They own only a right to use that water. The right to exclude holds no special value for them. Second, water rights holders understand that their rights to any specific amount of water are tentative, since nature may always withhold water. Third, water rights do not invoke the kind of privacy interest referred to in *Loretto*. Losses from restrictions on water deliveries or diversions are strictly economic, and therefore properly analyzed under the ad hoc fairness test

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defense so long as the action's impact upon public contracts is . . . merely incidental to the accomplishment of a broader government objective.").

201. 49 Fed. Cl. 313 (2001). The case is now in the damages phase. The State of California, which intervened on behalf of the U.S., is likely to appeal following the damages determination even if the Bush administration chooses not to. For a critical analysis of the decision, *see* Melinda Harm Benson, *The Tulare lake Case: Water Rights, The Endangered Species Act and the Fifth Amendment*, 32 ENVTL. L. 551 (2002).

202. *See* Benson, *supra* note 11, at 560.

203. 458 U.S. 419, 435 (1982).

204. *Id.* at 436.

of *Penn Central*.[205] Given the diminished expectations the vicissitudes of nature impose on water users, victory under that test is unlikely.

Even if the *Tulare Lake Basin* case is not reversed, it would not justify a finding of liability for water restrictions in the Klamath Basin. The U.S. did not have a contract with the irrigators in *Tulare Lake Basin*; the contractual relationship was with the state. The state water contracts, not surprisingly, protected the state but not the federal government against liability for shortages from drought or other causes. As already explained, however, the Klamath Project contracts provide that the United States shall not be liable for water shortages.[206] That surely is an acceptable condition for contracts that provide inexpensive irrigation water, a substantial benefit directly related to the condition.

II
THE CRISIS OF 2001

The Department of Interior's decision to enforce the Endangered Species Act by leaving water in Upper Klamath Lake rather than making spring and summer deliveries to project irrigators triggered a crisis in 2001. That crisis had been a long time coming. It was not a surprise, although the strength of Interior's reaction was.

A. 1992–2001: One Track, Two Trains

The federal government has struggled to balance environmental protection with support for agriculture in the Upper Klamath Basin since the beginning of the century.[207] By the 1990s, it was clear that the demand for water for those competing interests could easily exceed supply.

1. The 1992 FWS Biological Opinion

Water conflicts in the Klamath began in earnest in the early 1990s, under the combined stress of ESA listings and closely- spaced critically dry years. In 1992, the driest year on record since construction of the Klamath Project,[208] FWS issued a biological opinion concluding that long-term operation as planned would jeopardize the continued existence of the suckers, and identifying increases in minimum water levels in Clear Lake and Gerber Reservoir as reasonable and prudent alternatives (RPAs).[209] When the Bureau of Reclamation indicated that it would

205. Penn Central Transp. Co. v. City of New York, 438 U.S. 104 (1978).

206. *See supra* note 193, and accompanying text.

207. *See supra* notes 42-43, and accompanying text.

208. KLAMATH PROJECT HISTORIC OPERATION, *supra* n. 96, at 36.

209. *See* Bennett v. Spear, 520 U.S. 154, 159 (1997). The prescribed minimum levels for Clear Lake were revised slightly downward in 1994. *See* Bennett v. Spear, 5 F. Supp. 2d 882, 884 (D. Or. 1998).

adopt those alternatives, Project water users sued. After going to the U.S. Supreme Court to establish standing and justiciability,[210] the water users prevailed on the merits. The federal district court for the District of Oregon ruled that the RPAs were arbitrary and capricious because the record did not show that minimum elevations in Clear Lake and Gerber Reservoir would help avoid jeopardy, either in those lakes or in the larger project area.[211] Although there are sucker fish in those lakes, the dominant population of both species lives in Upper Klamath Lake. Sucker populations in Clear Lake and Gerber Reservoir, unlike those in Upper Klamath Lake, have been stable in recent years.[212]

The 1992 Biological Opinion also set minimum lake levels for Upper Klamath Lake, which were not challenged.[213] In 1994, another critically dry year, water levels at Upper Klamath Lake fell below the minimum prescribed in the 1992 BiOp, despite some curtailment of irrigation deliveries.[214] Reclamation gave agricultural demands priority over fish in both 1992 and 1994.[215]

2. *The Fine-Tuning Approach: The 1997 Bureau of Reclamation Plan*

Perhaps thinking that annual fine-tuning would allow it to make the most of any available irrigation water, the Bureau abandoned its long term plan in favor of yearly operation plans. Those plans were quickly challenged from both sides. The 1997 plan called for limiting September flows out of Upper Klamath Lake through Link River Dam to 1,000 cubic feet per second (cfs). PacifiCorp, the operator of Link River Dam, indicated that it would not follow that plan, because doing so would violate the minimum flow requirements of its FERC license, established to protect fish in the lower reaches of the Klamath. Reclamation and PacifiCorp thereafter modified the contract for operation of Link River Dam so that it called for implementation of the 1997 operating plan, contingent upon FERC concurrence. Irrigators filed suit, asserting third-party beneficiary rights to enforce the contract. The Ninth Circuit rejected their claim, and held that the ESA governed operation of the dam notwithstanding the earlier contract or the irrigators' water rights.[216]

The situation became even more difficult with the 1997 coho listing. Water supplies for irrigators were now squeezed from both ends: the

210. *See* Bennett v. Spear, 520 U.S. 154 (1997).

211. Bennett v. Spear, 5 F. Supp. 2d 882, 885-86 (D. Or. 1998).

212. *See* FWS 2002 BiOp, *supra* note 40.

213. *See* Benson, *supra* note 11, at 218.

214. *Id.*

215. *Cf.* Benson, *supra* note 11, at 218 ("While there was some curtailment of irrigation deliveries . . . the fact that Upper Klamath Lake reached its all-time low level in 1994 indicates that the ESA had not yet significantly changed the Klamath Project's operational priorities.").

216. Klamath Water Users Prot. Ass'n v. Patterson, 204 F.3d 1206 (9th Cir. 1999).

sucker species seemed to require minimum lake levels, while the coho needed minimum stream flows. Maintaining both would leave little water for irrigation withdrawals.

3. *Things Fall Apart: The 2000 Bureau of Reclamation Plan*

A series of above-average water years between 1995 and 2000[217] seemed to alleviate some of the pressure. Nonetheless, the Bureau of Reclamation's water juggling act fell apart in 2000. Disagreements among the technical advisors about minimum flows needed to support the coho complicated preparation of the annual operating plan. The Bureau did not adopt a final plan until late April. It did not complete a draft Biological Assessment until November, long after the plan had gone into effect, and the final Biological Assessment was not ready until late January 2001, when the plan had essentially expired. Long before that, the Pacific Coast Fishermen's Federation had filed suit claiming a violation of ESA section 7.

The substantive result was a foregone conclusion. The Bureau, which had consulted with NMFS and FWS on its prior annual operating plans, knew that consultation was required before putting its operations plan into effect. Nonetheless, the Bureau had failed to even begin the consultation process until the plan was virtually complete. As it was bound to do, the court in *Pacific Coast Federation of Fishermen's Ass'ns. v. U.S. Bureau of Reclamation*[218] found that the Bureau had violated section 7 by implementing its 2000 plan without ensuring that it would not jeopardize listed species or adversely affect their critical habitat.

On April 3, 2001, faced with an agency that appeared at best indifferent to its ESA responsibilities, and no formal operating plan, the court enjoined irrigation deliveries from the Klamath Project. The injunction applied whenever flows at Iron Gate Dam fell below minimum flows recommended in the Hardy Report prepared for the Bureau, and would be lifted either upon the completion of formal consultation and issuance of a "no jeopardy" opinion by NMFS or the adoption of RPAs suggested in a "jeopardy" opinion.[219]

4. *Ineffectual Efforts to Defuse the Conflict*

Even before the crisis of 2001, the problems of the 1990s had spawned halting efforts to reduce the conflicts over water. The Klamath Basin National Wildlife Refuges began reconsidering their relationship with commercial farming. Over 23,000 acres within the Tule Lake and

217. KLAMATH PROJECT HISTORIC OPERATION, *supra* note 94, at 39.
218. 138 F. Supp. 2d 1228 (2001).
219. *Id.*

Lower Klamath Lake NWRs are leased for farming.[220] The Kuchel Act calls for "optimum agricultural use" of these lands to the extent consistent with the primary purposes of the refuges.[221] FWS considers the consistency standard of the Kuchel Act equivalent to the requirement under the 1997 National Wildlife Refuge System Improvement Act[222] that secondary uses be compatible with the primary purposes of refuges. In 1999, concerned that farming was consuming limited water resources needed for refuge wetlands, FWS decided that refuge water would be delivered to wetlands first, and only made available for farming once those needs were fulfilled. It began preparing an Environmental Assessment on options for implementing that decision.[223]

Congress also responded, in a lukewarm way, to the apparent insufficiency of the Basin's water resources to meet the needs of farms and fish. It authorized the purchase of Agency Lake Ranch to increase water storage capability within the basin.[224] Later, it directed Interior to study the feasibility of various potential solutions, including increased storage in the Klamath Project, additional groundwater supplies, better use of existing water resources, or market-based approaches.[225] Oregon Senator Mark Hatfield created the Upper Klamath Basin Working Group, made up of federal, tribal, state, city, county, environmental, farming, fishing, and business representatives, to develop consensus strategies for restoring the ecosystem, maintaining the economy, and reducing the impacts of future droughts. In 1996, Congress directed the Group to propose, by consensus, ecological restoration, economic development, and other projects, and appropriated up to $1 million dollars per year for a 50% federal cost-share on those projects.[226]

B. Summer 2001: The Train Wreck

The vague efforts sparked by the droughts of the 1990s to resolve the conflicts between irrigation and fish protection were far too little and far too late to avert the crisis. With the water situation already near the breaking point, the Klamath Basin endured a critically dry winter in 2000-2001. By early April, the gravity of the situation was clear. The Bureau of Reclamation was forecasting record low inflows to Upper Klamath

220. KLAMATH PROJECT HISTORIC OPERATION, *supra* note 94, at 9.

221. 16 U.S.C. § 695l (2000).

222. Pub. L. No. 105-57 (1997).

223. *See* Letter from Philip W. Norton, Project Leader, to Interested Parties, June 4, 2002, *available at* http://www.klamathnwr.org/AgProgramEa.pdf.

224. *See* KLAMATH PROJECT HISTORIC OPERATION, *supra* note 94, at 8.

225. Klamath Basin Water Supply Enhancement Act of 2000, Pub. L. No. 106-498, § 2 (2000).

226. *See* Pub. L. No. 104-208, § 201 (1996).

Lake.[227] Nonetheless, the Bureau's draft operations plan called for operating the project as had been done in the dry years of the 1990s. In April, FWS and NMFS released final BiOps on project operations for the 2001 irrigation year, concluding that the proposed operation of the project would jeopardize the continued existence of the suckers and the coho.[228] As required by the ESA, both agencies offered reasonable and prudent alternatives they believed would avoid jeopardy. FWS called for Upper Klamath Lake to be maintained at a minimum level of 4,139 feet for brief periods, with long-term levels at a minimum of 4,140 feet. NMFS called for minimum flows below Iron Gate Dam ranging from a high of 2,100 cfs in early June to a low of 1,000 cfs from July through September.[229] These flows exceeded the minimums established by FERC in the licensing of Iron Gate Dam, but were less than those recommended in the draft Hardy Report.

On April 6, 2001, the Bureau of Reclamation issued its final 2001 Operations Plan. The Bureau committed to following the RPAs offered by the wildlife agencies,[230] presumably at least in part to obtain the lifting of the injunction imposed in *Pacific Coast Federation of Fishermen's Associations*. Because the year was critically dry, meeting the RPAs for lake levels and instream flows left little water for irrigation. The 2001 Operations Plan allotted no irrigation water at all from Upper Klamath Lake, which meant that much of the acreage within the project could not be irrigated. The plan did, however, provide for the full allotment, some 70,000 acre feet, to be drawn from Clear Lake and Gerber Lake.[231] It provided for deliveries to the Tule Lake NWR only as needed by the sucker species.

Irrigators immediately sought an injunction against implementation of the 2001 Plan.[232] Among other things, the irrigators argued that the best available science did not support the Services' claims that higher lake levels and instream flows were necessary to aid the suckers and salmon, respectively. The court concluded that plaintiffs were unlikely to prevail

227. U.S. DEPT. OF INTERIOR, BUREAU OF RECLAMATION, KLAMATH PROJECT 2001 ANNUAL OPERATIONS PLAN 3 (2001), *available at* http://www.mp.usbr.gov/kbao/news/Final2001OperationPlan4_6_2001.pdf (last visited Mar. 3, 2003) [hereinafter 2001 ANNUAL OPERATIONS PLAN].

228. *See* Kandra v. United States, 145 F. Supp. 2d 1192, 1198 (D. Or. 2001).

229. 2001 ANNUAL OPERATIONS PLAN, *supra* note 227, at 4. The agencies had adjusted their recommended minimum lake levels and instream flows in response to the Bureau's complaint that water supplies, as proposed in the draft biological opinions, were not sufficient to meet both. *See Kandra*, 145 F. Supp. 2d at 1198.

230. 2001 ANNUAL OPERATIONS PLAN, *supra* note 227.

231. *See The National Research Council Draft Interim Report on Endangered and Threatened Fishes in the Klamath River Basin Before the Committee on Resource, U.S. House of Representatives* (Mar. 13, 2002) (testimony of Sue Ellen Wooldridge, Deputy Chief of Staff, Dept. of the Interior); 2001 ANNUAL OPERATIONS PLAN, *supra* note 227, at 4.

232. Kandra, 145 F. Supp. 2d at 1199.

on this claim, because they had shown no more than a disagreement with the agencies' scientific conclusions.[233] Furthermore, although the court conceded that implementation of the plan undoubtedly would cause the plaintiffs economic harm, that harm did not clearly outweigh the harm to the fish, fishermen, and tribes that irrigation deliveries above those provided by the plan would cause.[234] Finally, the court noted that if the 2001 Plan or the BiOps supporting it were set aside, the ESA and the injunction in the earlier litigation would require that irrigation deliveries be cut even more, not increased.[235] The court denied the requested injunction and urged the parties to resolve the Basin's water needs outside the courts.[236]

On May 3, the *Pacific Coast Fishermen's Association* injunction was lifted.[237] That did not mean, however, that the water flowed freely. The summer turned out to be as dry as predicted. The headgates were kept closed to maintain Upper Klamath Lake at its pre-project minimum level of 4,140 feet above sea level.

The plight of the Klamath irrigators began to attract national attention as farmers and their supporters engaged in various forms of direct, potentially violent protest. On July 4, 100 people cut through a chainlink fence and opened the valve that fed the main canal, while local law enforcement officers watched but did not intervene.[238] After the headgates were restored,[239] local officials refused to protect them. Federal police guarded the headgates from July 14 to September 26, 2001, when a security fence, video camera and motion detectors were installed.[240]

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233. *See id.* at 1210.

234. *Id. at* 1192 .

235. *See id.* at 1210-11.

236. *Id.* at 1211.

237. Benson, *supra* note 11, at 232.

238. Jeff Barnard, *Farmers Who Diverted Water Are Denied an Exonerating Law*, SAN DIEGO UNION-TRIBUNE, July 6, 2001, at A3.

239. In an example of instant history, the Klamath County museum has mounted an exhibit which includes the stile that the protesters used to go over the fence protecting the headgates as well as the cut padlock. Shannon C. Borren, *Klamath headgate steps become museum exhibit*, KLAMATH HERALD & NEWS, Oct. 29, 2001. Locally, the gates have now obtained the iconic status of the Berlin Wall. Demolition started in October 2002. The old concrete gates will be replaced with fish screens, and chunks of the old gates will be displayed in the Klamath County Museum. Michael Milstein, *Klamath Gates Are No More*, PORTLAND OREGONIAN, Oct. 29, 2002.

240. After 9/11 the protestors withdrew so that federal police could concentrate on post-9/11 terrorism attacks, and the Bureau hired private security guards. Kehn Gibson, *Federal Officials Leave A Canal Headgates*, HERALD & NEWS (Klamath Falls), Sept. 26, 2001. The Bureau of Reclamation subsequently spent $750,000 to guard the headgates and in late December, 2001, installed a new $90,000 fence, camera and motion detector security system. The ASSOCIATED PRESS, *Tight Security Goes Up Around Irrigation System*, January 2, 2002, *available at* 2002 WL 2538335. For the perspective of the more rabid supporters of the irrigators' cause, consult Mary Schatán, *Independence Day Issue: A Blow for Liberty at the Klamath Project, at* http://www.papillonsartpalace.com/independ.htm (last visited Dec. 2, 2002).

Tension briefly eased when Secretary of the Interior Gale Norton "found" an accounting error in the estimates of the water stored in the lake and released roughly 70,000 acre feet of water, but this release ended on August 22, 2001.[241] The protests culminated with a truck "Convoy of Tears" from around the West and a rally in downtown Klamath Falls which some characterized as "the vanguard of a citizen revolt against federal water and land management policy."[242] Employing extreme hyperbole, former Idaho Congresswoman Helen Chenowith Hage compared the struggle to the American Revolution.[243]

Irrigators' direct financial losses from the dry summer have been estimated at $28-35 million,[244] a sizeable figure but nowhere near the one billion dollars that irrigators announced they would seek in compensation from the federal government.[245] Indeed, the agricultural losses are considerably less than those claimed by Lower Basin fishing communities, which have pegged their losses due to reduced Klamath River flows at $80 million annually since 1992.[246]

The economic costs to farmers were not equally distributed among all project irrigators. Those on the California side of the border were able to use the time-honored California drought strategy: switch from surface to groundwater. California appropriated $5 million dollars in emergency aid to allow farmers in Modoc and Siskiyou counties to irrigate 20,000 acres of cover crops.[247] Unlike Oregon, California does not regulate the use of groundwater. Users may simply pump, taking the risk that other users will not invoke the state's complicated dual correlative rights-prior appropriation doctrine to seek judicial redress.[248]

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241. ASSOCIATED PRESS, *Federal Officials Shut Klamath Project Headgates*, Aug. 23, 2001.

242. Patrick May, *Oregon Families Wage Wate Warr*, SAN JOSE MERCURY NEWS, Aug. 22, 2001, at A1.

243. *See* Jeff Barnard, *Truckers Join Rally Protesting the Shutoff of Irrigation Water*, SAN DIEGO UNION-TRIBUNE, Aug. 22, 2001, at A3.

244. JAEGER, *supra* note 96, at 7.

245. ASSOCIATED PRESS, *Klamath Farmers to Sue Government for Up to $1 Billion*, Aug. 25, 2001 *available at* http://www.restoringamerica.org/archive/property/farmers_sue_govt.html (last visited March 11, 2003); *see infra* note 293 and accompanying text.

246. News Release, Pacific Coast Federation of Fishermen's Associations, Fishermen Demand a Fair Share of the Water and Challenge the Long Term Plan for the Klamath Basin: Congressman Mike Thompson Joins Suit to Save Salmon (Sept. 26, 2002) *available at* http://www.pcffa.org/664pr.pdf. A study by an economist at the U.S. Geological Survey estimates revenues from recreational use of the lower river, including both sportfishing and rafting, at eight times the revenues from Upper Basin agriculture. *See* Steve Hymon, *Klamath's Water Is Better Used Downriver, Study Finds*, L.A. TIMES, Nov. 5, 2002, at B6.

247. Alex Breitler, *Emergency Wells Allow Some Pumping to Continue*, REDDING RECORD SEARCHLIGHT, Aug. 21, 2001, *available at* http://www.redding.com/specials/klamath/stories/20010820klamath045.shtml.

248. In brief, California law gives all overlying pumpers in a basin correlative rights to the groundwater and any surplus in excess of the safe annual yield is allocated by prior appropriation. The state has developed many techniques to limit groundwater use in specific basins but there is no state permit requirement as there is for all surface uses. Thus, overlying

The Refuges, which rely heavily on irrigation returns from upstream project uses, were also dry. Late in the summer, Reclamation was able to purchase and deliver some 3,700 acre-feet to the Refuges, enough to meet the minimums set by FWS to ensure that the area would be hospitable for wintering bald eagles.[249]

The drought's impacts extended to the basin's larger human community. Food banks, mental health providers, and other social services came under heavy stress.[250] Because the Klamath Tribe was viewed as a moving force behind protection of the sucker species, anti-Indian sentiment boiled over in the white farming community. Tribal members were subjected to racial taunts and violent confrontations. They felt unwelcome in the commercial establishments of Klamath Falls.[251] Meanwhile, the tribes enjoyed few tangible benefits from the limitations on irrigation. The 2001 Biological Opinions served more as a hopeful sign that their treaty rights might finally prove effective than as an immediate source of either economic or cultural benefits.

Anger was also directed at environmental activists, some of whom received death threats.[252] As is typical of ESA disputes, the rhetoric ran very high.[253] Even people with strong environmental credentials, including National Wildlife Refuge managers and Oregon Governor John Kitzhaber, began to complain about the Endangered Species Act.[254]

The Bush Administration's response, like the Bureau of Reclamation's response to the jeopardy opinions, was initially more measured than the farming community had hoped. Interior rejected a petition filed by the Pacific Legal Foundation to invoke the "God Squad" exemption process.[255] Although several western Republican lawmakers drew up bills to amend the ESA,[256] the administration did not publicly endorse any of them, and none of them went far. In the spring of 2002, President Bush created the interagency Klamath Basin Federal Working

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owners in unregulated rural basins such as the Klamath may pump until other users seek an adjudication of the basin or a declaration of correlative and appropriative rights. *See* A. DAN TARLOCK, JAMES N. CORBRIDGE, JR. AND DAVID H. GETCHES, WATER RESOURCE MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY 603-622 (2002).

249. *Water Bought for Bald Eagles*, L.A. TIMES, Aug. 9, 2001, at A12.

250. *See* Lach et al., *supra* note 66, at 187; Rebecca Clarren, *No Refuge in the Klamath Basin*, HIGH COUNTRY NEWS, Aug. 13, 2001.

251. *See* Lach et al., *supra* note 66, at 195-96; Michael Milstein, *Fish Center of Swirling Crisis Series:High and Dry in the Klamath*, PORTLAND OREGONIAN, May 8, 2001, at A1.

252. Brock Evans, *Crisis Is the Agent of Real* Progress, THE ENVTL. FORUM, March/April 2002 at 48.

253. Farmers accused environmentalists of using the ESA "to hurt farming," and the Bureau of Reclamation of betrayal. *See* Clarren, *supra* note 250.

254. *See* Clarren, *supra* note 250.

255. *See* Deborah Schoch & Eric Bailey, *Klamath Farmers Thwarted in Plea for Irrigation Water*, L.A. TIMES, July 14, 2001, at B9.

256. *See, e.g.*, H.R. 4840, 107th Cong., 2d Sess. (2002), H.R. 3705, 107th Cong., 2d Sess. (2002), H.R. 2389, 107th Cong., 1st Sess. (2001).

Group, consisting of the Secretaries of Interior, Agriculture, and Commerce, and the Chair of the White House Council on Environmental Quality.[257] Despite its high-level membership, the Working Group appears to be more a public relations effort than a real attempt to grapple with the basin's problems. It has done little other than provide a relatively small amount of federal funding for water conservation projects, including a number of Forest Service erosion control projects already scheduled for 2002.[258]

The administration's primary immediate response to the Klamath Basin crisis was to seek review by an independent expert panel of the science behind the jeopardy opinions that precipitated the crisis. At the request of the Departments of Interior and Commerce, the National Research Council, the research arm of the National Academy of Sciences, convened a review committee. The committee's preliminary report, released early in 2002, returned the Klamath controversy to the front pages.

C. *The Aftermath*

In the wake of the crisis summer of 2001, there was much heat but little light. The events of September 11, of course, had diverted the nation's attention from the plight of a small rural community and a handful of little-known fishes. Nonetheless, the crisis was far from resolved.

1. *The NRC review of the science*

Society's faith in science has the power to shape the environmental dialogue. Although science seldom controls the final outcome, policymakers must generally operate within the parameters of science.[259] It is often the only potential unifying standard among disparate interests who mutually distrust each other. The universalist claims of modern science support the search for *an* exclusive truth.[260] Good scientists know

257. Presidential Memo on Klamath River Basin Working Group (Mar. 1, 2002), *at* http://www.whitehouse.gov/news/releases/2002/03/print/20020301-10.html.

258. Michael Milstein, *Bush Cabinet Group Gives Klamath Basin Quick Water Help*, PORTLAND OREGONIAN, March 9, 2002, at E3.

259. For example, courts are most willing to reverse agency action as an abuse of discretion when it flies in the face of scientific consensus. *E.g.* Northern Spotted Owl (Strix Occidentalis Caurina) v. Hodel, 716 F. Supp. 479 (W.D. Wash. 1988) (Fish and Wildlife Service ignored internal and external scientific consensus in decision refusing to list Northern Spotted Owl under the Endangered Species Act). The George W. Bush Administration's initial rejection and subsequent re-acceptance of the Clinton administration's arsenic drinking water standards is a classic example. *See infra* note 261.

260. *See, e.g.*, BERNARD WILLIAMS, ETHICS AND THE LIMITS OF PHILOSOPHY 132-155 (1985).

that many scientific answers are highly contingent, but science's power to legitimate intrusive and costly regulation by invoking the idea of exclusive truth makes the "ownership" of science one of the most contested issues in modern environmentalism.

Of the many levels of contingency in science, one in particular has special relevance to the attempt to apply science to water use disputes such as the Klamath. The ESA requires scientists to provide clear answers to fuzzy questions that many scientists do not define as "scientific," such as whether a species is endangered or whether a specific project is likely to cause jeopardy. Scientists are uncomfortable with this role for two reasons. First, it partially collapses the fact-value dichotomy which science has rigorously maintained, both to differentiate itself from the softer humanities and social sciences and to establish its authority. Scientists are asked to decide, without revealing that they have done so, not only how much risk the species will experience but also how much risk society will accept. Second, it leaves too little room for reconsideration. Science seeks truth through a continual process of experimentation and re-evaluation. Scientists are most comfortable giving answers as ranges of probability rather than absolute causal relationships.

Despite these difficulties, the science establishment has long convinced the political one that the best public policy decisions rest directly on sound science. The most concrete manifestation of this victory is the National Research Council (NRC), the research arm of the National Academy of Sciences. The NRC conducts studies, funded largely by government agencies, to advise the government on science policy issues. NRC studies are generally conducted by committees of unpaid experts, who produce reports reflecting the current scientific consensus on an issue. Many studies are highly technical; they often conclude that further research is necessary or suggest general policy directions.

In recent years, NRC studies have gained increased visibility as the Executive and the Congress increasingly turn to the NRC to diffuse political hot potatoes. The George W. Bush Administration was initially embarrassed by NRC reports that supported the Clinton EPA's position on arsenic drinking water standards[261] and confirmed that—surprise—global climate change is a serious problem.[262] However, the Bush Administration struck pay dirt when it asked the NRC to form a

261. NATIONAL RESEARCH COUNCIL, ARSENIC IN DRINKING WATER: 2001 UPDATE (2001), *available at* http://www.nap.edu/books/0309076293/html/ (last visited Mar. 13, 2003).

262. NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS (2001), *available at* http://books.nap.edu/books/0309075742/html/.

committee to examine the scientific basis of the 2001 Klamath Biological Opinions.

While the NRC usually speaks in a cautious, nuanced voice, the Klamath committee's preliminary report minced no words. It concluded that "all components of the biological opinion issued by the USFWS on endangered species have substantial scientific support except for recommendations concerning minimum water levels for Upper Klamath Lake."[263] Based on the ten years for which detailed monitoring data were available, the committee found no firm connection between lake levels and either water quality or juvenile sucker recruitment.[264] Similarly, reviewing NMFS' coho BiOp, the committee found no "clear scientific or technical support for increased minimum flows in the Klamath River main stem."[265] Although the committee conceded that increased mainstem flows "seem[] intuitively to be a prudent measure for expanding habitat," it found that the recruitment record suggested that factors other than low flows were limiting.[266] Given the current state of knowledge, the committee concluded that there was no substantial scientific basis for changing lake levels or mainstem flows from those observed over the past ten years.[267]

The response to the Committee's interim report was swift. Newspaper reports trumpeted headlines critical of the wildlife agencies. The report shaped agency and judicial responses to the crisis. The Bureau quickly issued a new proposal for managing the Klamath Project for the next 10 years, relying heavily on the report. The report strongly influenced the Final 2002 Biological Opinions issued by the Fish and Wildlife Service and the National Marine Fisheries Service; both found that normal project operations would jeopardize the listed fish, but softened their demands for modification.[268] The Justice Department cited the interim report in its successful opposition to law suits filed by environmentalists and Lower Basin fishermen to ensure sufficient water for salmon runs. The Committee's work did not go unchallenged, however. Fishery scientists from Oregon State University criticized the interim report as plagued by "multiple errors that detract from its scientific usefulness."[269] In a paper accepted for publication in the peer-reviewed journal Fisheries, they argued that the report should not be

263. NRC Interim Report, *supra* note 15, at 2.
264. *Id.* at 12-16.
265. *Id.* at 3.
266. *Id.* at 18-19.
267. *Id.* at 3-4.
268. *See infra* text accompanying notes 282-291.
269. *See* Michael Milstein, *Report Says Klamath Panel Erred*, PORTLAND OREGONIAN, Nov. 14, 2002, at B9.

treated as the definitive scientific statement on the status and needs of the basin's fish.[270]

2. *Events in the agencies*

a. *Bureau of Reclamation*

By early 2002, Reclamation was finally nearing completion of the long-term plan it had been promising since 1992. In February, the Bureau issued a Biological Assessment (BA) on proposed operations over a ten-year period.[271] The agency once again asserted that all water needs in the basin could be satisfied; it proposed to maintain irrigation deliveries while protecting fish and wildlife in dry years with a "water bank," acquired through a variety of strategies such as water leases. The BA included virtually no information on how the water bank would function, whether water would be available in dry years, or what it would cost.

The two key variables in the 2001 BiOps, Upper Klamath Lake levels and flows below Iron Gate Dam, were addressed precisely as the NRC report had suggested. Reclamation proposed to maintain Upper Klamath Lake at or above average elevations for the period 1990 to 1999. The proposed minimum levels ranged from a low of 4,138.2 feet in September and October to a high of 4,142.4 in late May to early June. At the high point, those levels would exceed baseline levels expected in the absence of project operation, but they would fall as much as 2 feet below baseline levels at the low point.[272] In critically dry years, lake levels would be permitted to fall as low as 4,137.1 feet, nearly three feet below corresponding baseline levels.[273] To reduce entrainment, Reclamation proposed to screen the A Canal by April 2004.

The BA featured a similar pattern for flows at Iron Gate Dam, again depending upon water availability for the year and tied to 1990 to 1999 averages. Proposed flows would range between 993 cfs at the peak in late Marchand 542 cfs in late July. For critically dry years, flows would be as low as 547 cfs in late March, rising to 874 cfs in early April, then falling again to 501 cfs in late July.[274] By comparison, the Phase II Hardy Report recommended flows no lower than 1,000 cfs at the driest time of the driest year.[275] In the BA, Reclamation relied explicitly and heavily on the

270. *Id.*
271. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32.
272. *Id.* at 55.
273. *Id.* at 56.
274. *Id.* at 72.
275. THOMAS B. HARDY & R. CRAIG ADDLEY, U.S. DEPT. OF THE INTERIOR, EVALUATION OF INTERIM INSTREAM FLOW NEEDS IN THE KLAMATH RIVER, PHASE II FINAL

NRC preliminary report to justify its low flow requirements, emphasizing that the NRC committee had found no current scientific justification for deviating from 1990 to 1999 flows.[276]

Because consultation on the ten-year plan was not finalized before the 2002 project year began, on March 22 the Bureau requested ESA consultation on operation of the project for April and May.[277] For those months, Upper Klamath Lake levels were to be maintained above 4,142 feet, higher than the expected levels for a similarly dry year without project operation,[278] and entrainment was expected to be minor. FWS readily issued a "no jeopardy" opinion for the interim plan.[279] Although those months fall within the most critical period for young salmonids, NMFS reluctantly concurred with Reclamation's determination that the interim operation would not adversely affect the coho.[280] The terse concurrence letter makes it clear that NMFS simply felt it had no choice.[281] NMFS emphasized, however, that its concurrence applied only to operations for April and May, and that it was seeking additional consideration of spring flows by the NRC committee.

b. Fish and Wildlife Service

Both FWS and NMFS subsequently issued jeopardy opinions on the ten-year operations plan. In its BiOp, FWS held its ground against the NRC report. It concluded that the proposed project operations would jeopardize the key Upper Klamath Lake populations of both sucker species for several reasons. First, screening of A Canal would reduce entrainment of juveniles but not larvae, and entrainment would continue at Link River Dam. Second, shallow water depths in Upper Klamath Lake during dry years would mean worse water quality and a higher likelihood of localized fish kills. Third, shallow water would substantially limit spawning habitat as well as access to water quality refugia.[282]

REPORT 244 (2001), *available at* http://aaron.uwrl.usu.edu/docs/PhaseIIDraftFinalReportVer(1cPrint).pdf (last visited Mar. 13, 2003).

276. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 80.

277. *See* U.S. Dept. of the Interior, Fish & Wildlife Svc., Final Biological Opinion for the Bureau of Reclamation's Proposed Operation of the Klamath Project for the Period April 1 through May 31, 2002 at 2 (March 28, 2002), *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Final_2002_KPOP_BO.pdf.

278. *Id.* at 5.

279. *See id.* at 6-7.

280. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 79.

281. "Given the conclusions expressed by the NRC, NMFS currently has no basis for contradicting your determination...." Letter from James H. Lecky, Ass't Regional Administrator, Protected Resources Division, National Marine Fisheries Service, to David Sabo, Area Manager, U.S. Bureau of Reclamation, Mar. 28, 2002 (on file with authors).

282. FWS 2002 BiOp, *supra* note 40. FWS concluded that the proposed action was likely to adversely affect bald eagles, but would not jeopardize them. *Id.* at Section III, part 1, 30. Given

Defending the science in its 2001 BiOp, FWS pointed to reviews by faculty of Oregon State University and the University of California at Davis.[283] Explaining the apparent discrepancy with the NRC report, FWS stated that the best scientific information supported a relationship between lake level "and factors that affect water quality," as well as access to important habitat areas.[284] The agency went to great pains to explain how water depth could affect dissolved oxygen, pH, nutrient availability and algal blooms, and set out evidence supporting those connections. It also detailed the precise relationship between changes in lake depth and availability of habitats suitable for spawning, larvae, juvenile, and adult fish.

FWS also strongly criticized the Bureau's technique for forecasting water availability. Measurements of the winter snowpack, taken each April, predict a range of possible inflows. Of that range, the Bureau adopts as its forecast a level that will be exceeded in seven of ten years (known as the "70% exceedence" level). This is a conservative forecasting technique for irrigation planning, because inflows are much more likely to be underestimated than to be overestimated. But it has potentially injurious consequences for the fish because it substantially increases the probability that a year will be categorized as dry or critically dry, permitting lower lake and minimum flow levels.[285]

Although its jeopardy opinion openly challenged the NRC report, FWS appeared to lose its nerve in formulating its RPAs. Instead of mandating minimum lake levels above those proposed by the Bureau, the RPA included three milder requirements. First, it called for the Bureau to change its water forecasting method to use a 50% rather than a 70% exceedence level. This change would improve the correspondence between forecasts and actual water inflow, reduce the number of years designated as dry or critically dry, and therefore ensure that the lake was "not managed at artificially low levels."[286] Second, it called for the Bureau to substantially reduce entrainment of juvenile suckers at Link River Dam.[287] Third, it called for specific additional studies of water quality effects on the suckers. FWS also required Reasonable Prudent Measures

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this determination, FWS' subsequent conclusion that the proposed action would not take any bald eagles is confusing, to say the least. *Id.* at 162.

283. Those reviews had been solicited after the 2001 BiOp was issued, because it generated so much controversy.

284. *See* FWS 2002 BiOp, *supra* note 40, at ii.

285. *Id.* at 76.

286. *Id.* at 118.

287. PacifiCorp, which generates power from two hydroelectric diversions on the Link River, opposes fish screens because the cost might make power generation uneconomical. Michael Milstein, *PacifiCorp Opposes Call for Intake Screens*, PORTLAND OREGONIAN, March 22, 2002, at C9.

to minimize take of the suckers, including entrainment reduction measures and studies of the habitat needs of various sucker life stages.

c. National Marine Fisheries Service

NMFS also issued a jeopardy opinion for the coho. Like FWS, NMFS disputed both the Bureau's claim that it would operate the Project within 1990 to 1999 parameters and the NRC report's conclusion that operation within those parameters would sufficiently protect the fish. First, NMFS latched on to the report's statement that depletion of river flows below the 1990s reference levels could threaten the coho. As NMFS analyzed the ten-year plan, the proposed operation would tend toward historic minimum flows rather than averages, resulting in gradual depletion.[288] Second, NMFS argued that the committee's conclusions showed a lack of information on coho and the factors limiting their distribution in the Klamath River Basin. It then referred to the ESA consultation handbook, which directs FWS and NMFS to "provide the benefit of the doubt to the species concerned with respect to such gaps in the information base." Since some of the information the NRC report called for would take a decade or more to gather, NMFS concluded that, in the interim, it should "take a cautious approach" to evaluating the action.[289]

NMFS proposed an RPA calling for higher flows, phased in over time. It also called for a research program to evaluate the assumptions behind the Hardy Report, which had inspired the minimum flow requirements criticized by the NRC committee. The long-term flows called for in the RPA were well above those proposed in the BA, with spring minimums of 1300 cfs and late summer minimums of 1000 cfs. These increased flows would come in part from development of the water bank proposed by Reclamation in its BA; NMFS identified specific amounts of water that must be made available each year through the water bank. Recognizing that the Klamath Project is not the only water diverter upstream of Iron Gate Dam, however, NMFS concluded that the project should not bear the full brunt of restoring flows. Based on the distribution of acreage in the Upper Basin between project and non-project farms, NMFS decided that Reclamation should contribute 57% of the needed flows, or the amount proposed in its BA, whichever was greater. NMFS also told Reclamation to initiate a process to identify sources to provide the other 43% of needed flows.[290] In late October, 2002, a young NMFS biologist sought Whistleblower Act protection, charging that the agency's biological opinion had been improperly altered

288. NMFS 2002 BiOp, *supra* note 28, at 34-37.
289. *Id.* at 7.
290. *Id.* at 55-56.

at the last minute, at the behest of the Bureau and without input from agency scientists, to lower the required minimum stream flow levels.[291]

Reclamation agreed to operate the project for 2002 in accordance with the RPAs specified in the BiOps, but made clear its disagreement with those opinions. Key points of contention included the scientific underpinning of the opinions, the extent to which the proposed actions were under the Bureau's control, and the extent to which the Bureau should be responsible for remedying the sum of all threats to the species.[292]

3. *Events in the courts*

Meanwhile, litigation continued on several fronts. With the end of the irrigation year, the irrigators dropped their lawsuit against the 2001 Operations Plan. They replaced it with a takings suit in the Court of Claims, hoping to repeat the success of *Tulare Lake*. Their complaint sought damages "estimated to be in the range of $1 billion,"[293] a number surely concocted with an eye toward publicity rather than through a serious effort to quantify damages to the agricultural community.[294]

When FWS missed the deadline for responding to petitions to remove the Lost River and shortnosed suckers from the ESA protected list, the petitioners filed a suit to compel a response. In May, FWS determined that the petitions did not present substantial information indicating that delisting might be warranted.[295]

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291. *See* Steve Hymon, *Federal Biologist Invokes Whistleblower Act*, L.A. TIMES, Oct. 29, 2002, at B7; MICHEAL S. KELLY, NARRATIVE STATEMENT OF MICHAEL S. KELLY, FISHERY BIOLOGIST, NATIONAL MARINE FISHERIES SERVICE, *available at* http://www.peer.org/kellynarrative.pdf (last visited on Dec. 3, 2002).

292. *See* Memorandum from Kirk Rodgers, Regional Director, U.S. Bureau of Reclamation, to Rodney R. McInnis, Acting Regional Administrator, National Marine Fisheries Service, Decision Regarding the Proposed Action Addressed in the National Marine Fisheries Service's May 31, 2002 Biological Opinion on the Proposed Operation of the Klamath Project (June 3, 2002), *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Memo-NMFS.pdf; Memorandum from Kirk Rodgers, Regional Director, U.S. Bureau of Reclamation, to Steve Thompson, Manager, U.S. Fish & Wildlife Service, Decision Regarding the Proposed Action Addressed in the U.S. Fish & Wildlife Service's May 31, 2002 Biological/Conference Opinion on the Proposed Operation of the Klamath Project (June 3, 2002), *available at* http://www.mp.usbr.gov/mp150/envdocs/kbao/Memo-FWS.pdf.

293. Plaintiff's Complaint For Just Compensation and Damages, Klamath Irrigation District et. al v. United States (Oct. 11, 2001), *available at* http://www.kmtg.com/pdfs/Klamath Complaint.pdf.

294. Those costs had been estimated at $28-35 million. *See supra* text accompanying note 245.

295. FWS pointed to a 2001 status review showing that the fish were subject to continuing threats, and noted that populations did not seem to be increasing. Notice of 90-Day Finding on a Petition To Delist the Lost River Sucker and Shortnose Sucker, 67 Fed. Reg. 34,422 (May 14, 2002).

Fishing interests filed their own federal suit, challenging the low river releases provided for late spring and early summer 2002, during coho spawning, as well as the lake levels and flows called for under the ten-year plan. The suit challenged the plan's scientific foundation, pointing out that the river flows it proposed were considerably below those called for in the draft Hardy report and the NMFS 2001 BiOp.[296] In May 2002, the court rejected plaintiffs' motion for a temporary restraining order increasing flows. In defense of the Bureau's actions, the U.S. had cited the interim NRC report, which questioned the scientific link between higher flows and salmon survival. In the face of that report and NMFS' newly articulated concurrence with the low spring flows,[297] the judge concluded that plaintiffs had not sufficiently proven that those flows would harm the coho.[298] Undeterred, fishing interests and environmental groups soon filed a new suit, this one challenging the 10-year plan.[299]

Litigation has not been limited to issues of water diversion. The Oregon Natural Resources Council (ONRC) has issued a notice of intent to sue Reclamation over the use of herbicides in project operations.[300] ONRC also threatened to sue the three major irrigation districts in the Upper Basin under the Clean Water Act for applying acrolein in irrigation canals without permits,[301] and the permitting authority for granting permits without ESA consultation.[302] A coalition of

296. *See* Earthjustice, Supplemental Notice of Violation of the Endangered Species Act: Proposed Klamath Reclamation Project Operations for 2002 Will Jeopardize Threatened Coho Salmon and Endangered Lost River and Short-nosed Suckers, Adversely Modify the Designated Critical Habitat of the Coho, and Take These Species in Violation of Sections 7 and 9 of the Act 5 (Feb. 22, 2002), *available at* http://www.pcffa.org/Klam60-Day2002.pdf (last visited Mar. 13, 2003).

297. *See supra* note 280.

298. *See* Deborah Schoch, *Klamath Farmers Applaud Ruling*, L.A. TIMES, May 4, 2002, at B1.

299. Steve Hymon, *U.S. Orders Water Release Into Klamath River After Fish Die-Off*, L.A. TIMES, Sept. 27, 2002, at B8.

300. The Bureau sought section 7 consultation on the use of acrolein and copper in Project channels in the mid-1990s, and obtained no-jeopardy opinions from FWS. ONRC alleges, however, that the Bureau has failed to implement monitoring and reporting requirements imposed by those opinions. Oregon Natural Resources Council, Notice of Intent to File Suit Under the Endangered Species Act (July 2, 2002), *available at* http://www.onrc.org/lawsuits/copperhydrox/noi.html.

301. Oregon Natural Resource Council, Press Release, ONRC Places Three Klamath Basin Irrigation Districts on Notice for Clean Water Act Violations (Mar. 28, 2002), *at* http://www.onrc.org/press/035.acrolein.html.

302. *See* Oregon Natural Resources Council, Notice of Intent to File Suit Under the Endangered Species Act (Aug. 14, 2002), *available at* http://www.onrc.org/lawsuits/acrolein/NOI.html.

environmental groups also filed a suit challenging the continuation of leased-land farming in the basin's wildlife refuges.[303]

4. Events in the Congress

All sides also jockeyed for position in Congress. The 2002 Farm Bill gave Klamath farmers $50 million for conservation and water quality improvement measures.[304] Farmers must compete for funds, which will be given only for improving irrigation delivery systems and riparian and pasture habitats. The money cannot be used to buy and fallow farmland. In addition, a little-noticed provision slipped into the bill by former Rep. Gary Condit (D. CA) directs the Department of Agriculture to formally study the feasibility of expanding crop insurance to cover "agricultural producers experiencing disaster conditions caused primarily by Federal agency action restricting access to irrigation water."[305] The farmers could have enjoyed greater success. Congress dropped another $125 million in aid to the region when the Klamath Water Users Association opposed it, largely because the funds could have been used for land or water buyouts.[306]

Long-time opponents of the ESA saw the NRC preliminary report as an opportunity to revive their claims that ESA decisions limiting economic activity need to be supported by stronger science. The House Resources Committee held oversight hearings on the use of science in the Klamath biological opinions.[307] A bill, dubbed the "Sound Science for the Endangered Species Act Planning Act of 2002" was introduced, calling for independent scientific review before finalizing: decisions to add or remove a species from the protected list (but not decisions not to add a species to the list); recovery plans; and "jeopardy" (but not "no jeopardy") opinions where there is "significant disagreement" about the

303. *See* Michael Milstein, *Suit: Klamath Refuge Water Belongs to Wildlife*, PORTLAND OREGONIAN, Oct. 30, 2002, at B1. Refuge officials opposed the suit because they were afraid it would alienate basin farmers on whom the Refuges depend for return irrigation flows. *Id.*

304. *See* Jim Barnett, *Farm Bill Guarantees $50 Million to Klamath*, PORTLAND OREGONIAN, Apr. 30, 2002, at A1.

305. Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-171, § 10108; *see also* Michael Doyle, *Valley Growers Get Unexpected Bonus in Farm Bill*, SACRAMENTO BEE, May 8, 2002, at D2.

306. Approximately 50 farmers representing 25,000 acres in the Upper Basin have accused the Association of interfering with their right to sell their land. Michael Milstein, *Farmers Fault Water Users Group*, PORTLAND OREGONIAN, June 22, 2002, at D4. Other farmers have expressed concern that the money will only be used on the Upper Klamath to the exclusion of the tributaries.

307. HOUSE COMMITTEE ON RESOURCES, NATIONAL ACADEMY OF SCIENCES INTERIM REPORT ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN (2002), *available at* http://resourcescommittee.house.gov/resources/democrats/pr2002/20020313naskamathreport.html (last visited Mar. 13, 2003).

opinion or the opinion could have "significant economic impact."[308] In reporting the bill out, the Resources Committee eliminated the asymmetry with respect to jeopardy opinions, but not with respect to listing decisions.[309] Reviewers would be appointed by Interior and the Governors of affected states.[310]

Environmentalists also sought help from the legislature, without notable success. Portland's Democratic Congressman, Earl Blumenauer, sought to amend the Interior appropriations bill to limit commercial farming in the basin's National Wildlife Refuges. The proposal was narrowly defeated.[311] Late in the 2002 legislative session, Blumenauer and California Congressman Mike Thompson introduced a bill that would provide federal funding for water conservation efforts in the Upper Basin and financial assistance for Lower Basin fishing communities and tribes.[312] Their bill would also combine the Upper Klamath Basin Working Group and Klamath Basin Fisheries Restoration Task Force into a single Klamath Basin Restoration Task Force with representation from Upper Basin interests, Lower Basin interests, federal agencies, state agencies, tribes, and local governments. More controversially, the bill would make fish and wildlife conservation an explicit purpose of the Klamath Project, and require that river flows below Iron Gate Dam be maintained at the minimum levels specified in the Hardy II Report.[313] Given the shift of power to the Republicans in the 2002 elections, this bill is unlikely to reappear in anything close to its original form in the 108th Congress.

5. *Events on the landscape*

The year after the crisis began with substantial optimism. The winter rains arrived, as they had not the prior year. As water rose in the National Wildlife Refuges, the birds returned. No lingering ill effects on Refuge migrants from the dry year were observed.[314] Interior Secretary Gale Norton, Agriculture Secretary Ann Veneman, and Oregon Senator Gordon Smith opened the A Canal headgates with great fanfare on

308. H.R. 4840, 107th Cong., 2d Sess. (May 23, 2002).

309. H.R. 4840, 107th Cong., 2d Sess. (Oct. 15, 2002). The bill did not come to a vote in the 107th Congress. As of March 20, 2003, it had not been re-introduced in the 108th Congress.

310. *Id.*

311. Jim Barnett, *Effort to Limit Klamath Basin Farming Fails*, PORTLAND OREGONIAN, July 18, 2002, at B1.

312. H.R. 5698, 107th Cong., 2d Sess. (2002).

313. *Id.*

314. *See* Bailey, *supra* note 18, at B6. After another unexpectedly dry year, waterfowl numbers fell dramatically. *See* ASSOCIATED PRESS, *Waterfowl Migration Numbers Low in Basin*, Nov. 11, 2002, *available at* 2002 WL 25623142.

March 29, emphasizing that water supplies seemed to be sufficient to meet the needs of both farmers and fish.[315]

Within weeks, however, that optimism had given way to another dry summer. By the end of April, although irrigation deliveries had not yet reached their peak, reduced flows below Iron Gate Dam had stranded juvenile salmon in puddles; young coho were rescued by biologists from two low water areas.[316] By July, Reclamation had revised its water forecast down from "below average" to "dry." Based on that change in the forecast, the Bureau began further ramping down releases to the river, and asked irrigators to conserve water.[317] Nonetheless, Klamath Basin farmers received their water while flows were reduced for the Lower Basin just as the (unlisted) chinook salmon began returning to the river.[318]

A massive salmon die-off ensued, although the role of reduced river flows in that die-off remains contested. Some 33,000 fish died in the lower forty miles of the Klamath river in September 2002.[319] The immediate cause of the deaths was an epidemic of two common parasitic diseases, triggered by crowding of the fish into the low, warm waters at the mouth of the river. Scientific battle lines were immediately drawn. The Bureau of Reclamation and the Bush Administration argued that, given the distance between the project and the fish kill, it was "premature" to attribute the kill to project operation.[320] Environmentalists and the state of California, though, blamed the die-off on the Bureau's decision to supply irrigation water, which resulted in river flows 25% below those in the crisis summer of 2001. The Bureau initially refused to release additional water, on the contested ground that the water in the upper reaches of the system was too warm. It did, however, eventually provide a two-week "pulse" release from Iron Gate Dam which increased the flow

315. Press Release, Klamath Basin Federal Working Group, Secretaries Norton and Veneman, Senator Smith Open "A" Canal Headgates, Provide Water to Irrigators (Mar. 29, 2002), *available at* http://www.doi.gov/news/020329.html.

316. Deborah Schoch, *A Race to Save Baby Salmon in Klamath*, L.A. TIMES, May 2, 2002, at B10.

317. *See* U.S. Dept. of the Interior, Bureau of Reclamation, Mid-Pacific Regional Office, News Release, Reclamation Changes Water Year Type for Klamath Basin, July 10, 2002.

318. John Driscoll, *Reclamation Cuts Water as Klamath Salmon Start Run*, EUREKA TIMES-STANDARD, Aug. 3, 2002. In agreeing with the DOI cuts, the NMFS' regional administrator for protected species observed that "if the water's not there it's not there." *Id.*

319. Roughly 30% of the fish killed were from hatcheries, while the remaining 70% were wild fish. The vast majority, about 95%, were the non-listed chinook. Jeff Barnard, *Klamath Fish Kill Blamed on Bush*, CONTRA COSTA TIMES, Oct. 29, 2002, at 13. According to tribal biologists, the dead included nearly 200 endangered coho. *See* Michael Milstein, *U.S. Official Pledges Study of Fish Die-Off*, PORTLAND OREGONIAN, Oct. 3, 2002, at D1.

320. Michael Milstein and Jim Barnett, *Salmon Die-Off Becomes Harsh Reality*, PORTLAND OREGONIAN, Sept. 29, 2002, at A1.

from 800 to 1300 cfs.[321] It is unclear whether that pulse helped the fish at all.[322]

III
LEARNING FROM A TRAIN WRECK

The most obvious lesson from the 2001 Klamath Basin crisis and the events leading up to that crisis is that the status quo is unsustainable. There is not enough water in the basin to satisfy all the competing demands. Increases in storage capacity sufficient to satisfy all those demands are not on the horizon. The real questions, then, are what interests will have to yield, on what terms, and how those decisions will be made. Several factors have made it difficult to address those questions. Unless these barriers can be surmounted, another train wreck is inevitable.

A. The Consequences of Culture Clashes

During the summer of 2001, Klamath Project irrigators sought to portray the conflict as "farmers versus fish." This was a misleading characterization, because it glossed over the long-term sustainability of the area as a functioning ecosystem and agricultural district and marginalized other legitimate interests. Other people with legitimate interests in the basin's water include environmentalists, both local and distant, who simply want to see the endangered fish survive; commercial salmon fishermen in the lower basin, whose economic interests directly conflict with those of the upper basin farmers; and the tribes, both in the Upper and Lower Basin. Each of these groups, like farmers, seek to protect its culture, way of life, and vision of what the West should be.

The stakes are much higher than water or money; for a substantial fraction of each group nothing less than cultural identity is at stake. It is difficult to find any common ground in these disputes. Contending cultural groups tend to demonize one another,[323] and, because their visions of the problem are so different, it is frequently difficult for them even to communicate with one another. Money cannot resolve these conflicts. Indeed, strong adherents of cultural positions vigorously resist

321. *See* Glen Martin, *New Clash on Salmon Die-Off*, S.F. CHRON, Oct. 3, 2002, at A3; Timothy Egan, *As Thousands of Salmon Die, Fight for River Erupts Again*, N.Y. TIMES, Sept. 28, 2002, at A. Any permanent increase in flows in the lower river will necessarily come at the expense of the project farmers and the endangered suckers in Upper Klamath Lake.

322. The die-off had already slowed by the time the pulse reached the lower river. The California Department of Fish and Game expressed concern that the pulse might even make matters worse by coaxing fish upstream, where they would be stranded in small pools when the pulse ended. *See* Eric Bailey, *U.S. Denies Blame for Die-Off of Salmon*, L.A. TIMES, Oct. 3, 2002, at B1.

323. *See supra* notes 251-253 and accompanying text.

the possibility of buy-outs. In the Klamath, this resistance has been most apparent among the farmers. The Klamath Water Users Association, the voice of the basin's most committed farmers, reportedly scuttled congressional approval of funding for voluntary purchases of land or water rights in the region.[324] Some farmers in the Upper Basin who are prepared to sell have complained that the Association has usurped their ability to control their property.[325]

The water conflicts in the Klamath Basin appear even more intractable than those in large, complex systems like the Platte, Rio Grande, and San Francisco Bay-Delta. Surprising as it may seem, the smaller the basin, the more difficult it is to find broadly acceptable, fair solutions to water allocation conflicts. There are many reasons for this, but four stand out. First, winners and losers are easier to identify in small basins. Second, the costs of conservation are almost entirely local, while the benefits are much more broadly dispersed. In a small basin like the Klamath, the costs of protecting the fish are, at the moment, concentrated on the project irrigators. The benefits inure particularly to the tribes, who also are relatively small groups, but also to downstream fishing communities and a diffuse group of environmentalists. Those who stand to bear concentrated conservation costs strongly resist change, while those receiving diffuse benefits are less likely to effectively organize. Third, the smaller the user, the more deeply entrenched the water use. Farms in the Klamath Basin tend to be small. Unlike large corporate agricultural interests, small farmers have a low tolerance for risk and see few alternatives to preserving the status quo, regardless of the impacts on others or society. Fourth, the margin of error for inaccurate management decisions is smaller because the costs of error are more concentrated.

The root of the problem is that the contending groups see the conflict through too narrow a lens. The ultimate issue is not "farms versus fish" or even farmers versus fishermen. The ultimate issue is how to define a sustainable landscape, and how to achieve it in a just way. The only way to defuse a culture clash is to assure all contending groups that they can pursue their chosen way of life. Here, that appears impossible; the basin simply cannot support the current level of farming and continue to provide the ecosystem services demanded by fishermen, tribes, and environmentalists. Not all the basin's farmers, however, are culturally committed to remaining. Some are willing to sell out. The culture clash might prove tractable if it were possible to assure the survival of a viable agricultural community, perhaps by targeting the lowest value lands for acquisition and assuring some level of water delivery to the higher value

324. *See supra* note 306 and accompanying text.

325. *See* Ryan Harper, *Group of Project Landowners Raises Issue with Water User Association*, HERALD & NEWS (Klamath Falls), June 21, 2002.

lands. It may be possible to maintain a reduced level of farming in the basin, while also protecting the fish and all they represent to other communities. But in order for that to happen the farmers must be willing not only to let some lands go fallow but to move to more adaptive, sustainable agricultural practices.

The Klamath crisis of 2001 was anticipated by those familiar with the system at least a decade before it actually occurred. Whatever the precise lake levels or river flows needed to maintain the suckers and salmon, it was obvious that demands on the region's water exceeded supply in dry years. Yet the Bureau of Reclamation made every effort to buffer its water contractors against water shortages during the drought years of the 1990s. The state of Oregon did nothing to expedite the Klamath Basin adjudication process. EPA and Oregon's Department of Environmental Quality turned a blind eye to the region's water quality problems.

That response is understandable. Addressing the problem would have required changing the status quo by taking water from the irrigators, a politically appealing and vulnerable community. But delay, no matter how well intentioned, has made the eventual crisis worse. Had the Bureau forced them to face the less severe droughts of the 1990s, many farmers might have taken steps to make their operations less vulnerable, such as increasing their water use efficiency, switching to less water-intensive crops, adjusting their planting decisions annually based on water supply forecasts, drilling wells and applying for groundwater rights, or even accepting buyout offers. Those kinds of adjustments are less wrenching, and often less expensive, before the situation reaches crisis proportions.

The irrigators themselves seem to have courted this crisis, probably more out of denial and hopeful optimism[326] than Machiavellian manipulation. They (and farmers in other water-stressed basins), too, should take a lesson from it. Although they may have thought it was politically impossible to deny them water in favor of some uncharismatic, little-known fish species, they learned otherwise. Even the Bush Administration did not immediately leap to their defense. That's a telling result.[327]

Agricultural interests might have hoped that the crisis would either bring them an individualized exemption from the ESA or even spark amendment of the Act. But the ESA once again proved surprisingly

326. Wishful thinking is characteristic of human nature. *See* Barton H. Thompson, Jr., *Tragically Difficult: The Obstacles to Governing the Commons*, 30 ENVTL. L. 241, 258 (2000).

327. It might be unique to this basin, which is lightly populated and produces mostly low-value crops, but the Bush Administration's swift move to cut Colorado River water allocations to irrigators as well as to cities in California when negotiations for voluntary water transfer collapsed suggests otherwise. *See* Stuart Leavenworth & Dale Kasler, *Imperial Deal for Water is a Bust*, SACRAMENTO BEE, Jan. 1, 2003, at A1.

resilient in the face of a high-profile conflict. That might give a future administration, more committed to conservation, greater confidence that the Act can be strongly enforced against agricultural activities in the future.[328]

In the long run, the combination of the ESA and Indian reserved rights puts the Klamath Project irrigators in a weak legal position. Irrigated agriculture's key challenge is to integrate itself into a political universe which seeks to change part of the western landscape from a garden to a wilderness. The economic rationale for this vision is that the doctrine of prior appropriation has locked too much water into inefficient agricultural uses[329] and does not provide enough water for growing cities and ecosystem restoration.[330] The transition will be easier if the irrigators take the initiative to begin it now, before the next crisis hits.

B. The Effects of Legal Uncertainty

The Klamath Basin is plagued by uncertainties about legal rights and responsibilities that complicate efforts to resolve its water conflicts. Uncertainty heightens the tension of the culture clashes, allowing all sides to overestimate their entitlements and underestimate others. Uncertainty also impedes settlement by willing parties because it is such a challenge to value what is given up or received.

The uncertainties begin with the extent of water rights. Because the state has yet to complete its adjudication, water rights in the Klamath Basin remain unquantified. That includes the federal Indian reserved rights that carry the earliest priority dates, and the federal NWR reserved rights with later priority dates. Although those rights should make water available for the protection of fish and the ecosystem, they remain virtually worthless so long as the adjudication remains incomplete because enforcing them against junior users is effectively impossible. The tribes feel (understandably) that they have been deprived of control over water that is rightfully theirs and needed to protect their culture. At the same time, irrigators have been allowed to develop a sense of entitlement

328. It remains to be seen whether the widely publicized NRC Interim Report, which exposed the ESA as less scientifically objective than might have been thought, will undermine public support for the ESA.

329. To the extent that senior rights correspond to high-valued uses for which security of supply is crucial and junior rights correspond to low-valued uses for which security is not crucial, the priority system may be an efficient method of allocating scarce supplies. However, such a relationship does not necessarily exist. For Example Westlands Water District is a low *priority* district [for the distribution of Central Valley Project Water], but it is a high *productivity* district. Janis M. Carey & David L. Sunding, *Emerging Markets in Water: A Comparative Analysis of the Central Valley and Colorado-Big Thompson Projects*, 41 NAT. RESOURCES J. 283, 301 (2001).

330. SARAH F. BATES ET AL., SEARCHING OUT THE HEADWATERS: CHANGE AND REDISCOVERY IN WESTERN WATER POLICY 184 (1993).

to, and dependence upon, that water that makes them defend their claim to it fiercely. The combination makes compromise unlikely.

It also means that the irrigators assign a much higher value to their water rights (and the land to which they are attached) than environmentalists or others with conflicting claims to the water. That makes it excruciatingly difficult for water markets to move water to more socially valuable uses. Some farmers might voluntarily idle their lands in dry years if environmental groups, taxpayers, or farmers with higher value crops would pay for the water. But without clarity about the extent and priority of water rights, those transactions cannot happen.[331]

Uncertainty also surrounds the extent and strength of federal "regulatory water rights" under the ESA. It is reasonably clear that the ESA overrides state appropriative water rights and water contracts to the extent necessary to protect the species. There is considerable confusion, however, about precisely what the ESA requires. "Take," including harming the fish, is forbidden, but the sketchy scientific evidence makes it difficult to identify with any confidence the point at which harmless water use ends and take begins. Even if that point could be clearly identified, drawing a causal connection between any individual diverter and the reduced flows or water quality resulting in take would be difficult.

Critical habitat cannot be adversely modified by actions with a federal nexus, but critical habitat has never been designated for the sucker species. While it has been designated for the coho, it is just a location on a map; its essential elements have not been clearly described.

Federal actions also must not be likely to jeopardize the continued existence of the species, but the extent of acceptable risk has never been quantified, nor is it clear how much risk water diversions impose. The uncertainty about the scope of ESA duties encourages water users to deny that they are legally (or morally) responsible for protecting the listed fish.

C. *The Role of Science*

The ESA tries to finesse the culture clash and hide some of the uncertainties by framing the conflict as one of scientific facts rather than of values. On its face, the ESA seems to call for a reasonable compromise: no culture can be permitted to jeopardize the continued existence of a listed species. That standard was relatively easy for all sides to agree to in the abstract, before the limits it imposed became obvious. It seems to leave room for all the competing cultures, and to provide an

331. Even the amount of water withdrawn for various uses is uncertain. No one knows, for example, how much water is removed from the system by irrigators upstream of the project. That makes it difficult to determine the extent to which upstream irrigators should contribute to the solution, or how helpful retiring non-project lands would be.

objective means of resolving conflicts among them. As many observers have pointed out, the ESA is basically a development permit program, rather than a comprehensive biodiversity program.[332]

The problem with that approach, as the Klamath experience vividly demonstrates, is that the science cannot support the stress put upon it. Section 7 suggests that there is a magic point of balance at which irrigators are supplied as much water as possible, while ensuring the survival of the fish. The wildlife agencies have based their implementation of section 7 on the search for this magic point, evaluating proposed actions on a first-in-time, first-in-right basis and permitting them until the available "cushion" is consumed and further impacts are likely to cause jeopardy.[333] Science is supposed to guide this search; the Services must use the best available scientific data to formulate their biological opinions.[334] The statute does not forbid the incorporation of other types of knowledge in the section 7 process, but the pounding rhetoric of "good science" suggests to the public that nothing else is needed. The hard truth is that the future of the Klamath involves value choices that, while they must be informed by science, must ultimately rest on a shared social vision of the landscape.

Unfortunately, our knowledge of the needs of endangered species, and our ability to predict future environmental conditions, are typically far too limited to identify the magic point with any confidence. That is surely true in the Klamath. The NRC Interim Report, for example, emphasized that reliable information correlating the status of the sucker species with lake conditions was available only for the past decade.[335] The Report concluded that the available evidence did not show either that the fish needed more water than they had received during that ten-year period or that they could survive with less.[336] But data from one decade can hardly be said to clearly establish that the fish can tolerate the status quo over the long term. Similar confusion surrounds the needs of the coho salmon. Perhaps all that can be said with confidence at the moment about scientific knowledge is that it does not clearly identify the minimum level of water the fish require. Because stronger data are

332. This point was first made by Oliver Houck, *The Endangered Species Act and Its Implementation by the United States Departments of Interior and Commerce*, 64 U. COLO. L. REV. 277 (1993). It continues to accurately describe the way the ESA works.

333. *See* Cumulative Impacts Under Section 7 of the Endangered Species Act, 88 Interior Dec. 903, 905 (1981). Professor Mary Wood uses a more accurate term than "cushion": the "mortality increment." *See* Mary Christina Wood, *Fulfilling the Executive's Trust Responsibility Toward the Native Nations on Environmental Issues: A Partial Critique of the Clinton Administration's Promises and Performance*, 25 ENVTL. L. 733, 785 (1995).

334. 16 U.S.C. § 1536(a)(2) (2000).

335. *See* NRC INTERIM REPORT, *supra* note 15, at 12.

336. *See id.* at 3.

difficult and expensive to gather,[337] it is unlikely that science will provide that information any time soon.

Section 7 also sets up a culture clash of its own, between the wildlife agencies and the action agency. By requiring that the action agency "ensure" that its actions are "not likely to" cause jeopardy, the statute seems to call for giving the benefit of the doubt to the species.[338] But political pressures to maintain the status quo push the other way. Given their professional orientation, the wildlife agencies might be expected to systematically favor the species, demanding more water than they might need. That might produce unnecessary restriction of farming and other activities. The Bureau of Reclamation, on the other hand, sees the irrigators as its clients and can be expected to favor their interests. That would tend to lead to optimistic interpretation of the data, and overexploitation of the resource.[339]

Emphasizing the scientific basis of section 7 decisions strengthens the Services' position in this conflict, because the Services have the stronger claim to scientific expertise about the needs of the species. That makes it risky for action agencies like the Bureau to ignore the Services' determination of whether the jeopardy point has been crossed; courts might be expected to defer to the Services' expert judgment.[340] The scientific advantage may help explain why Secretary Norton, who would be expected to sympathize with irrigators in this conflict, did not immediately overrule FWS' jeopardy opinion. Doing so would have been seen as politics interfering with science. Instead, Secretary Norton cleverly chose to seek an outside review of the science itself.

The result of that review, and the subsequent reaction in the media, exposes the downside of the Services' rhetorical emphasis on science. That rhetoric diverts attention from the non-scientific precautionary aspect of the statute. The Services believe that section 7 requires them to give the benefit of the doubt to the species when biological data is incomplete.[341] But they much prefer to characterize their section 7 decisions as driven by science, perhaps because that deflects political pressures. When the science turns out to be thin, however, as in the Klamath Basin, the Services can end up looking like the emperor with no clothes. The NRC interim report emboldened the Bureau to resist the Services' demands, and sparked Congressional oversight hearings bashing the Services for improper use of science. It left the Services belatedly

337. *See id.* at 20.

338. *See supra* notes 154-155 and accompanying text.

339. *See* Donald Ludwig, et al., *Uncertainty, Resource Exploitation, and Conservation: Lessons from History*, 260 SCIENCE 17 (1993).

340. *See* Bennett v. Spear, 520 U.S. 154, 169 (1997) (noting "powerful coercive effect of biological opinion").

341. *See supra* note 155 and accompanying text.

trying to shift the rhetorical battleground to the need for caution. Heavy reliance on science is thus a double-edged sword for the wildlife agencies.

Nor does the emphasis on science reduce controversy. Where the evidence is equivocal, as it so often is with respect to endangered species, that emphasis is actually likely to escalate the tension level. Biased assimilation is human nature; people interpret mixed evidence as supporting their pre-conceived view and refuting their opponents' view. Positions on both sides tend to harden in the face of mixed scientific evidence.[342] Although many scientific answers are highly contingent, science's power to legitimate or undermine intrusive and costly regulation creates new battles about which side has the "good science," shorthand for the exclusive truth. Convinced that their interpretation of mixed evidence is the only tenable one, both sides are likely to conclude the other is operating in bad faith, making compromise increasingly difficult to achieve.[343] Demanding a purely scientific solution leaves no way to escape that cycle.

Ultimately, science alone cannot tell us how to allocate the limited water resources of the Klamath Basin. Neither can a simple-minded appeal to caution. Society must decide how cautious it should be, and at what cost. For example, the 2002 FWS BiOp asserts that deeper water in Klamath Lake would "most likely improve water quality, at least incrementally,"[344] increasing the sucker species' chances of survival. Whether that incremental improvement is worth the costs, economic and otherwise, it will impose, and how those costs should be distributed are questions that require a mix of ethical, economic, and scientific reasoning. Calls for "good science" unhelpfully obscure the real issues.

D. A Roadmap for a Comprehensive Approach

Because of the ways their statutory authorities are framed, it is not surprising that the federal agencies involved in the Klamath crisis have taken very narrow views of the problem. The Klamath is ultimately an exercise in bioregionalism[345] but agencies can only adopt this perspective indirectly. Their narrow view is the lingering legacy of the conservation era, when they were created as mission-specific agencies. We have

342. *See* Jeffrey J. Rachlinski, *The Psychology of Global Climate Change*, 2000 U. ILL. L. REV. 299, 305.

343. *See* Paul Sabatier et al., *The Devil Shift: Perceptions and Misperceptions of Opponents*, 40 W. POL. Q. 449 (1987).

344. FWS 2002 BiOp, *supra* note 40, at 57.

345. *See* Keane Callahan, *Bioregionalism: Wiser Planning for the Environment*, 45 LAND USE LAW AND ZONING DIG. 3 (August 1993).

modified but not rethought their historic missions.[346] The net result is that agencies are ill-equipped to propose comprehensive, long-range solutions that require large-scale ecosystem management.[347] For example, the Bureau's 2002 Final Biological Assessment compiled a detailed, basin-wide, ecological catalog of causes and effects of environmental degradation but then narrowly concluded that the delivery of water to project beneficiaries, viewed in isolation, would not jeopardize the endangered species. NMFS and FWS disagreed with that conclusion, but also focused solely on project water deliveries. This is ultimately a myopic view of the basin, albeit one the law encourages. The agencies' tunnel vision escalates the level of conflict and complicates the search for solutions. A larger view is needed to avoid repeating past mistakes.

The Bureau of Reclamation sees the Klamath Basin only as the site of the Klamath Project, and its duties under the ESA as limited to distributing project waters in a manner consistent with the Act.[348] To the Bureau this duty, however strict, is a sharply limited one; it does not include any responsibility for the effects of non-project irrigation,[349] farming practices such as pesticide use on project lands,[350] or even operation of Link River Dam for hydropower generation. [351] Similarly, NMFS sees the basin only as a source of threats to the coho that must be controlled, and the project as the only viable handle for that control. FWS has a slightly less simplistic view, because it has had to think about bald eagles and the effects of pesticides, but it too has preferred to separate the effects of the project, narrowly construed, from other environmental problems in the basin.

Such narrow views are ecologically and socially unrealistic. The basin is a dynamic ecological and social system under stress. Modern ecology views ecosystems as dynamic, complex systems continually adapting to change and stress.[352] Ecosystems are nether stable nor chaotic, but evolve

346. *See* A. Dan Tarlock, *Biodiversity Conservation in the United States: A Case Study in Incompleteness and Indirection*, 32 ENVTL. L. REP. 10529 (2002), *reprinted in* JOHN DERNBACH, ED., STUMBLING TOWARD SUSTAINABILITY 312 (2002).

347. For a perceptive analysis of the legal consequences of increasing scientific focus on large-scale ecosystems see Fred Bosselman, *What Lawmakers Can Learn from Large-Scale Ecology*, 17 J. LAND USE & ENVIR. L. 207 (2002).

348. *See* 2002 FINAL BIOLOGICAL ASSESSMENT, *supra* note 32, at 1-9.

349. The Bureau takes the position that "the Project should not be responsible for effects of all of the water development and land management activities throughout the Basin" on endangered species. *Id.* at 2.

350. Reclamation has consulted with FWS on pesticide use in project canals, but not with respect to associated use on private lands. *See* FWS 2002 BiOp, *supra* note 42, at 2-3 (consultation history for the Klamath project).

351. Despite its ownership of Link River Dam, the Bureau contends that it lacks the authority to require PacifiCorps to install fish screens or take other measures to limit entrainment at the Dam. *See* FWS 2002 BiOp, *supra* note 40, at 11.

352. *See* PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS 1-23 (Lance H. Gunderson and C.S. Holling eds.).

at varying rates over different spatial scales. The rate of change is not continuous, and systems can display equilibria states for long periods of time but then collapse.[353]

The Klamath's ecological problems are traceable to the cumulative effects of project and non-project water diversion, and agricultural practices. Irrigation upstream of the project supplies more than forty percent of the irrigated acreage in the Upper Basin, and reduces lake levels and river flows just as surely as project diversions. Yet the non-project irrigators have not so far been forced to share in the solution, for both practical and legal reasons. As a practical matter, withdrawals upstream from Upper Klamath Lake have not been quantified,[354] making it difficult to allocate responsibility between project and non-project irrigators. As a legal matter, the federal project provides the most convenient hook for application of the ESA.

Because the project is a federal action, section 7 requires consultation on its operation as a whole. For that purpose, non-project irrigation is treated as part of the environmental baseline, essentially giving non-project irrigators priority over the project. Without a federal nexus, non-project operations can only be addressed through section 9. That would require FWS to prove that the actions of a specific entity (an individual farmer or irrigation district) caused the take of a listed fish, which can be difficult. The law, in other words, makes it much easier to look to project irrigators than to non-project irrigators to bear the costs of protecting the endangered fish. It is easy to see why project irrigators (and the agency that serves them, the Bureau) would feel unfairly burdened. The result in the Klamath has been both increased antagonism between regulators and project irrigators, and Biological Opinions that, because of reluctance to impose inequitable burdens on project irrigators, leave protection of the listed species in doubt.[355]

Besides water diversion, agricultural practices in the basin contribute to the problems facing the fish, and ultimately constitute the major threat to biodiversity in the basin. Fertilizers, pesticides, and manure from livestock operations wash into the rivers and lakes and cause eutrophication.[356] There is no dispute that Upper Klamath Lake is nutrient-rich and that the impaired water quality puts the endangered fish at increased risk.[357] The NRC Interim Report agreed that "changes in the water quality of Upper Klamath Lake have increased mass mortality

353. *Id.* at 72-77.

354. FINAL 2002 BIOLOGICAL ASSESSMENT, *supra* note 32, at 86.

355. *See supra* note 290 and accompanying text.

356. Eutrophication is the excessive accumulation of nutrients, leading to lush algal growth and oxygen depletion.

357. NRC INTERIM REPORT, *supra* note 15, at 13.

among adult suckers."[358] The Report did not find a clear empirical link between lake levels and water quality, but warned that "[a] negative association between welfare of the species and lake levels could emerge if lake levels are reduced below those of recent historical experience."[359]

It is difficult, however, to assign responsibility for the basin's water quality problems. Only about 16 - 40 percent of the nutrient loading is anthropogenic; the rest comes from natural background conditions.[360] To further complicate matters, other non-anthropogenic events such as hot, relatively calm weather can cause or increase the risk of fish kills, as illustrated by the massive fish kill of September 2002.[361]

Federal law provides some tools for addressing the anthropogenic pollution loads, but those tools have so far gone largely unused. Nutrient loadings could be equitably addressed through development and implementation of a Total Maximum Daily Load (TMDL) under the Clean Water Act,[362] but it remains to be seen if this will be done. In May 2002, the Oregon Department of Environmental Quality submitted a TMDL for the Upper Klamath Basin to EPA.[363] The TMDL calls for a 40 percent reduction in total phosphorous loading in Upper Klamath Lake,[364] but sets specific load targets only for the two point sources of phosphorous pollution, which represent a negligible proportion of the problem.[365] The TMDL also includes a general target for all nonpoint source contributions to phosphorous loading, but leaves development and implementation of management plans for forest and agricultural practices to the future, under the direction of the Oregon Departments of Forestry and Agriculture.[366]

Pesticide pollution also may pose problems for the sucker species. Pesticides cannot be used without registration by EPA under the Federal

358. *Id.* at 12.

359. *Id.* at 20.

360. *See* K.A. Rykbost & B.A. Charlton, Nutrient Loading in the Klamath Basin, Western Nutrient Management Conference, 2001 Proceedings, Vol. 4, 74, 79, *available at* http://www.css.orst.edu/nm/WCC103/2001_proceedings/Nutrient_Loading-Rykbost.pdf.

361. *See supra* text accompanying notes 319-322.

362. For a detailed description of the Act's TMDL requirements, *see* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION (1999). TMDLs must be developed for water bodies impaired solely by non-point sources, even though the Act does not directly impose limits on non-point source pollution. *See* Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2002).

363. DEPT. OF ENVTL. QUALITY, STATE OF OREGON, UPPER KLAMATH LAKE DRAINAGE TOTAL MAXIMUM DAILY LOAD (TMDL) AND WATER QUALITY MANAGEMENT PLAN (WQMP) (May 2002), *available at* http://www.deq.state.or.us/wq/TMDLs/UprKlamath/UprKlamathTMDL.pdf.

364. *Id.* at 65.

365. *Id.* at 68-71.

366. *Id.* at 171-74.

Insecticide, Fungicide, and Rodenticide Act.[367] Consultation under the ESA is required when registration may adversely affect a listed species.[368] Limitations on pesticide use can be imposed through that process if necessary to protect the species. So far, however, EPA has not consulted with the Services on the effects of pesticide use on listed species in the basin, other than direct use in project irrigation channels.[369]

The Clean Water Act's permit requirement for point source pollution can also play a role in dealing with pesticide pollution. The Ninth Circuit has held that direct use of aquatic pesticides in irrigation ditches requires a permit under the National Pollution Discharge Elimination System (NPDES).[370] EPA, however, has not accepted that ruling. Instead, it has issued an interpretive statement explaining that it believes the Act's exclusion of irrigation return flows from the permitting requirement covers herbicide use to keep irrigation channels free of weeds.[371]

While there are legal tools for addressing most of the Klamath Basin's water woes, they are fragmented and scattered, under the authority of a variety of federal and state agencies. Watershed conservation ultimately seeks to incorporate a vision of a holistic healthy landscape as Aldo Leopold and his followers define a healthy

367. 7 U.S.C. § 136a(a) (1999). EPA registers pesticides upon finding that they will perform their intended function, are properly labeled, support any proposed claims, and "when used in accordance with widespread and commonly recognized practice" will not "generally cause unreasonable adverse effects on the environment." *Id.* § 136a(b)(5)(D). EPA can (and occasionally does) impose regulatory restrictions as needed to prevent unreasonable adverse effects on the environment. *See id.* § 136a(d)(1)(C)(ii); WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 459 (2d ed. 1994). In implementing FIFRA, EPA has focused heavily on human health effects, and not much on anything else.

368. Defenders of Wildlife v. Administrator, E.P.A., 882 F.2d 1294, 1300 (8th Cir. 1989).

369. EPA's reluctance to consult on pesticide registration is neither new nor limited to the Klamath Basin. *See* WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 464 (2d ed. 1994).

370. Headwaters, Inc. v. Talent Irrigation Dist., 243 F.3d 526 (9th Cir. 2001); *see also* League of Wilderness Defenders v. Forsgren, 309 F.3d 1181 (9th Cir. 2002) (holding that aerial spraying of pesticides in national forests requires an NPDES permit).

371. Memorandum from Robert E. Fabricant et al., to Regional Administrators, Interpretive Statement and Regional Guidance on the CWA's Exemption for Return Flows from Irrigated Agriculture (undated), *available at* http://www.epa.gov/npdes/pubs/talentfinal.pdf (last visited Mar. 13, 2003). The extent to which that interpretation stretches the ordinary understanding of the return flow exemption suggests just how reluctant EPA is to regulate pesticide use through the NPDES program. The Ninth Circuit recently refused to defer to a part of the memo dealing with silvicultural activities. *See* League of Wilderness Defenders v. Forsgren, 309 F.3d 1181, 1188-89 (9th Cir. 2002). EPA has also not accepted the idea that NPDES permits are routinely required for application of pesticides to water, even outside the irrigation context. The agency recently announced that it would not require permits for the spraying of pesticides to kill the mosquitoes that carry West Nile virus. *See* John Heilprin, *EPA to Allow Pesticides Without Permits Against West-Nile-Virus-Carrying Mosquitoes*, ASSOCIATED PRESS, Oct. 11, 2002, *available at* http://www.enn.com/news/wire-stories/2002/10/10112002/ap_48678.asp (last visited March 18, 2003).

ecosystem.[372] In this vision, voluntary and mandatory land and water use practices are integrated to conserve the traditional ecosystem services that watersheds provided before they were degraded through intensive development and commodity production. Ideally, law should support this integration by permitting, encouraging and, in some cases, mandating consistent conservation practices. Federal and state requirements dealing with pollution and resource conservation should work together toward that goal.

The transition to such a unified system will not be easy, but in some ways it has already begun. In recent years, the law has contributed to the maintenance of in-stream flows, an important component of integrated watershed management.[373] A few American states are beginning to integrate water and land use to try to ensure that development does not outstrip available water.[374] In places like the Klamath Basin, where agriculture is the primary land use and the largest threat to water resources, that kind of integration needs to encompass agricultural water use as well.

The ESA has been hailed as having the power to force changes in state law. The Klamath experience, however, confirms the disconnect between the ESA and state water law, and the Act's limited ability to change long-established water allocation patterns.[375] The NMFS 2002 Biological Opinion makes a commendable stab at broadening the vision of responsibility for improving the Klamath's ecological condition by calling for initiation of a state/federal process to identify non-project water that could contribute to flows needed by the coho.[376] But that effort, which does not go nearly as far as is needed, seems doomed to failure unless the state chooses to cooperate. The Bureau, the target of NMFS' requirement, has no authority to demand state, or even other federal agency, participation in any such process, much less to demand any particular substantive outcome.

To date the Klamath experience suggests that, at best, the ESA is an uneven, weak catalyst. In the long run the transition to sustainability must come through adjustments at the state level. In Oregon, resistance to those changes continues. In the spring of 2002, a coalition of environmental groups submitted a petition asking the Oregon Water

372. *See* Eric T. Freyfogle, *A Sand County Almanac At 50: Leopold in the New Century*, 30 ENVTL. L. REP. 10058 (2000).

373. *See* David H. Getches, *The Metamorphosis of Western Water Policy: Have Federal Laws and Local Decisions Eclipsed the States' Role?*, 20 STAN. ENVTL. L.J. 3, 30-33 (2000).

374. *See* A. Dan Tarlock and Lora A. Lucero, *Connecting Land, Water, and Growth*, 54 LAND USE LAW & ZONING DIGEST 3 (April 2002).

375. *Cf.* Doremus, *supra* note 195, at 411-413 (explaining how the ESA can encourage changes to state law).

376. *See supra* note 290 and accompanying text.

Resources Commission to place a moratorium on new appropriations on the Klamath and Lost Rivers.[377] Given the recent water conflicts in the basin, the ongoing adjudication, and the fact that no new flow appropriations have been granted since 1997, that seemed a relatively mild request. The Commission, however, with the support of the agricultural community, rejected the petition.[378]

CONCLUSION

Water conflicts in the Klamath Basin are complex, both scientifically and socially. The crisis of 2001 was easy to foresee, but difficult to forestall. Another crisis will undoubtedly come soon, unless we address the root cause: too many demands competing for too little water.

Science alone cannot determine how water should be allocated among those competing demands. It is a mistake to demand that scientists identify the magic point at which agricultural water withdrawals can be precisely balanced with environmental protection. That point may not exist, and even if it does exist it will be impossible to identify. The futile search for the magic point will continue to escalate controversy, satisfying no one.

Instead, policymakers should understand that they are dealing with a clash of cultures, and must make value choices. Society must choose between farming and fish, or find a way to accommodate both. There may well be room for farms and fish to co-exist in the Klamath Basin, but a comprehensive approach, rather than the current myopic focus on project withdrawals alone, will be needed to find it. The search should begin in earnest immediately; delay simply courts another train wreck, which offers no promise to any of the competing groups. For farmers, the best chance of maintaining their culture may be to make peace with the fish (and the eagles). The transition to a sustainable economy in the basin cannot begin too soon.

The lessons of the Klamath Basin apply more widely as well. Other small basins in the West, particularly those with little storage capacity, may be poised for very similar water crises. The Klamath Basin crisis of 2001 can also teach us important lessons about conflicts in larger basins, and even endangered species controversies that have nothing to do with water demands. In all these conflicts, we should not expect science to do

377. Waterwatch, Petition for Withdrawal or Emergency Rulemaking Before the Water Resources Commission of the State of Oregon (May 28, 2002), *at* http://www.waterwatch.org/petition.htm

378. *See* Oregon Water Resources Commission, Minutes of Meeting June 7, 2002, *at* http://www.wrd.state.or.us/publication/notices/comm-minutes/040_060702.html (last visited Mar. 13, 2003); Klamath Water Users Association, State Commission Rejects Petition to Halt Klamath Water Permitting, http://www.klamathbasincrisis.org/articles/KWUA-Newsletter/reject%20petition%20to%20halt%20water%20permiting.htm.

the hard work of identifying and implementing the proper balance between economic development and nature protection. Nor should we think that a narrow view of either nature or the economy will allow us the vision we need to achieve such a balance. That vision must be found through difficult, forthright political debates. We need both new legislation that legitimates and cabins new ideas such as biodiversity conservation through large-scale ecosystem and adaptive management, and local, collaborative processes that tailor the larger concepts to specific places.[379]

The process that led to the current Florida Everglades restoration experiment is one possible model. The key state and federal agencies and the NGOs first reached an agreement on a restoration plan, then got the federal government and Florida to agree to fund it. Legislation could offer grants at the watershed and river basin level for the development of sustainable land and water use plans that would permit reduced, but economically rational, levels of commodity production. Once a plan was approved by an inter-agency committee, the basin or watershed would qualify for a funding package that would address land retirement, retraining of displaced workers, eco-friendly start-up businesses, and other issues. Performance targets could be established and strictly monitored.

The search for a solution will not get any easier with delay. We must face the need for institutional change, in the West as elsewhere, as soon as possible. The identification and creation of new institutions capable of implementing a new environmentally sound and fair vision of the landscape should be a very high priority.

379. A basin stakeholder group, the Upper Klamath Basin Working Group, has endorsed a long term, inclusive solution. Tam Moore, *Locals Agree on Klamath Strategy*, CAPITAL PRESS WEEKLY, Aug. 26, 2002.