Doug Foster

Refuges and Reclamation

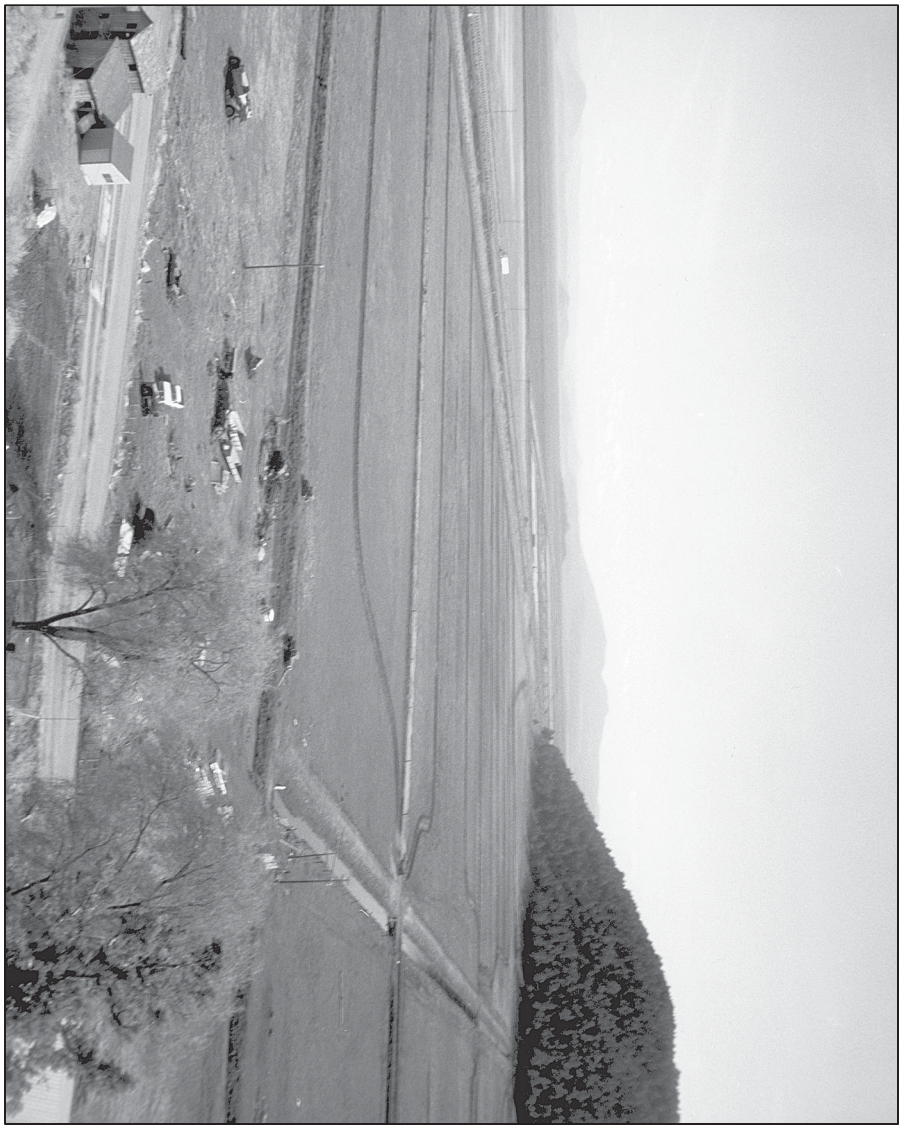
Conflicts in the Klamath Basin, 1904–1964

The Klamath Basin, which rests in the rain shadow cast by the Cascade Mountains, once held a sprawling mosaic of shallow, tule-choked lakes and vast swamplands fed by runoff water from surrounding mountains and uplands. The basin has an arid climate, yet it once had such an abundance of water that it was called the "land of lakes." The lower basin — situated in a sere landscape of scab-rock, sagebrush, and scattered juniper — held two big lakes that reached across the Oregon-California state line, Tule Lake and Lower Klamath Lake. In the 1870s, Samuel A. Clarke, reporting for the *New York Times*, described these lakes as "oases in the desert" and wrote that the fertile, alkaline waters of the lakes "absolutely swarm[ed]" with trout and suckers. At one fishing station on Lost River, where the rocky bottom forced spawning suckers from Tule Lake to swim near the surface, Klamath and Modoc Indians caught and dried over fifty tons of suckers each year until at least 1900. The fishery was so productive that settlers built a cannery in 1892 to process the river's abundant suckers. At Tule Lake, the rich fishery supported dense populations of fish-eating birds, including five to six hundred ospreys, one of the largest breeding colonies of osprey in North America.[1]

By the turn of the twentieth century, the lake region of southern Oregon was also the most profitable field in the West for "plume hunters," whose method was to kill mature birds on their nesting sites. The skins of egrets, terns, gulls, grebes, herons, and pelicans were packed into bales and shipped to city milliners to be sewn into capes or to trim fashionable hats. During one summer, hunters shipped thirty thousand grebe skins to San Francisco from one location

Top right: *The vast expanse of Lower Klamath Lake marshes is shown from Wild Horse Butte in 1907, when the lake and surrounding marshes covered eighty thousand acres.* Bottom right*: A modern view of the bed of Lower Klamath Lake from Wild Horse Butte shows agricultural fields and a complex system of irrigation and drainage canals.*

Photo by the author



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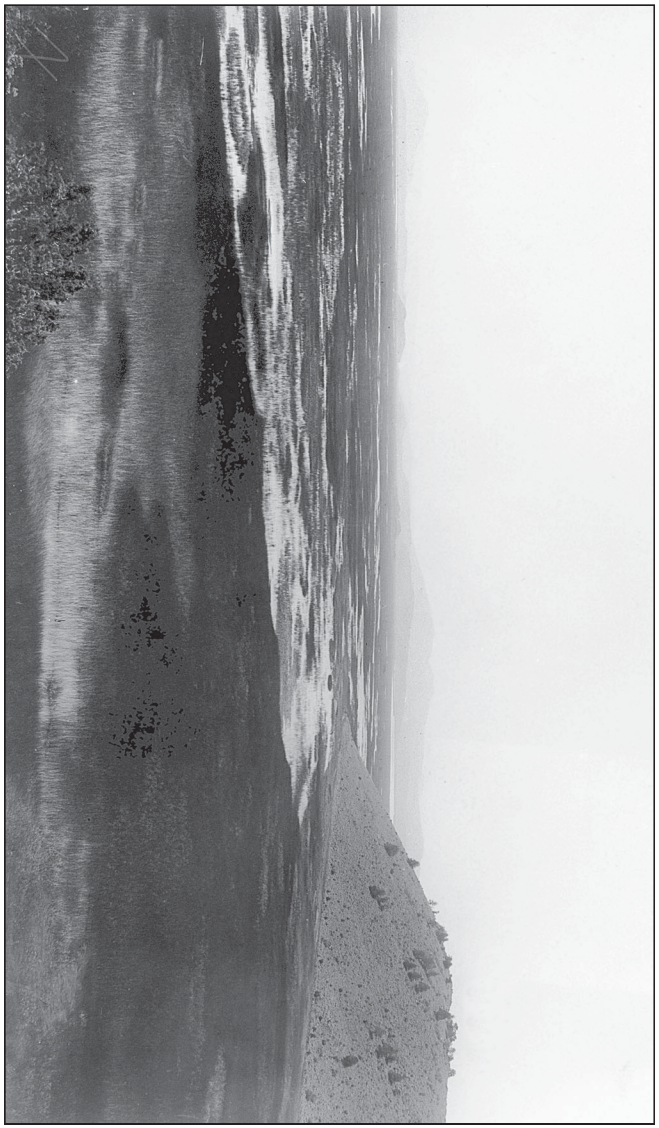
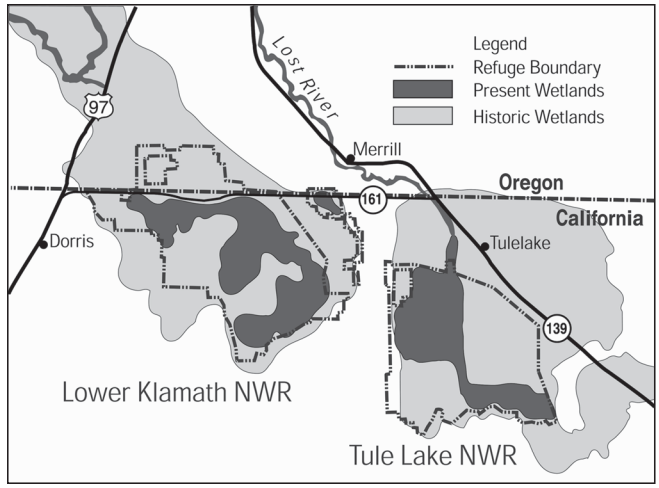


in the Klamath Lake region, and some plume hunters made four to five hundred dollars per day during nesting season. "With such profit in sight," the *Klamath Falls Evening Herald* later reported, "birds were being slaughtered by the thousands."[2]

To help curb the slaughter, the Oregon Audubon Society successfully lobbied the 1903 Oregon legislature to pass a law against killing inedible, "non-game" birds such as pelicans and herons. The following year, the National Association of Audubon Societies paid the wages of two deputy state game wardens to enforce the new law on Lower Klamath Lake and Tule Lake. National Audubon then asked its western field representative, William Finley, to personally investigate conditions there.[3] Finley and wildlife photographer Herman Bohlman fought their way through what they described as a "jungle" of ten- to fifteen-foot-tall hard-stem bulrushes, called "tules," to reach Lower Klamath Lake. Once on open water, they discovered great colonies of nesting birds clustered on an "endless area of floating tule islands," including from four to nine thousand American white pelicans, one of the largest colonies anywhere.[4] They had found, Finley later wrote, "perhaps the most extensive breeding ground in the West for all kinds of inland water birds." He also discovered that market hunters operated on the lakes, killing ducks by the wagonload. In the winter of 1903 alone, 120 tons of ducks had been shipped to San Francisco meat markets from one location near the lakes.[5]

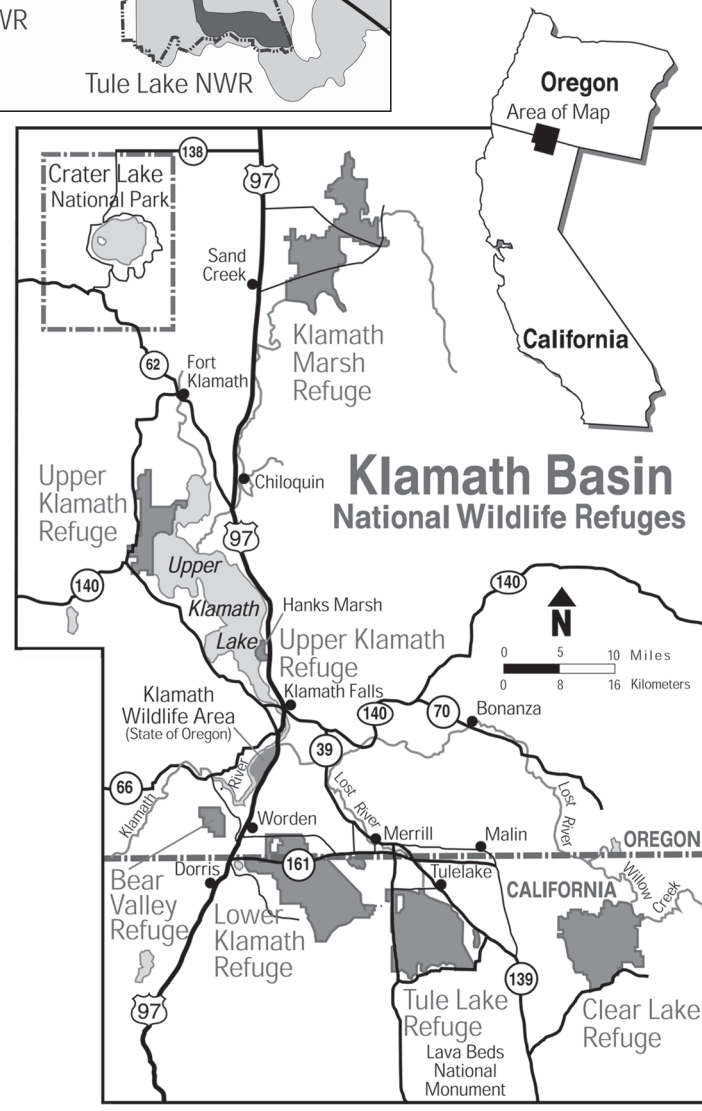
A year earlier, in 1902, President Theodore Roosevelt had signed the Reclamation Act, designed to harness the power of the federal government to turn unproductive land into small, irrigated farms for families. The new Reclamation Service was led by Frederick Newell, the first of the government's engineer-administrators who would seek to use science and technology to advance American life.[6] In 1903, Newell sent a Reclamation Service engineer to investigate the Klamath Basin, where privately financed reclamation projects already irrigated about ten thousand acres. The basin, the engineer found, contained two drainages. To the east lay the Lost River system, a component of the Great Basin, that vast interior drainage with no outlet to the sea. Lost River began in Clear Lake, looped sixty miles north, then back south, and then drained into Tule Lake, an evaporation sump. To the west, the much larger Klamath River system drained to the sea. The Klamath River began in Upper Klamath Lake, the largest lake in Oregon, and cut southwest through the Cascade Mountains to the Pacific Ocean. When the Klamath River overflowed, it drained through the marshy Klamath Straits and filled Lower Klamath Lake, a big, shallow overflow sump. The Reclamation Service proposed an ambitious project: "dewatering" the two big sumps, Tule Lake and Lower Klamath Lake, to expose their lake beds for farming, and building dams at the outlets of Clear Lake and



The Klamath Basin

The U.S. Fish and Wildlife Service map above indicates just how much of the historic wetlands of Tule Lake and Lower Klamath Lake — including both open water areas and surrounding marshes — have been drained. The map also shows the extent of wetlands within Tule Lake and Lower Klamath national wildlife refuges at times when water is available for refuge ponds and marshes.

The map to the right shows the two drainage systems — Lost River and Klamath River — and the locations of the six national wildlife refuges in the Klamath Basin: Klamath Marsh, Upper Klamath, Bear Valley, Lower Klamath, Tule Lake, and Clear Lake.



Modified from U.S. Fish and Wildlife Service maps

Maud Baldwin, photographer, Klamath County Museum

Early-day duck hunters pose with their "bag" of game on Main Street in Klamath Falls. "Game hog" photos such as this were once popular in the Klamath Basin, where hunters shot great numbers of waterfowl.

Upper Klamath to hold winter runoff for use as irrigation water in the summer. The dam at Upper Klamath Lake also regulated the flow of water to a downstream power plant owned by the California Oregon Power Company.[7]

At the same time that the Reclamation Service began its project in the basin, Finley was describing to a growing audience the value of the area as wildlife habitat. In 1907, he wrote about Lower Klamath Lake's abundant bird life for *The Condor,* a respected ornithological journal. Using bulky bellows cameras and hiding in canvas blinds, Finley and Herman Bohlman had captured superb close-up photographs of birds in the field that, when used to illustrate the articles, stirred the public's imagination.[8] As a result of these stories and photos, as well as more lobbying by Finley, on August 8, 1908, President Roosevelt signed Executive Order 924, which set aside all of Lower Klamath Lake — 81,619 acres of lake, islands, and marsh — as the Klamath Lake Reservation, a "preserve and breeding ground for native birds."[9] It was, by a large measure, the

nation's first big area of public land reserved for wildlife. Because Lower Klamath Lake was already part of a federal reclamation project, the preserve included only those public lands that were "unsuitable for agricultural purposes" and made them subject to use by the Reclamation Service. The Lower Klamath refuge became the first federal wildlife refuge to be superimposed on an existing federal reclamation project; as a result, land management there was guided by incompatible priorities.[10]

President Roosevelt was passionate about protecting wildlife, but he was also a conservationist who believed natural resources should not be wasted. The conflict inherent in the president's philosophy — that good land stewardship encompassed both reclamation of wetlands for agriculture and preservation of wetlands for wildlife — would unfold in the Klamath Basin. By the turn of the twenty-first century, when the demands for water exceeded the supply, the place that had once held such an abundance of water that it had been called the "land of lakes" would become the site of a bitter "fish vs. farms" water-rights controversy. The conflict assumed national importance when the federal government took the unprecedented step of cutting off irrigation water to over one hundred thousand acres of fertile farmland to protect endangered fish species.

In 1906, construction began on the Klamath Project, considered by Reclamation Service engineers to be "one of the most complex problems" they had to solve because it involved an "irrigation problem, a drainage problem, an evaporation problem, and a run-off problem." There were also "little or no physical data" on the basin's rainfall or runoff and evaporation rates. Later studies would show that the growing season in the basin is short — on average, only one hundred frost-free days — and precipitation is scanty, ranging from a high of seventeen inches to a low of nine inches at Tule Lake. [11]

The project required the full support of the states of Oregon and California because, as a matter of constitutional law, the states owned the lake beds. In early 1905, the two state legislatures had passed the Cession acts, which conveyed to the United States for purposes of the Federal Reclamation Act "any land uncovered by the lowering of the water levels" that was "not already disposed of by the State." In this way, the ownership of the two lake beds was transferred to the federal government. Only a small part of the wetlands around the lakes was affected, however, because private citizens had already claimed most of that land under the two states' Swamp Land acts.[12] Federal law had allowed the states to acquire title to public "swamp and overflow lands" so that the states could supervise their reclamation. Under the Oregon Swamp Land Act, an applicant could claim an unlimited quantity of swampland for one dollar per

acre "in gold coin." While "reclamation" was required, it was so loosely defined that pasturing livestock or cutting wild grass during the dry season was deemed sufficient.[13]

At Lower Klamath, there was as much swamp as open water, and the forty thousand acres of swamplands there were about equally divided between Oregon and California.[14] In 1904, on the eve of the passage of the Cession acts, individuals filed a flurry of Oregon Swamp Land Act applications on more than three thousand acres of land. This kind of land rush was not uncommon.[15] The appearance of Reclamation Service engineers, according to historian Donald Worster, often touched off a "frenzied rush of speculators" who intended to resell their land at inflated prices after the irrigation water arrived.[16] By the time the Cession acts were passed in 1905, individuals had acquired "practically all" of the twenty thousand acres of swampland on the Oregon side of the Lower Klamath as well as much of the swampland on the California side. As a result, when the bird refuge was created in 1908, private individuals had claims to about one-third of the total area within the refuge.[17]

Although the Lower Klamath refuge was set aside to protect birds from overhunting, would-be homesteaders posed a bigger risk than hunters did. Squatters had settled along the southern border of the refuge in California, claiming that the marshlands in the federal preserve were valuable for agriculture and should be available for homesteading through the 1902 act. The *Dorris Weekly Advocate* (California) editorialized on January 5, 1912:

> Uncle Sam, it seems, thinks more of having a nesting place for his ducks than he does of giving these hardy pioneers, the backbone and sinew of the country, homes in which to live. The ranchers are not asking for anything unreasonable. They are only demanding justice.

Responding to political pressure from would-be homesteaders and their California congressman, President Woodrow Wilson signed an executive order in 1915 that withdrew over seven thousand acres of marshland from the southeast and southwest edges of the refuge and made it available for homesteading.[18]

The Reclamation Act had been written to prevent land speculators from benefiting from public reclamation projects, stipulating that "no right to the use of water for land in private ownership shall be sold for a tract exceeding 160 acres to any one landowner." Frederick Newell, adamant that the "acreage limitation provision" be enforced, had told delegates to the 1905 National Irrigation Congress in Portland, Oregon: "Not one dollar will be invested until the Government has a guarantee that these large farms will ultimately be put into the hands of small owners, who will live upon and cultivate them." The audience complained loudly, and one "Oregon old-timer protested the 'enforced sale of your private rights, your private property.'" Newell refused to be swayed,

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William Finley uses a bulky bellows camera to photograph three young white pelicans at Lower Klamath Lake in 1905. Finley's photographs and articles in national magazines about the threat of plume hunting in Lower Klamath persuaded President Theodore Roosevelt to set aside the lake as a wildlife refuge.

announcing that if landowners did not comply with the act then the Reclamation Service would "go elsewhere to people who want to cooperate."[19] A few years later, in 1908, a Reclamation Service engineer noted that nearly all of the marshland in the Lower Klamath was owned by a few individuals. He recommended that the situation be remedied by setting a "farm unit" at 160 acres and ordering that "no work be done on the reclamation of these marsh lands until all of them have been subscribed." In 1910, Newell remained "thoroughly committed" to his belief that "the object of the reclamation law is primarily to put the public domain into the hands of small land owners."[20] Nevertheless, the Reclamation Service proceeded with studies to reclaim the Lower Klamath and began constructing other parts of the Klamath Project.

The Reclamation Service's actions in the Klamath Basin were not untypical. The Reclamation Act's acreage-limitation provision had been so sporadically enforced that a 1916 Reclamation Service review board concluded

that the government's management "closely verges on fraud." Historian Donald Worster maintains that federal reclamation projects largely "worked to enrich speculators and enhance the holdings of established owners, not to furnish inexpensive new homes" for small farmers.[21] Further, according to historian Donald J. Pisani, the Reclamation Act's failure to centralize power and administrative control in Washington, D.C., precluded both a coherent water policy and the consistent enforcement of the letter of the law. Too often, the Reclamation Service allowed policy to be set by westerners who saw the act as a "benefits program," a "way to stimulate local economic development."[22]

The history of the Lower Klamath refuge was forged by the clash of two federal agencies working at cross-purposes: the Reclamation Service in the Department of the Interior and the Biological Survey in the Department of Agriculture. From an initial staff of two hundred, the Reclamation Service quickly grew to "become the largest bureaucracy ever assembled in irrigation history." The Reclamation Act gave the agency a clear mission and ample funding: its "projects were to be financed by a Reclamation Fund, which would be filled initially by revenues from sales of federal land in the western states, then paid back gradually through sales of water to farmers." The service's 1908 budget for the Klamath Project was set at $420,000. The Biological Survey, an outgrowth of the Division of Economic Ornithology and Mammalogy (which dealt with agricultural pests), was at a disadvantage because it was underfunded. The agency's expenditures for the entire country in 1908 were less than $52,000.[23] In fact, it could not even afford to pay and equip the first warden at the Lower Klamath refuge. In 1909, three groups collaborated to pay the warden's monthly salary: the U.S. Department of Agriculture paid $1, the National Association of Audubon Societies paid $25, and the State of Oregon paid $50.[24]

The new warden was L. Alva Lewis, who had been president of the Oregon Retail Jewelers Association in Klamath Falls. One of his primary responsibilities was to enforce the ban on hunting on the refuge, and he met with immediate resistance. Lewis wrote William Finley in October 1908 warning that the local district attorney had publicly announced that he would continue hunting on the bird refuge and intended to tow a houseboat there. He claimed that the state owned the swampland and the federal government had "no jurisdiction over any of the swamplands surrounding the lake." Lewis cautioned Finley that "we should be sure of our ground," since the district attorney would probably be the first to be arrested.[25] Lewis continued to patrol the preserve, motoring downriver to the Klamath Straits in his big launch and using a small rowboat in shallow water. He kept busy observing wildlife, chasing poachers, and writing reports.[26]

Lewis was the only Biological Survey representative in the basin, and his reports often passed on rumors about the plans of local Reclamation Service engineers. When he learned of the service's plans to close the Klamath Straits and cut off water to Lower Klamath Lake, he warned that the lake would become so strongly alkaline that fish would die, birds would stop breeding there, and the preserve would be ruined.[27] Reflecting the Biological Survey's relative powerlessness at the time, Lewis's supervisor, T.S. Palmer, replied that it was an "unfortunate but unavoidable" part of the "regular plan of the Reclamation Service." The Biological Survey, which did not then consider refuge management a priority, was so woefully underfunded that it could not afford to challenge the Reclamation Service, even if it chose to do so.[28]

Reclamation Service engineers had considered several ways to reclaim the lower lake. When they learned that the California Northeastern Railway wanted to build an embankment and lay track across the northwestern end of Lower Klamath marsh, the Reclamation Service proposed an inexpensive plan to drain the lake: require the railroad to build its embankment to Reclamation Service specifications so that it could also serve as a levee. In October 1907, the California Northeastern signed a contract with the Reclamation Service agreeing to install a passageway for water through its embankment at Klamath Straits, subject to the government's sole right to regulate the flow of water to and from Lower Klamath Lake.[29]

In 1909, Department of Agriculture soil experts studied conditions at Lower Klamath and issued a report "strongly" advising against reclaiming the marshlands around the lake without first reclaiming a small tract as an experiment. U.S. Bureau of Plant Industry scientists ran an experimental farm on a small, reclaimed area near the Klamath Straits, but they were unable to grow crops to maturity. Government experts reported that the soil in the Lower Klamath marshlands lacked "essential elements of fertility" and contained so much alkaline salt that it was "unfit for crop production until these salts are leached out." The report also noted that there was no cost-effective method to leach alkaline salts from the soil. In 1911, a U.S. Army Board of Engineers appointed by the president concurred that this part of the reclamation project should be "postponed until it has been shown that the lands can be made productive when cultivated."[30]

Notwithstanding the negative government reports, the value of privately owned marshlands around Lower Klamath Lake had increased sharply. In 1910, D.W. Murphy, a Reclamation Service drainage engineer, reported that

> sales have been made recently at the rate of $25 to $30 an acre, and considering the fact that the land is under water for six months each year, and is absolutely useless until reclaimed by drainage and irrigation, and that the value of these lands has not yet been demonstrated to

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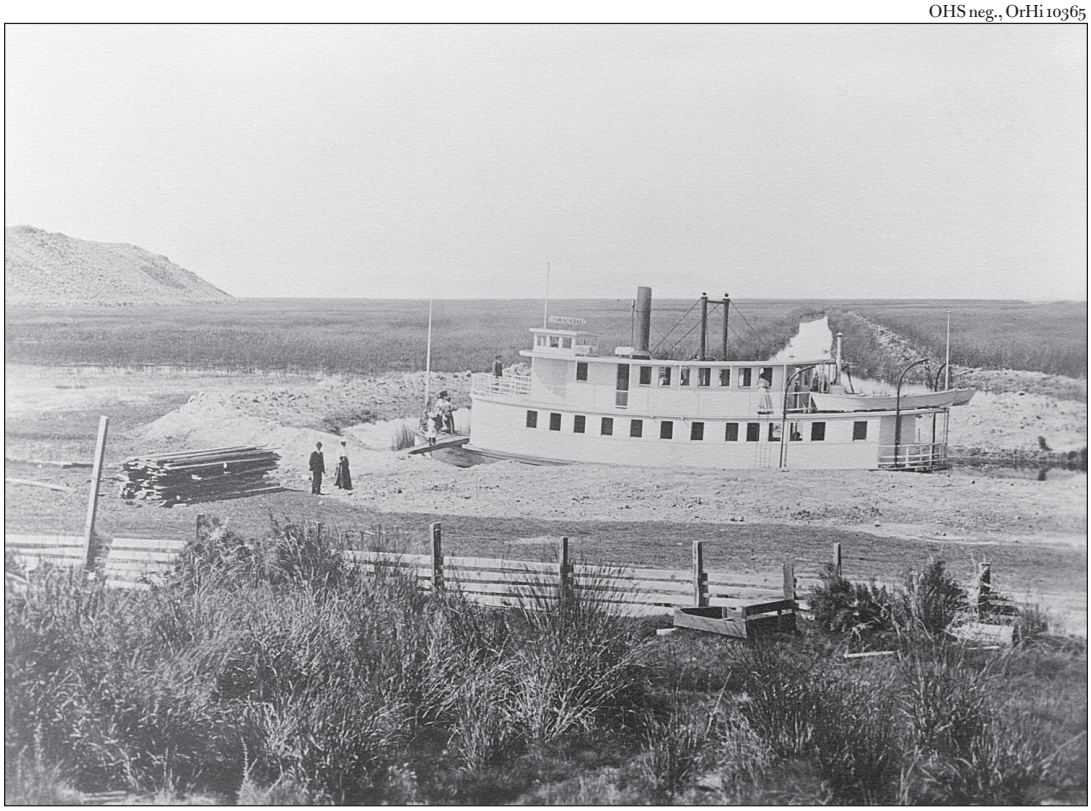

The steamer Klamath *is shown here in 1906 at Merrill Landing on the east side of Lower Klamath Lake. When the Reclamation Service investigated the Klamath Basin in 1903, this seventy-five-foot-long steamboat offered regular service to Lower Klamath Lake, navigating down the Klamath River and through the marshy Klamath Straits to several "landings" on the lower lake.*

any extent by actual cultivation and the raising of crops, this price seems to be excessive and based on a speculative rather than any actual value.[31]

The landowners lobbied to get their lands "released from subscription" so they would be freed from their obligation to repay the costs of federal reclamation studies and could reclaim the land on their own. Abel Ady, president of the Klamath Water Users Association, let it be known in Washington, D.C., that his group wanted to build a private reclamation project.[32] The association wanted to construct dikes around private marshlands and pump off the water, a plan that would not have threatened the refuge. After the secretary of the interior released the marshland owners from subscription, however, Ady lobbied to have the Klamath Straits headgates closed so private marshlands could be drained at no cost to the owners. Closing the headgates would also drain the federal refuge. [33]

Frederick Newell characterized Ady's plan for reclamation by evaporation as a "more than dubious scheme." In 1911, he wrote Secretary of the Interior Walter L. Fisher that "there is a moral obligation to the public that we do not tacitly acquiesce and sit by quietly while a scheme which is known to be chimerical is being foisted on the public."[34] Two years later, Newell warned the secretary that if the flow of water to Lower Klamath Lake was cut off before the landowners installed an irrigation system, there would be a great danger that fires would start in the peat soil and sweep through the marsh, turning the lake bed into "an alkali flat."[35]

The local project engineer, W.W. Patch, wrote his superior, E.G. Hopson, that "government land in the Lower Klamath marsh may be ruined by this experiment." Rather than ruling out Ady's plan, he wrote that if the plan was approved "it seems proper to charge" the marsh owners for the surveys, the experiment farm, and other expenses related to reclaiming the lower lake marshes.[36] A few months later, in an "entirely confidential" letter, Hopson requested that Patch determine both "the actual loss to the Government according to conservative estimates if the plans suggested by Mr. Ady were carried into effect" and "the charges that have been made against the marsh lands hitherto and which should be recoverable."[37]

Two weeks later, Hopson wrote Newell that Ady's plan was inconsistent with the landownership limitations set by the Reclamation Act, because "the marsh lands are generally held in large holdings," with some "as large as 3,000 acres." He concluded that the plan involved "some risk of ruining all the lands, both private and public." Warning that Ady's plan had no limitation on ownership and no restriction on "land speculation, inflation of values or other forms of malpractice that have been the bane of western development," Hopson wrote that the Lower Klamath marshland owners were "in full career toward unloading their speculative holdings on the unwary at the earliest possible date."[38]

While lower-level engineers in the Reclamation Service gave lip service to Newell's commitment to the Reclamation Act, they also planned how best to increase the size of the Reclamation Fund, which was dedicated to financing Reclamation Service expenses, including employee salaries. In the end, pragmatism won out over idealism at Lower Klamath. In 1915, local Reclamation Service engineers helped marshland owners organize as a drainage district under Oregon law and then began negotiations to cut off water to the lake. In 1917, the federal government and the Klamath Drainage District — which included twenty-one thousand acres of private land and six thousand acres of federal land — signed a contract to shut off water to Lower Klamath Lake. An escape clause allowed the government to open the gates, but only if the reclamation of irrigation district land as "contemplated" in the contract proved "im-

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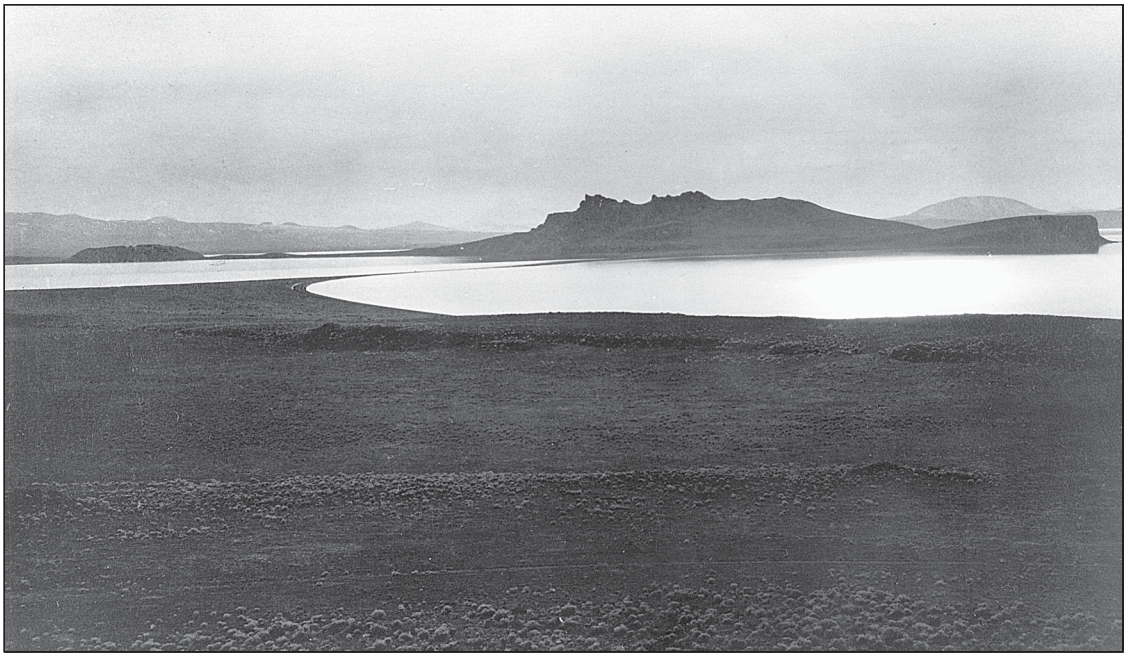


When Tule Lake was at high water levels, as it was when this 1908 photograph was taken, it was not surrounded by extensive marshes, unlike nearby Lower Klamath Lake. This view looks east across Tule Lake before the Klamath Irrigation Project "de-watered" the lake.

practicable" or was "not accomplished in reasonable compliance" with the contract or would "interfere with the proper reclamation or use of public lands" as contemplated by the Oregon and California Cession acts.[39]

Given the concerns of government plant and soil scientists, the warnings of the director of the Reclamation Service, and the imminent threat to the wildlife refuge, why did the United States enter this contract? One explanation is that most people still thought of swamps as smelly, worthless, and pestilential places, and draining them was considered a public service. In 1911, for example, the *Oregonian* characterized the marsh around Lower Klamath Lake as "waste, and not nearly so valuable as a hot desert that will grow a little grass for Winter feed. The marshes make good duck pasture and snake paradises; but that is about all."[40] A few years later, in 1917, the *Klamath Falls Evening Herald* reported that draining "64,000 acres of tule lands" on Lower Klamath Lake, which included a "national bird reserve," would expose "exceptionally fertile" soil that, when put into production, could support a city of five thousand.[41]

Another explanation is that the Reclamation Service, which was staffed with engineers who viewed their mission as re-plumbing the West for agricul-

ture, identified with the reclamation goals of private landowners. More importantly, those engineers got money for the Reclamation Fund; the 1917 contract required that the drainage district reimburse the government $104,898.15, the district's share of the costs of government reclamation studies at Lower Klamath. The headgates were permanently closed on November 30, the day the contract was signed, and the water was cut off from Lower Klamath Lake.[42] Two years later, Lower Klamath Lake was about three feet below its mean level and birds were "dying in large numbers," apparently from "alkali poisoning." Secretary of Agriculture D.L. Houston wrote N.J. Sinnott, chair of the House Committee on Public Lands, that the refuge had become a "menace to the birds which resort to the concentrated alkaline waters." By 1922, all that remained of Lower Klamath Lake was a 365-acre sump at the south end of the lake bed.[43]

Conservationists protested the destruction of the Lower Klamath refuge. William Finley continued to be Oregon's leading champion for reflooding the lake after he became state biologist in 1917. Then, in 1919, without warning, the Oregon Fish and Game Commission fired Finley, primarily because of his "rage and frustration over the draining of the Klamath region for farmland, which several commission members supported." Many Oregonians supported Finley, and thousands of letters were sent to protest his firing. The December 27, 1919, *Oregon Voter* ran a long editorial praising Finley as a "popular" state biologist, a "nationally known scientist, lecturer and writer," and "Oregon's great genius."[44] In 1919, Olas Murie, the well-known naturalist, supported Finley's position in a letter to Secretary of the Interior Franklin K. Lane:

> It is poor economy to destroy a valuable public asset, a thing of beauty to a large mass of red-blooded Americans who are lovers of Nature and the Out-of-doors, merely to gain a few paltry acres of doubtful value for agricultural purposes. It is so easy to destroy something of this kind, but very difficult to create it.[45]

In 1920, several big cattle operators on the south end of the lake bed in California complained to the Reclamation Service that draining the lake had damaged their lands. C.J. Laird, who had owned and farmed one thousand acres of swampland there since 1892, objected that lake water did not subirrigate his land anymore, so he could no longer cut abundant grass hay. Peat fires, he reported, had raged for the last two summers. A.E. Bolton, who jointly owned six thousand acres of swampland with the Churchill Company, claimed that as an owner of riparian land he had a vested right to the waters of Lower Klamath Lake in its natural state to irrigate his adjacent land. Unless the headgates were re-opened, he claimed, his land would become "barren and a desert waste."[46]

Farmers had planted crops on the dried lake bed in Oregon, and Klamath Drainage District landowners said that opening the gates would destroy the value of their land. One of the owners, L. Jacobs, stated that he had purchased nine thousand acres of Lower Klamath marshland within the Klamath Drainage District between 1916 and 1920 based on the 1917 contract, which Jacobs believed indicated Reclamation Service "approval" of Ady's reclamation plan. Draining the lake, he reported, increased the value of his land from eleven to forty-five dollars per acre.[47]

H.L. Holgate, district counsel for the Reclamation Service in Portland, concluded that the California ranchers had no legal right to demand that the waters of Lower Klamath Lake "remain in their natural state." The ranchers had acquired the land under the state Swamp Land Act, Holgate reasoned, for the sole purpose of reclaiming them "from their swamp condition." A few months later, Holgate revealed more of his thinking when he wrote that the Klamath Drainage District was making "quite heavy investments toward reclamation" of its land and was contributing a "very considerable sum" to the Reclamation Fund each year "to help repay an outlay for surveys, the result of which was little, if any, benefit to the District." Holgate's decision was not free from self-interest, since the fund directly supported Reclamation Service expenses. The secretary of the interior ruled that the headgates would stay closed.[48]

While draining the lake hurt the big California cattle operators, squatters in California hoped it would benefit them. In 1919, fifty squatters established themselves on dried-out marshland on the California side of the bird refuge, claiming that the land belonged to the state of California and was available for homesteading. One of those squatters was L. Alva Lewis, the first refuge warden. Lewis had built a small shack on the lake bed and, unlike most of his fellow squatters, actually lived in his shack while tending his livestock there. [49]

Support for the squatters' claims came from California Congressman John Raker, who had advocated "the abolishment of the Klamath bird reserve and putting the territory included to greater usefulness." Raker introduced legislation, which Congress passed in 1920, requiring the secretary of the interior to open for homesteading all California public lands lying within the bird preserve that were valuable chiefly for agriculture. The Raker Act, however, only permitted homesteading if all owners of Lower Klamath marshlands in California paid their proportionate share of the cost of reclamation surveys. A.E. Bolton, the Churchill Company, and other big California ranchers refused to pay five dollars per acre as their share because draining the lake had damaged their riparian lands and the Raker Act would not benefit them. As a result, no federal lands were disposed of under the act, and the squatters had to abandon their shacks. Just as paying money into the Reclamation Fund bought a water

Klamath County Museum

Tourists view a pod of young American white pelicans on "Bird Island" on Lower Klamath Lake before the lake was drained. The Telford brothers offered tours of these bird colonies, taking people by boat from Klamath Falls to floating tule islands such as this one.

cut-off that allowed private landowners to reclaim land on the Oregon side of the refuge, the failure to make such payments cost the squatters their land claims on the California side.[50]

In 1921, the local drainage district asked the Reclamation Service to deliver Klamath Project water to irrigate its farmers' crops. Selling water to farmers located outside a federal project was permitted under the Reclamation Act, as amended by the Warren Act in 1911, provided that each farmer irrigated only 160 acres of land. Nonetheless, in 1921, the U.S. government signed a contract with the Klamath Drainage District to deliver project water to Klamath Straits sufficient to irrigate 27,000 acres of land in the district, a good part of which was owned in large tracts. The district agreed to pay fifty thousand dollars in ten

annual installments.[51] Holgate sought to justify the contract by arguing that the water would otherwise "go to waste," flowing down the Klamath River. If the federal government would not sell the water, he observed, the drainage district might seek to acquire rights under state law for water in the river in excess of project needs. More to the point, Holgate had earlier advised that while the drainage district would only pay a "very low" price for project water, the money would be "nearly all profit" to the government. Holgate also explained that reclaiming Lower Klamath marshlands would "involve a large per-acre outlay and a long wait before there are any returns." Therefore, the land was not "fitted for the average homestead entryman with limited capital" and "for several years…is best handled in large tracts."[52]

Biologists and naturalists who visited the refuge in the mid-1920s were deeply discouraged. In the *Oregon Sportsman*, the magazine of the Oregon Game Commission, William Finley mourned the changes:

> Today, Lower Klamath Lake is but a memory. It is a great desert waste of dry peat and alkali. Over large stretches fire has burned the peat to a depth of from one to three feet, leaving a layer of white loose ashes into which one sinks above his knees. One of the most unique features in North America is gone. It is a crime against our children.[53]

Once again, Finley was the leading advocate to revive the refuge. He argued that the peat fires in the lake bed and local farmers' failure to make more rapid progress growing crops justified reflooding the lake.[54]

The new demands to open the headgates and reflood the lake were supported by an odd coalition: duck hunters, naturalists, and residents of nearby Merrill, Oregon, who were aggrieved by the continuing dust and ash storms that blew off the lake bed. In the autumn of 1922, schools were closed in Klamath Falls because of a "dust storm that enveloped this city in clouds of volcanic ash particles which filled the eye, ear, nose and throat." Merrill, which was closer to the lake bed than Klamath Falls, suffered even more.[55]

The Bureau of Reclamation also received requests from "bird lovers" that Lower Klamath Lake be reflooded. Members of one duck-hunting group sent the Reclamation Service fifteen thousand postcards urging that the "greatest duck breeding ground in California" be reflooded because it had become a "waste — unfit for farming."[56] In rebuttal, Mike Motschenbacher, president of the Klamath Drainage District, said:

> It has simply narrowed down to a question of whether a flock of pelicans is of greater value to a community than a number of fertile farms. The pelican is picturesque, but he never aided in paying taxes nor in upbuilding the section in which he lived. We feel the farmer is entitled to an even break with the pelican, we will fight any attempt at discrimination.[57]

Motschenbacher and the other district supervisors also wrote Secretary of the Interior Hubert Work that "by entering into a further contract with the District in 1921 for a water right for lands of the District, the United States certainly placed its approval on what had been done thus far by the District." Because district farmers had issued bonds to finance construction of drainage and irrigation ditches and had spent thirty-one thousand dollars over three years excavating ditches, they argued that opening the headgates would devalue their bonds, violate their "vested contract rights," and overthrow their "years of pioneer reclamation work."[58]

District Counsel Holgate acknowledged that in entering into the 1917 contract with the Klamath Drainage District to close the headgates "no consideration was given to rights of owners of the Lake lands in California nor to the interests of the California Oregon Power Company." Shutting the headgates, Holgate conceded, had cut off the summer supply of water into the Klamath River from Lower Klamath Lake. The water otherwise would have been available to power downstream generators, forcing the power company to spend over a million dollars for more "regulation works." Nonetheless, Holgate maintained that the terms of the 1917 contract precluded the Reclamation Service from reopening the gates until it could show that the drainage district's reclamation methods were impractical. Because reflooding the lake bed would not be "a purpose covered by the reclamation law," he wrote, any reflooding "seems to appropriately belong to some agency of the Government other than the Bureau of Reclamation." Moreover, he continued, for the Bureau to "voluntarily wipe out $120,000 of assets of the reclamation fund for no reclamation purpose would appear to be impolitic."[59]

When Harold Bryant investigated conditions on Lower Klamath for the Biological Survey in 1925, he found that the ranches at the southwest end of the lake had been "severely injured by the drying up of the lake." Charles Laird's ranch, which had once been green, looked "bleak." His hay production had dropped by 80 percent, and his "fine" orchard had died from lack of water after his well went dry. "The south end of the lake bed looks white and barren," Bryant wrote, "with practically no vegetation. Great tule fires have devastated large areas leaving holes two to four feet deep."[60]

Alkali problems, peat fires, and the lack of adequate drainage combined to make farming difficult on the Lower Klamath in the 1920s and 1930s. Some farmers, including Mike Motschenbacher, had to sell parcels of their land to finance more farming, and even the Zuckerman *(continued on page 170)*

Klamath Basin Chronology

1860

U.S. Swamp Land Act (extended to Oregon) — *Allows the state to acquire title to public wetlands and supervise their reclamation. This law had been extended to California in 1850.*

1870

Oregon Swamp Land Act — *Allows citizens to acquire title to wetlands by reclaiming them for agricultural use. A similar law had been passed in California in the 1850s.*

1902

Federal Reclamation Act — *Authorizes the interior secretary to develop irrigation and hydropower projects in 17 western states and establishes the Reclamation Service (later renamed the Bureau of Reclamation) to turn unproductive land into small family farms.*

1903

Reclamation Service engineers begin studies for a large reclamation project in the Klamath Basin.

1903

President Roosevelt establishes the first federal wildlife refuge, at Pelican Island, Florida.

1905

Oregon and California Cession Acts — *Convey title to the beds of Tule Lake and Lower Klamath Lake to the federal government for purposes of the Reclamation Act*

1908

Executive Order No. 924 — *President Roosevelt creates Klamath Lake Reservation (later renamed the Lower Klamath National Wildlife Refuge), desgnating 81,619 acres of lake and surrounding marshland as a "preserve for breeding birds." (Private citizens had already filed claims to about a third of the refuge area under the state swamp land acts.)*

1911

Warren Act — *Amends Reclamation Act, allowing sale of water to farmers outside a federal reclamation project, provided each farmer irrigates no more than 160 acres.*

1912

Reclamation Service completes damming of Lost River, cutting off Tule Lake's main supply of water. The lake begins to dry up.

1915

Klamath Drainage District established — *Swampland owners organize under Oregon law to collectively develop drainage and irrigation works and to contract with the federal government.*

1915

Executive Order 2202 — *President Wilson withdraws over 7,000 acres from the refuge, making the land available for homesteading.*

1917

Klamath Drainage District signs contract with Reclamation Service and agrees to repay over $100,000 of reclamation survey costs in exchange for shutting off the water supply to Lower Klamath Lake to facilitate reclamation and farming. Within a few years, the lake is dry.

1920

Raker Act — *Allows homesteading on Lower Klamath Refuge lands valuable chiefly for agriculture, if reclamation survey costs are repaid. No land passed into private ownership under the act.*

1921

The Klamath Drainage District and the federal government sign a contract for the sale of Klamath Irrigation Project water to the district (allowing irrigation of about 27,000 acres of land).

Klamath County Museum (detail)

1928

Executive Order 4975 — *President Coolidge designates 10,300 acres of Tule Lake sump as a federal wildlife refuge.*

1936

Executive Order 7341 — *President Franklin D. Roosevelt more than triples the size of the Tule Lake wildlife refuge, to 37,000 acres.*

1942

Reclamation Service completes construction of a tunnel to carry excess agricultural runoff from Tule Lake sump to the dry bed of Lower Klamath Lake. The lower portion of the lakebed is reflooded and becomes a productive bird refuge.

1954

Klamath Termination Act — *Terminates federal recognition of and government services to the Klamath Tribes. The U.S. acquires 800,000 acres of Klamath tribal land.*

1956

Tule Lake Irrigation District established— *Homesteaders organize under California law to manage parts of the Klamath Project that service their farms.*

1964

Kuchel Act— *Provides that 21,000 acres of refuge land within the Klamath Reclamation Project be managed for waterfowl and leased for farming; prohibits further homesteading; moves management of refuge land under the secretary of the interior.*

1966

Lower Klamath National Wildlife Refuge is placed on National Register of Historic Places.

1973

Endangered Species Act — *Provides for the conservation of ecosystems upon which threatened and endangered fish, wildlife, and plant species depend, both through federal action and by encouraging the establishment of state programs.*

1983

Federal appeals court rules that the Klamath Indians hold in-stream water rights to support their hunting and fishing rights on over 800,000 acres within their former reservation. Almost all of this land, now part of Winema National Forest, lies in the watershed that generates irrigation water for most project farms.

1986

Federal legislation "restores" the Klamath Tribes. The Tribes file a petition to have two indigenous species of suckers listed under the Endangered Species Act. Two years later the fish are listed.

2001

Federal government cuts off water to 90 percent of the farmers in the Klamath Reclamation Project in order to maintain higher water levels to protect endangered fish.

brothers, who had successful farms in California, could not make money farming at Lower Klamath.[61] Winston Patterson, an early-day farmer on Lower Klamath, remembers that as late as the 1930s tractors would sometimes nose into the ground up to their radiators in a hole burned out by underground peat fires. Jim Flowers, a farmer, said that rye was the only crop that would grow there at first, and much of that crop was used in local stills during Prohibition. In 1922, farmers planted three thousand acres on Lower Klamath, nearly all in rye, but about two thousand of those acres burned in a fire. No crops were planted there the following year, and plantings had increased to only thirty-five hundred acres by 1927.[62]

On the north end of the lake bed in Oregon, Bryant found several landowners who were interested in their landholdings "solely"as an investment. L. Jacobs, who had two thousand acres for sale and "praises the fertility of the soil," was "anxious to find buyers for twenty-acre pieces," even though soil experts believed such tracts "could in no way be made to produce a living for such settlers." Several prominent citizens, including County Agent A. Henderson and L. Sabin, secretary of the Chamber of Commerce, told Bryant that local sentiment had recently changed and that, as a compromise, they supported diking off the northern part of the lake bed and reflooding the lower part that would not grow crops. [63]

In 1925, a commission appointed by the Bureau of Reclamation to study Lower Klamath soil conditions concluded that the marshlands had potential agricultural value but that the lake bed did not. The commission recommended that a portion of the lake bed in California be used as a drainage sump, both to hold runoff irrigation water and to serve as a bird refuge. The report triggered more demands to revive the refuge. Shortly after William Finley was appointed to the Oregon Fish and Game Commission in 1925, the game commissions of Oregon and California adopted a joint resolution to secure the reflooding of Lower Klamath. The Western Association of Game Commissioners in Denver passed a similar resolution.[64]

The local farmers did not roll over. Klamath Drainage District President Mike Motschenbacher publicly accused Finley of making "false and misleading reports" about local soil conditions, characterizing him as someone who "devoted most of his time in the state of Oregon to wildcat schemes and untried theories." The *Evening Herald* ran an editorial titled "The Lower Lake Crime," which ridiculed soil experts who could report that the soil was "not suitable for agricultural purposes" after merely standing in a field of grain. Three days later, the newspaper accused the Reclamation Service of "carrying on a campaign of sabotage against the lands in the district for the purpose of destroying public confidence in their value." The editorial charged the Audubon Society, which

Bureau of Reclamation

The waterfront at Klamath Falls is shown here in the fall of 1907. The town abutted Lake Ewauna, from which the Klamath River flowed.

supported reflooding, with being "a mere tool in the hands of those corporations that are seeking to gain, or maintain, their grip upon the resources of the public lands and federal water power of the nation, and when it steps into the limelight, you will find that it is but voicing the demands of its masters." Local reclamation advocates apparently assumed that any serious challenge to their plans must have been orchestrated by an economic rival, in this case by the power companies that were building hydroelectric dams and selling power to growing towns in the west.[65]

In November, R.C. Zuckerman wrote Reclamation Commissioner Elwood Mead that Lower Klamath marshland was "highly productive" and the lake bed, once drained and worked, would be "some of the best and most fertile land in the world." He pleaded with Mead not to schedule another hearing on opening the headgates, because it would cause drainage district farmers "untold inconvenience and trouble" in securing financing for needed canals. "What we desire," Zuckerman wrote, "is that this matter be squashed now once and for

Bureau of Reclamation

Many Klamath Basin farmers worked farms on the bed of Tule Lake in the 1920s, including the Barton brothers, shown here irrigating their crops by hand. The Bartons grew sixty-five acres of potatoes on the lake bed in 1929, when this photograph was taken.

all time, relieving us of this continual nagging, this sniping about our heads, this move to break our morale.... We want your support; we must have it; it is right that you give it to us." A month later, the Klamath Drainage District wrote President Calvin Coolidge: ". . . we feel that the Government should not only technically comply with the letter of these contracts, but should live up to the spirit of them and aid and assist us, and co-operate with us in every way possible." The district's arguments carried the day. Mead took the position that reflooding the lake bed would require an act of Congress.[66]

A few years later, the solicitor for the Department of the Interior wrote a legal opinion that supported Meade's position, concluding that the lands and water that Oregon and California had conveyed to the federal government to facilitate the Klamath Irrigation Project could not be used for migratory waterfowl. Based on the opinion, the Department of the Interior judged that it would

be "manifestly impracticable" to draft legislation to reflood Lower Klamath Lake and use it as a refuge. It would require canceling the two contracts with the Klamath Drainage District, reimbursing monies paid by that district, obtaining legislative approval from the states of Oregon and California to use the lands for purposes other than those contemplated by the Reclamation Act, obtaining legislative approval from the state of Oregon for use of water for purposes other than reclamation, and repealing the Raker Act.[67] When Mead suggested that fees be charged for the thirty to forty thousand sheep that were grazing on weeds in the Lower Klamath lake bed in the late 1920s, W.C. Henderson, chief of the Biological Survey, replied that the dried lake bed was of such "relatively small importance" as a bird refuge that he had no objection to leasing the area for grazing.[68]

A few years later, in 1931, the *Klamath News* commented on the draining of Lower Klamath Lake: "We of today would not have it otherwise, because we make our living from the industry and the agriculture that are fed by the waters that formerly fed the lake." Acknowledging the "great value" of wildlife resources, the editorial expressed hope that the Klamath Basin could preserve its remaining wildlife "in so far as is possible in connection with a prosperous industry and a prosperous agriculture."[69]

Lower Klamath refuge, reduced to just over forty-seven thousand acres by the elimination of private inholdings, was finally reflooded in 1942, but not in response to the demands of naturalists and "lovers of wildlife." The Reclamation Service, the same agency that had closed the headgates and destroyed the refuge, conceived the plan that revived it. Ironically, the decision to reflood was made to solve an irrigation problem: excess agricultural runoff from Klamath Project farms.[70]

The road to understanding why Lower Klamath refuge was revived begins at Tule Lake, two miles away on the east side of a narrow ridge that separates the two lake basins. In 1917, after diverting Tule Lake's main source of water, the Reclamation Service opened up parts of the exposed lake bed to homesteading. As the number of homesteaders grew, the volume of agricultural runoff increased, and all the water eventually drained into Tule Lake sump. Government officials proposed that a refuge on the sump could substitute for the loss of Lower Klamath, and in 1928 President Calvin Coolidge designated 10,300 acres around Tule Lake sump as a bird preserve. The new refuge was a success, offering a resting place for migrating ducks and geese that fed in the thousands of acres of grain planted on the lake bed. In the 1930s, William Finley wrote President Franklin D. Roosevelt about increasing the size of Tule Lake refuge, and the president responded by tripling its size to 37,000 acres.[71]

The 1930s also brought growing local support to reflood Lower Klamath Lake, because increasing agricultural runoff coupled with a wet weather cycle was filling Tule Lake sump to overflowing and threatening to flood adjoining farmland. The board of directors of the Klamath County Chamber of Commerce voted unanimously in 1934 to endorse reflooding twenty-five thousand acres on the south end of the lake bed to create "an inviolate sanctuary for migratory waterfowl," provided that water for reflooding be taken from the Tule Lake sump, which had excess water. In addition, the Merrill Service Club persuaded twelve hundred local citizens to sign a petition endorsing reflooding, because the bed of the "former beautiful lake" had become "practically a desert waste" and the sand, ashes, and dust that blew off the lake bed in great storms constituted a "nuisance" and a "menace" to health.[72] At the same time that dust storms raged on Lower Klamath's dry lake bed, Tule Lake refuge was also in trouble. One refuge was too dry and another was too wet.

In 1938, J.R. Iakisch, a senior engineer with the Reclamation Service, devised a solution for both problems. He proposed excavating a six-thousand-foot tunnel through the ridge separating the two lake beds so that excess water from Tule Lake sump could be pumped onto the dry bed of Lower Klamath. That year, when there was so much water in Tule Lake sump that the dikes on one side had to be opened, flooding six thousand acres of neighboring fields, the local project superintendent urged that the Iakisch plan be implemented. Two years later, the secretary of the interior endorsed the plan, saying that the proposed "restoration of Lower Klamath Lake to something comparable to its former importance as a wildlife refuge has been the subject of more public interest and has had more special study within the past fifteen or twenty years than any similar undertaking in the United States."[73] For twenty years, the federal government had insisted that it could not reflood Lower Klamath Lake because the law prevented it. Then, when practical necessity dictated otherwise, a large part of the lake bed was reflooded as if the legal impediments had been swept away by the high water.

Because public and private lands were intermingled at Lower Klamath, the Iakisch tunnel could not be built without the concurrence of the Klamath Drainage District. In 1940, the district and the Biological Survey signed a cooperative agreement: the government agreed to enlarge the district's drainage canal for their joint use and to build a dike across the bed of Lower Klamath Lake south of the Oregon-California state line so refuge ponds would not flood district farmland.[74]

As the wet weather cycle continued, more water from Tule Lake was pumped through the tunnel than the drainage system at Lower Klamath refuge could handle. With no way to funnel the excess water into the Klamath River, refuge

dikes were washed out and "rampant" botulism in the refuge's unregulated waters took a "heavy toll" on waterfowl. In 1943, the project superintendent proposed building a new outlet to allow heavily alkaline water from the Lower Klamath refuge ponds to drain into the Klamath River and ensure an outlet for all excess water accumulating in Tule Lake sump and agricultural runoff from drainage district farms.[75] The drainage outlet stabilized water levels at both refuges and increased soil productivity and grain yields for refuge and drainage district farmlands. By this time, Lower Klamath farmers had learned how to control the alkali problem by periodically flooding their fields during the summer to leach out the alkali. The farmers had dug a network of drainage ditches below the level of their fields and irrigation canals in order to intercept, collect, and carry away excess seepage water so the alkali could be flushed into drainage ditches and carried away. These changes allowed Lower Klamath farm fields to grow good crops of barley, oats, and wheat. Oregon farmers had been right about the fertility of the soil there.[76]

Constructing such drainage systems, according to historian Mark Fiege, was a second form of reclamation in many parts of the West: the land had to be reclaimed first from aridity and then from excess water in the soil. At the Klamath Project, it constituted a third form of reclamation: first the lakes were dewatered, then irrigation canals were built to bring water to the dry lake beds, then ditches were installed to remove excess water.[77]

Until 1940, major conflicts between federal refuges and reclamation projects were fought at the secretarial level in the departments of agriculture and interior. In an effort to form a single department of natural resources, Secretary of the Interior Harold Ickes stitched together the Bureau of Biological Survey in the Department of Agriculture and the Bureau of Fisheries in the Department of Commerce to create the Fish and Wildlife Service, which he placed in his own department. Although the new agency suffered from low funding, its first director, J.N. "Ding" Darling, was a strong advocate for refuges and tilted the balance of power in that direction.[78]

This restructuring did not end the conflict between the two departments. In 1941, the Fish and Wildlife Service and the Bureau of Reclamation negotiated an agreement that allocated management responsibility on thousands of acres of refuge lands within the Klamath Irrigation Project. What began as agency cooperation instead generated friction. B.E. Hayden, the project superintendent, wrote a superior: "You, of course, are well aware of the tendency of the Fish and Wildlife people to chisel in a little further all the time on what we consider our proper jurisdiction." The final agreement provided that the Bureau of Reclamation would continue to have immediate jurisdiction over and continue to lease large tracts of refuge lands.[79]

Courtesy Murel Long

Five tractors on this farm pull combines, harvesting a thousand acres of oats on the Oregon side of Lower Klamath in October 1942. While one person can operate a modern combine, it took a crew of five or six to operate a "puller combine": a "cat skinner" to drive the tractor, a "header man" to adjust the cutter bar so it would not cut too high or scrape the ground, a "jig man" who filled burlap sacks with grain, one or two "sack sewers" to sew up the bulging sacks of grain and slide them onto the ground, and a machinist to grease the combine and tractor. The canvas covering on the side of the combines — called a "dog house" — protected the jig man and sack sewers.

In like manner, the federal government sought a cooperative management agreement with the Klamath Drainage District. Public and private land there had become more interdependent, and the more than six thousand acres of refuge land within the district relied on the same irrigation and drainage canals that serviced neighboring farms. The 1943 agreement, which superceded earlier contracts, allocated responsibilities for maintaining canals, released the district from the $47,627 still owed under the 1917 contract, and reaffirmed governmental control of the headgates at the Klamath Straits.[80]

In contrast to Lower Klamath, virtually all the land involved in the reclamation of Tule Lake was public land, so the Reclamation Service could offer small plots of that dried lake bed to homesteaders. In the early days, Tule Lake homesteaders faced great challenges. Horse farming on the lake bed was such a "hard scrabble" life that many early homesteaders gave up and left. In 1922, for example, Karl and Marie Gentry, like most homesteaders, lived in a one-room shack with a lean-to kitchen attached. In an environment where the "bare land blew back and forth until alfalfa and water tied it down a bit," they met the cold winters in their poorly insulated house. In the first years, there was no indoor plumbing, electricity, or telephone service, and they pumped house water from a well dug with a posthole auger. During the summer, they scooped water from irrigation canals to wash clothes, because it was better than the hard well water. While homesteaders helped each other, "lending horses and equipment back and forth," Marie Gentry later wrote, it still took "backbreaking work" and "sheer determination" to succeed.[81]

The Reclamation Service did little for farmers like the Gentrys, and there was no help in building bridges, roads, schools, or similar improvements. Some legislators had wanted federal reclamation to be a tool of social reform and had proposed that the government be required not only to build reservoirs but also to prepare public land for settlement. President Roosevelt rejected the suggestion on the grounds that it was too paternalistic. The president prevailed, and the Reclamation Act did not become an "experiment in socialism or community building." Still, the promise of the act, according to Donald Pisani, was thwarted. Because farmers were allowed to "build their own communities" at government irrigation projects, the "mistakes of the past" were repeated and the "projects were settled in…[a] chaotic, unsupervised fashion."[82]

Nevertheless, homesteaders at Tule Lake built independent family farms and a strong, rural community. One homesteader later wrote: "We all had a good deal in common, and we needed and found each other's support and help." Another remembered: "The homesteaders had a knack for pulling together and doing what needed to be done. They worked hard to get schools, roads, churches, electricity, phones and eventually — city water."[83] Over time, as farming techniques improved and the Tule Lake farming community became better established and more successful, increasing numbers of would-be irrigation farmers applied for available homesteads at the lake. In 1946, out of 1,305 applicants, 86 people were selected to homestead on Tule Lake. All the men and women who were picked had a "veteran's preference" because they had served in the U.S. military. That year, when Tule Lake homesteads averaged 80 acres, new homesteaders had to have two years of farming experience and two thousand dollars in assets, own no more than 160 acres of land, and

farm their land for five consecutive years. Conditions at Tule Lake had improved, but new homesteaders still had to "start from scratch" on bare ground, with no house or well or trees.[84]

During the 1950s, there was considerable pressure from those who recognized the growing value of new homesteads to open more public land in the Klamath Project for reclamation homesteading. Homesteading advocates looked to the fifteen thousand acres in Tule Lake refuge and the more than six thousand acres in Lower Klamath refuge that the Bureau of Reclamation had been leasing to local farmers. Conservation organizations and duck hunters opposed releasing the land to homesteaders. The conflict became known as the "farmer vs. duck" or "homestead vs. lease" controversy. Once again, the two federal agencies were locked in a dispute. The commissioner of reclamation recommended that the land be homesteaded, as envisioned by the Reclamation Act. There would be no problem providing water to additional homesteaders: by 1962, the Klamath Project had grown to include 3 storage dams, 5 diversion dams, 29 pumping plants, 120 miles of canals, 477 miles of laterals, and 644 miles of drains. The director of the Fish and Wildlife Service, concerned that more homesteading would harm wildlife, recommended continuing the practice of leasing large tracts of land to farmers.[85]

In October 1959, Tule Lake homesteaders, organized as the Tule Lake Irrigation District, pumped water until Tule Lake sump dropped nearly seven inches below the minimum level required for wildlife, in violation of a management contract with the Department of the Interior.[86] Conservation organizations, interpreting this as a provocative act, protested loudly; and public charges, press stories, and letter-writing campaigns ensued. In December, the federal government took over operation of the pumping facilities at Tule Lake sump to ensure that minimum water levels for waterfowl would be maintained.[87] Walt Radke, who used his regular columns in the *San Francisco Examiner* to advocate for the protection of Tule Lake refuge, wrote in 1960 that the "rascally" Tule Lake Irrigation District "has never made any bones about the fact it considers the Tule Lake Refuge and the annual swarms of waterfowl and hunters a nuisance."[88]

In 1962, Secretary of the Interior Stewart Udall told the congressional committee considering legislation to resolve the controversy that "there is probably no more important waterfowl area in the country than these refuges in the Upper Klamath Basin." The refuges, Udall said, "act like the waist of an hourglass" so "all the birds of the Pacific Flyway funnel through this area in their annual migrations." At the height of fall migration, concentrations of from seven to eight million waterfowl congregated at the refuges, including five million pintail ducks, five hundred thousand mallard ducks, and three hundred thou-

Bureau of Reclamation

Philip and Barbara Krizo stand with their children on a hill above the dry bed of Tule Lake in 1947. Philip Krizo, the son of Czechoslovakian immigrants who started ranching near Tule Lake in 1910, won a reclamation homestead in the 1946 Bureau lottery. Their new community consisted of hundreds of abandoned barracks at the Newell Internment Camp, where nearly twenty thousand Americans of Japanese ancestry had been housed during World War II. The Krizos moved one of the tarpaper barracks to their homestead. In a reminiscence published in the Journal of the Modoc County Historical Society *in 1996, Barbara Krizo wrote that her mother "cried to see them living so poorly."*

sand white-fronted geese. While peak numbers of migrating waterfowl using the Klamath Basin fluctuated over time, reductions in those numbers were caused by habitat loss in other parts of the Pacific Flyway, especially in northern California. By the early 1960s, 90 percent of the wetlands in California's Central Valley was gone, almost all of it converted to irrigated farmland. Udall concluded:

> Proper management of these areas is essential to hold these birds until the rice harvest is completed in the Central Valley of California and any loss of refuge lands would inevitably

cause great losses to California's agricultural economy. In addition, the Klamath–Tule Lake lands are extremely important breeding grounds for ducks and geese.[89]

Several Klamath Basin farmers appeared before the committee to oppose parts of the bill. Dick Henzel, president of the board of the Klamath Drainage District, argued that the "Straits Unit" — the six-thousand-acre tract of Lower Klamath refuge land situated within the boundaries of the drainage district — should go into private ownership. Keeping this land in public ownership, he said, would violate past agreements and the Reclamation Act.[90]

The conservationists prevailed. The Kuchel Act, passed in 1964, prohibited further homesteading on the refuges and assigned management of the twenty-one thousand acres of refuge land in the Klamath Project to the secretary of the interior "for the major purpose of waterfowl management, but with full consideration to optimum agricultural use that is consistent therewith." In practice, the Bureau of Reclamation, not the Fish and Wildlife Service, has handled leases to farmers. This compromise land-tenure system — long-term leasing of refuge lands by another agency — is unique in the federal refuge system.[91]

Viewed in 1964, the Klamath Basin refuges were generally considered a success story. A flurry of books about the national wildlife system in the late 1960s and 1970s paid tribute to basin refuges. According to George Laycock's comprehensive guide to the system, Tule Lake was "the most important single waterfowl refuge in the country." Roger Tory Peterson identified the Tule Lake and Lower Klamath refuge complex as one of the "dozen birding hot spots" in the nation. Several refuge system guidebooks identified Klamath Basin refuges as the place where the greatest concentration of waterfowl on the continent could be found each fall and Tule Lake and Lower Klamath as the site of the largest concentration of wintering bald eagles outside Alaska.[92]

At the same time, the Klamath Irrigation Project had earned mixed reviews. The bed of Tule Lake, dotted with hundreds of modest farmhouses and connected by a grid of narrow country roads, embodied the vision of the Reclamation Act: land unsuited for farming had been transformed into rich, irrigated farmland for small farmers. The bed of Lower Klamath Lake, in contrast, was owned in large tracts. Lower Klamath farmers, however, had been right about soil fertility, and their vast, productive grainfields also benefited migratory ducks, geese, and swans. Still, many people today would say that getting that land into farm production did not justify the Reclamation Service's decision to twist the terms of the Reclamation Act, drain Lower Klamath Lake, and nearly destroy the first federal waterfowl refuge.

By the 1960s, Klamath Project farms and the two refuges had become so entwined by irrigation canals and drainage ditches that it was as if they shared arteries and veins. The relationship was not an equal one: project farms had

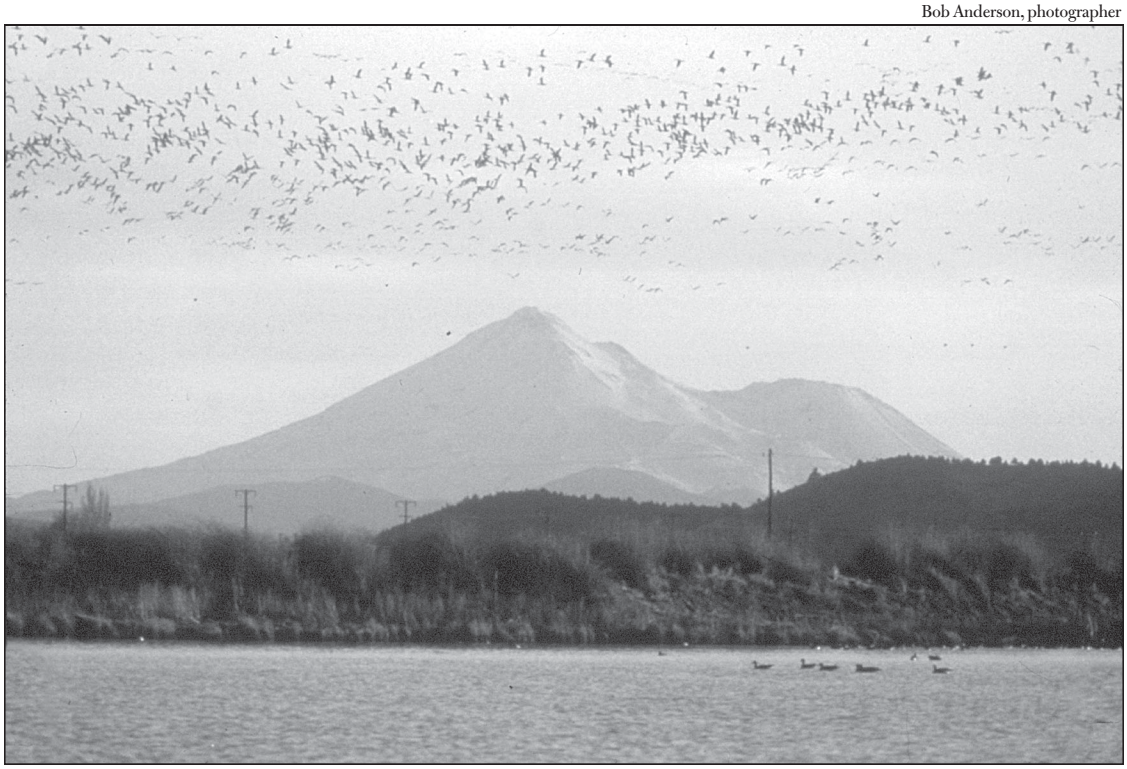
Bureau of Reclamation

Wind erosion turned a farmer's field into hummocky rows of drifted soil on the dried bed of Lower Klamath Lake in California in 1946.

water rights set by state law and the refuges did not. Because the refuges had to rely on runoff water from project farms, the use of agricultural chemicals and pesticides on "upstream" farms and on the twenty-one thousand acres of leased refuge lands could directly affect wildlife on the refuge. The curtailment of water to the Klamath Project also threatened the wildlife.

Over time, ever-greater demands were placed on the Klamath Basin's water resources, yet project farmers in 1964 had good reason to believe that state law secured their water supply. Under Oregon law, the doctrine of prior appropriation provides that in times of scarcity priority must be given to those who first put water to beneficial use. Klamath Project water has a priority date of 1905. The Klamath Indian Tribes could have challenged this priority when they owned a reservation of nearly a million acres, which covered much of the headwaters of Upper Klamath Lake, because Indian water rights — which cannot be lost through non-use — have a priority date of "time immemorial." That chal-

Bob Anderson, photographer



Lower Klamath National Wildlife Refuge in late fall, looking south toward Mount Shasta, is shown in this late 1960s photograph. The dark specks in the sky are flocks of geese.

lenge appeared to fade away when federal legislation "terminated" the Klamath Tribes in 1954 and the government later acquired their tribal land.[93]

In 1964, the nation's social landscape, even in remote locations such as the Klamath Basin, was about to be reshaped by a confluence of powerful forces. As historian Norris Hundley, Jr., documented, the politics of water and laws governing water allocation since the 1960s have changed significantly, and the growing environmental movement wrought much of this change. For example, courts recognized the legality of a water right in behalf of "instream uses" for, among other things, wetlands protection and restoring fish populations. Then, in 1973, Congress passed the Endangered Species Act, legislation that would have dramatic implications for water allocation in the Klamath Basin. Because species were becoming extinct "as a consequence of economic growth and development untempered by adequate concern and conservation for the environment," Congress set a more stringent standard for environmental protection in this act, requiring that "critical habitat" be designated to protect endangered species from extinction, regardless of the "economic impact."[94]

From outward appearances, little has changed in the Klamath Basin since 1964. The upland areas of the two refuges and nearby farms look alike, crisscrossed by dikes that slice the land into neat geometric patterns. Refuge personnel maintain a plumbing system of dikes, canals, and pumping plants that gives them flexibility to manage habitat for wildlife. By inundating a diked field in winter and then draining it in early summer, they can transform a bare field into a seasonal wetland. Parts of the refuges are managed as intensively as surrounding farmlands. Farming and waterfowl coexist on sharecropped refuge fields where local farmers, in return for the right to farm, agree to leave part of their grain crop standing as a high-protein food for migrating waterfowl.

A series of droughts in the past ten years, however, has made it clear that water resources in the Klamath Basin have been over-allocated. Recent studies of local fish populations, initiated by the Klamath Indians, document that the over-allocation has contributed to the steep decline of two fish species endemic to the Klamath Basin: Lost River suckers and short-nosed suckers. Because Klamath Indians historically relied on these fish species as a food source and because the federal courts ruled that the Tribes hold treaty-based fishing rights on their former reservation, they filed a petition under the Endangered Species Act and succeeded in having both fish species listed as endangered.

In the spring of 2001, after a winter of unusually low precipitation, the Bureau of Reclamation cut off water to 90 percent of the land in the Klamath Project to maintain higher water levels for three fish species: the two endangered sucker species in Upper Klamath Lake and threatened Coho salmon in the Klamath River. The dramatic reduction in water to project farms nearly eliminated agricultural runoff to the waterfowl refuges and adversely affected bald eagles, which are listed as threatened under the Endangered Species Act. Furthermore, meeting the legal requirements to protect the fish species may not leave enough water for all Klamath Project farmers in six out of ten years. Project farmers as well as the basin's waterfowl refuges now face an uncertain future.

The Klamath Basin's current fish versus farms controversy is, in part, a legacy of its one-hundred-year history of governmental agencies working at cross-purposes, seeking both to promote agriculture and to protect wildlife. This controversy was also affected by a regulatory system where state water law allowed private irrigators to take their full quota of water from the Klamath River drainage system while federal law denied this water to project farmers.[95] In the basin, resource use has been and continues to be governed by a patchwork of overlapping and inconsistent state and federal laws, which too often contributed to the unusual, inefficient, and inequitable allocation of the basin's natural resources.

Notes

1. B.K. Swartz, Jr., ed., "The Samuel A. Clarke Papers," Klamath County Research Paper No. 2 (Klamath Falls, Ore.: Guide Printing Co., 1960), 2–3; Carrol B. Howe, *Ancient Tribes of the Klamath Country* (Portland, Ore.: Binford & Mort, 1968): 158; Theodore Stern, *The Klamath Tribe: A People and Their Reservation* (Seattle: University of Washington Press, 1966), 11, 66; C.S. Bienz and J.S. Ziller, "Status of Three Lacustrine Sucker Species," *Federal Register* 53:137 (July 18, 1988); Charles J. Henny, "Large Osprey Colony Discovered in Oregon in 1899," *The Murrelet* 69:1 (Spring 1988): 34–5.

2. William L. Finley, "Western Grebe," *Oregon Sportsman* 6:1 (January 1918): 40; Frank Graham, *The Audubon Ark: A History of the National Audubon Society* (New York: Alfred A. Knopf, 1990), 25; William L. Finley, "Uncle Sam, Guardian of the Game," *Outlook* 107 (June 27, 1914): 482; "No More Hunting on Lower Klamath," *Klamath Falls Evening Herald* (Oregon), August 22, 1908.

3. Portland Audubon Society, *Audubon Warbler* (April 1959), 3-4.

4. William L. Finley, "Among the Pelicans," *The Condor* 9:2 (March–April 1907): 37.

5. William L. Finley, "Report of the Audubon Society for Oregon for 1905," *Bird Lore* 7 (1905): 340–1; Finley, "Among the Gulls on Klamath Lake," *The Condor* 9:1 (January–February 1907): 12.

6. Marc Reisner, *Cadillac Desert: The American West and its Disappearing Water* (New York: Viking, 1986): 111–12; Donald Worster, *Rivers of Empire: Water, Aridity and the Growth of the American West* (New York: Random House, 1985), 170, 177. See also Michael C. Robinson, *Water for the West: The Bureau of Reclamation, 1902–1977* (Chicago: Public Works Historical Society, 1979).

7. J.H. Quinton to Chief Engineer, December 26, 1908, and attached "Report on the Klamath Project," 1–2, 7–9, file 128.2, U.S. Bureau of Reclamation, Klamath Area Office, Klamath Falls, Oregon [hereafter KAO]. The power company contracted with the federal government to build a dam at the outlet of Upper Klamath Lake to provide irrigation water to Klamath Project farms and to regulate the flow of water to the company's downstream power plant. L.T. Jessup, "Report on Proposed Re-flooding a Portion of Lower Klamath Lake, California," October 1927, 7, 12, 13, RG 22, SE-162, Box 81, Civil Archives Division, National Archives and Records Administration, College Park, Maryland [hereafter NA].

8. William L. Finley, "The Grebes of Southern Oregon," *The Condor* 9:4 (July–August 1907): 97.

9. Ira Gabrielson, *Wildlife Refuges* (New York: Macmillan, 1943): 9–11, 133; Thomas G. Pearson, *Adventures in Bird Protection* (New York: D. Appleton, 1937): 243–4; Graham, *The Audubon Ark,* 109; Dallas Lore Sharp, *Where Rolls the Oregon* (Boston: Houghton Mifflin, 1913): vii; William L. Finley, "Hunting Birds with a Camera," *National Geographic Magazine* 44:2 (August 1923): 196–7; Executive Order No. 924 (August 8, 1908); Paul Cutright, *Theodore Roosevelt: The Making of a Conservationist* (Urbana: University of Illinois Press, 1985), 223. Lower Klamath refuge is both a National Historic Landmark and a National Natural Landmark. The preserve is now listed on the National Register of Historic Places as the first large area of public land reserved for wildlife and the first national waterfowl refuge. Earlier refuges had only included a few acres around threatened nest sites of colony-nesting birds. See U.S. Fish and Wildlife Service, "Annual Narrative Report, Lower Klamath National Wildlife Refuge" (1988), 1.

10. Executive Order No. 924, August 8, 1908, 1–2, 7–9; Gabrielson, *Wildlife Refuges*, 182.

11. Quinton to Chief Engineer, file 128.2, KAO; Glenn J. Akins, "The Effects of Land Use and Land Management on the Wetlands of the Upper Klamath Basin" (M.S. thesis, Western Washington State College, 1970): 11–15, 22–5, 45–8.

12. Allen L. Darr, "Lower Klamath Lake Reclamation," Report, 1923, 7, file 123.2, KAO; [?] Taylor, "Memorandum on Lower Klamath Lake," February 20, 1926, 2–4, attached to Elwood Mead to Chief Engineer, Denver, n.d., file 565, KAO; General Laws of Oregon, 1905, 63; California Statutes, 1905, 4.

13. Paul W. Gates, *History of Public Land Law Development* (Washington, D.C.: U.S. Government Printing Office, 1968), 321–6; F.G. Young, "Financial History of the State of Oregon," *Oregon Historical Quarterly* 10 (1909): 381–2; 11 (1910): 154–6. In 1878, this law was changed to increase the price per acre to $2.50 for tracts for swampland.

14. Jessup, "Report on Proposed Re-flooding," 4, 8.

15. Abel Ady to Ethan Allen Hitchcock, secretary of the interior, December 21, 1905, 2, RG 115, SE-3, Box 544, NA; Gates, *History of Public Land Law*, 661. See Darr, "Lower Klamath Lake Reclamation," 7.

16. Worster, *Rivers of Empire,* 171–2.

17. George R. Wickham to Albert B. Fall, secretary of the interior, July 22, 1921, 2, file 832, KAO; P.W. Dent to E.W. Nelson, April 30, 1927, file 565, KAO.

18. Executive Order No. 2202, May 14, 1915; see also "Raker Speaks on Reclaiming Land," *Evening Herald,* November 6, 1936; H.W. Henshaw, chief, Biological Survey, memo for the secretary, May 27, 1916, RG 22, SE-162, box 80, NA.

19. Gates, *History of Public Land Law Development*, 655–6; Worster, *Rivers of Empire,* 173–4.

20. Quinton to chief engineer, December 26, 1908; Gates, *History of Public Land Law Development*, 661.

21. Worster, *Rivers of Empire,* 171–2, 174. The

Reclamation Service later reinterpreted the act's 160-acre limitation to be 320 acres for a farm couple. In 1982, Congress increased the limitation to 960 acres. In 1987, the agency decided that holdings in excess of the 960-acre limit could continue to qualify for subsidized project water if they were part of a "farm management arrangement"; that is, if title for large landholdings was divided into partnerships or trusts, each holding no more than 960 acres. See ibid., 285–8; Norris Hundley, Jr., *The Great Thirst: Californians and Water, a History,* rev. ed. (Berkeley: University of California Press, 2001), 463–6. According to Donald J. Pisani, even the act's original 160-acre limitation encouraged land speculation because it neither provided a specific procedure to regulate the disposal of surplus land nor required farmers to divest themselves immediately of landholdings over 160 acres, particularly if they were unirrigated. See Pisani, *From the Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850–1931* (Berkeley: University of California Press, 1984), 316–17.

22. Donald J. Pisani, *To Reclaim a Divided West: Water, Law, and Public Policy, 1848–1902* (Albuquerque: University of New Mexico Press, 1992), 323–4, 330–6.

23. Jenks Cameron, *The Bureau of Biological Survey, Its History, Activities and Organization* (Baltimore: Johns Hopkins University Press, 1929), 91, 135, 311; Worster, *Rivers of Empire,* 170–1, 177; Reisner, *Cadillac Desert,* 118; *Klamath Republican,* September 26, 1907.

24. William L. Finley, "Report of the President of the Oregon Audubon Society" (1909), 1, Portland Audubon Society Collection, Research Library, Oregon Historical Society, Portland; Finley, "With the Field-Agents Cruising the Klamath," *Bird Lore* 17 (November 1915): 485. The Audubon Society furnished and paid for the warden's patrol boat.

25. William L. Finley to William Dutcher, September 1908, RG 22, ES-1323, Box 90, NA; L. Alva Lewis to Finley, October 1, 1908, RG 22, SE-162, Box 81, NA.

26. L. Alva Lewis to T.S. Palmer, April 15, 1909, RG 22, SE-162, Box 81, NA.

27. L. Alva Lewis to T.S. Palmer, assistant chief, Biological Survey, March 27, 1911, 2, RG 22, SE-162, Box 81, NA.

28. T.S. Palmer, acting chief, Biological Survey, to L. Alva Lewis, October 17, 1912, RG 22, SE-162, Box 81, NA; Cameron, *Bureau of Biological Survey,* 311; *Klamath Republican,* September 26, 1907.

29. I.S. Voorhees, "History of the Klamath Project, Oregon - California, May 1, 1903 to December 31, 1912," 1913, 133–9, general project history file, KAO; Quinton to chief engineer, December 26, 1908, 15–19.

30. Taylor, "Memorandum on Lower Klamath Lake," 5–9; Hopson to Frederick Newell, November 20, 1913, 5, file 832, KAO; Voorhees, "History of the Klamath Project," 142, 144–7. See also Gates, *History of Public Land Law Development,* 666–7.

31. Quoted in Taylor, "Memorandum on Lower Klamath Lake," 7–8.

32. Acting project engineer to W.W. Patch, September 19, 1912, 2 123.2, KAO; Abel Ady to Ethan Allen Hitchcock, secretary of the interior, December 21, 1905, 2, RG 115, SE-3, Box 544, NA. Ady was known in the basin as the "marsh king," since he had once owned twelve thousand acres of swampland around the lower lake — three thousand acquired under the state Swamp Land Act in 1904 and nine thousand acres purchased from big landowners. According to the Reclamation Service, "practically all" of Ady's marshland was financed with high interest mortgages, so his "only hope of avoiding disastrous failure lay in his ability to re-sell the lands fast enough to meet his obligations." Ady had to sell out or face foreclosure. He would later claim that he lost $150,000 because of the government's "delay" in reclaiming Lower Klamath. Patch to Newell, September 20, 1912, 2–4, 123.2, KAO.

33. Finney to Walter L. Fisher, secretary of the interior, April 19, 1911, 2–3, RG 48, S8–3, Box 1605, NA; Hopson to Newell, November 20, 1913, 9–10, 13–15; "Klamath Falls Wins Long Fight," *Oregonian*, April 30, 1911. See Taylor, "Memorandum on Lower Klamath Lake," 10–12.

34. C.J. Blanchard to Newell, August 29, 1911, 4, RG 115, SE-3, File 314, NA; Newell to Walter L. Fisher, secretary of the interior, April 18, 1911, 3–4, RG 48, S8–3, Box 1605, NA.

35. Newell to Franklin K. Lane, secretary of the interior, May 29, 1913, 2, RG 48, S8–3, Box 1605, NA.

36. Patch to Hopson, July 10, 1913, 6, file 832, KAO.

37. Hopson to Patch, November 11, 1913, 1–2, file 832, KAO.

38. Hopson to Newell, November 20, 1913, 8–10, 15.

39. Agreement, U.S. and the Klamath Drainage District, November 30, 1917, 4–6, RG 22, SE-162, Box 80, NA; Taylor, "Memorandum on Lower Klamath Lake," 10–13; Jessup, "Report on Proposed Re-flooding," 6–7.

40. "Klamath Is County Where There Is Too Much Water," *Oregonian*, November 5, 1911. See also William B. Meyer, "When Dismal Swamps Became Priceless Wetlands," *American Heritage* (May–June 1944), 109.

41. "The Marsh Lands Reclamation May Soon Be Started," *Evening Herald*, July 27, 1917.

42. Agreement, U.S. and the Klamath Drainage District, November 30, 1917, 4–6.

43. W.C. Henderson to Morris Bien, September 30, 1919, RG 22, SE-162, Box 80, NA; Jessup, "Report on Proposed Re-flooding," 7; D.L. Houston to N.J. Sinnott, November 25, 1919, 2, RG 22, SE-162, Box 80, NA.

44. E.E. Hewitt, "Oregon's State Game Warden

and Biologist," *Sunset* 39 (August 1917): 44; Worth Mathewson, *William L. Finley, Pioneer Wildlife Photographer* (Corvallis: Oregon State University Press, 1986), 10–11.

45. Olas J. Murie to Franklin K. Lane, December 15, 1919, RG 115, SE-7, Box 575, NA.

46. C.J. Laird, "Affidavit," December 11, 1920, file 832, KAO; A.E. Bolton to John B. Payne, August 27, 1920, 1–3, file 832, KAO.

47. L. Jacobs, Affidavit, "In the Matter of the Lower Klamath Lake Investigation," December 28, 1920, 1–2, file 832, KAO.

48. H.L. Holgate to Herbert D. Newell, January 10, 1921, 3, file 832, KAO; Holgate to Chief Engineer, June 14, 1921, 2, file 832, KAO; Taylor, "Memorandum on Lower Klamath Lake," 17.

49. Jessup, "Report on Proposed Re-flooding," 6; John J. Furber, Warden's Monthly Report, June 5, 1919, RG 22, SE-162, Box 81, NA.

50. "Raker Speaks on Reclaming Land," *Evening Herald*, November 6, 1916; Raker Act (41 Stat. 627), May 27, 1920; Taylor, "Memorandum on Lower Klamath Lake," 13–16; H.L. Holgate and Herbert D. Newell to Chief Engineer, April 18, 1921, file 565, KAO; Darr, "Lower Klamath Lake Reclamation," 8.

51. Taylor, "Memorandum on Lower Klamath Lake," 17; Gates, *History of Public Land Law Development*, 672; Worster, *Rivers of Empire,* 176.

52. H.L. Holgate to Chief Engineer, January 17, 1921, RG 115, SE-7, Box 671, NA; Holgate to Herbert D. Newell, project manager, May 7, 1921, 2, file 832, KAO; Holgate to chief engineer, June 14, 1921, 2, file 832, KAO.

53. William L. Finley and Irene Finley, "The Destruction of Lower Klamath," *Oregon Sportsman* 2:1 (September 1925): 1.

54. Finley to Joseph Grinnell, October 29, 1924, Joseph Grinnell Papers, file C-B 995, Bancroft Library, University of California, Berkeley; Taylor, "Memorandum on Lower Klamath Lake," 21–6.

55. "Dust Closes School," *Evening Herald*, October 26, 1922.

56. "Re-flood Lower Klamath Lake!" *Pacific Sportsman* (December 1925), 27; Taylor, "Memorandum on Lower Klamath Lake," 30.

57. *Klamath Sun* (Klamath Falls, Oregon), January 30, 1924.

58. Klamath Drainage District supervisors to Herbert Work, secretary of the interior, and Elwood Mead, November 13, 1924, 5–6, RG 115, SE-7, Box 575, NA; "File Protest against Lake Bird Preserve," *Evening Herald*, November 12, 1924.

59. H.L. Holgate to Mead, November 3, November 20, November 26, 1924, file 565, KAO.

60. Harold C. Bryant to Chief, Biological Survey, June 30, 1925, 2, 3, 5, RG 22, SE-162, Box 81, NA.

61. Bernard Motschenbacher, telephone interview with author, December 5, 1989; R.C. Zuckerman to Mead, November 22, 1924, 1–2, RG 115, SE-7, Box 575, NA; *Oakland Tribune* (California), March 9, 1926; Cal Peyton, interview with author, December 7, 1989.

62. Winston Patterson and James Flowers, interview with author, April 12, 1990; E.C. Finney to Finley, November 21, 1923, 2, file 565, KAO; Jessup, "Report on Proposed Re-flooding," 7.

63. Harold C. Bryant to Chief, Biological Survey, June 30, 1925, 2, 3, 5, RG 22, SE-162, Box 81, NA. Jacobs advertised this land as "admittedly the richest land in the world" and offered to sell it for one hundred dollars per acre. See *Klamath Falls City Directory*, 1920, 23.

64. Jessup, "Report on Proposed Re-flooding," 2; Finley to Mead, September 19, 1925, RG 115, SE-7, Box 575, NA; "Oregon Favors Re-flooding of Klamath Lake," *Sacramento Bee* (California), October 14, 1925.

65. *Evening Herald*, December 7, December 10, 1925.

66. Zuckerman to Mead, November 22, 1924; Klamath Drainage District to President Calvin Coolidge, January 27, 1925, 4, RG 115, SE-7, Box 575, NA; Mead to Rep. J.D. Fredericks, February 25, 1926, 4–5, file 565, KAO.

67. John H. Edwards, "Water Rights on Lower Klamath Lake," *Opinion*, June 9, 1932, 6, RG 22, SE-162, Box 90, NA; Taylor, "Memorandum on Lower Klamath Lake," 32.

68. Mead to E.W. Nelson, January 25, 1928, file 706, KAO; W.C. Henderson to Mead, December 19, 1928, RG 115, SE-7, file 131.141, NA.

69. "The Old Lower Klamath Lake," *Klamath News*, August 29, 1931.

70. U.S. Fish and Wildlife Service, "Annual Narrative Report, Lower Klamath National Wildlife Refuge," 1988, 1, Headquarters, Klamath Basin National Wildlife Refuges, U.S. Fish and Wildlife Service, Tule Lake, California [hereafter KBNWR].

71. W.M. Jardine to Hubert Work, secretary of the interior, December 8, 1927, RG 115, SE-7, Box 574, NA; Executive Order No. 4975, October 4, 1928; Edgar B. Nixon, ed., *Franklin D. Roosevelt and Conservation, 1911–1945*, vol. 1 (Hyde Park, N.Y.: General Services Administration, 1957), 465–6; Executive Order No. 7341, April 10, 1936.

72. *Klamath News*, March 1, 1934; Merrill Service Club to Ira N. Gabrielson, chief of the Biological Survey, December 30, 1937, RG 22, SE-162, Box 90, NA.

73. See J.R. Iakisch, "Report on Tule Lake Reclamation, Klamath Project, Oregon," U.S. Bureau of Reclamation, Project Investigation Report No. 5 (1938); B.E. Hayden to John C. Page, commissioner, Bureau of Reclamation, March 3, 1938, RG115, SE-7, Box 673, NA; Harold L. Ickes to Harold D. Smith, March 1, 1940, 2, RG 22, SE-162, Box 90, NA.

74. Agreement, Biological Survey and Klamath Drainage District, May 25, 1940, 2–4, file 832, KAO.

75. U.S. Fish and Wildlife Service, "Fiftieth Anniversary, Lower Klamath National Wildlife Refuge," October 18, 1958, 1, KBNWR; B.E. Hayden to Chief Engineer, Bureau of Reclamation, February 9, 1943, file 565, KPO.

76. Dick Henzel, interview with author, January 30, 1990; Flowers interview.

77. Mark Fiege, *Irrigated Eden: The Making of an Agricultural Landscape in the American West* (Seattle: University of Washington Press, 1999), 31.

78. Dennis Drabelle, "Going it Alone: An Inside Look at a Vulnerable System," *Wilderness* 47:162 (Fall 1983): 13; Mathewson, *William L. Finley,* 15.

79. B.E. Hayden to E.B. Debler, September 5, 1941, file 565, KAO; Agreement, Bureau of Reclamation and Fish and Wildlife Service, January 8, 1942, 3–5, file 565, KAO.

80. Amendatory Contract, U.S. and the Klamath Drainage District, April 28, 1943, 3, 16, file 832, KAO; Public Law 342, 78th Cong., June 17, 1944, 1.

81. Marie Gentry, "Experiences of an Early Homesteader," *Annual Report* (Tulelake, Calif.: Tulelake Irrigation District, 1972), 19–31.

82. Donald J. Pisani, *Water, Land, and Law in the West: The Limits of Public Policy, 1850–1920* (Lawrence: University Press of Kansas, 1996), 189–91, 194; Pisani, *To Reclaim a Divided West*, 324–5.

83. Eleanor Bolesta, "A Woman Wins," and Barbara Krizo, "The Krizos . . . 1946 Homesteaders," in *Journal of the Modoc County Historical Society*, no. 18 (1996), 90, 127.

84. Jess Prosser, interview with author, June 10, 2001.

85. John B. Bennett, "Report on the Homestead-Lease Controversy in the Lower Klamath and Tule Lake Areas," January 31, 1958, 1–6, file 565, KAO; Fred G. Aandahl, assistant secretary for water and power, and Ross Leffler, assistant secretary for fish and wildlife, to Fred A. Seaton, secretary of the interior, January 31, 1958, 2, file 565, KAO; Harold P. Dugan, Hearing before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs, on S. 1988, "Tule Lake, Lower Klamath, and Upper Klamath NWRs," 87th Cong., 2nd sess., February 23, 1962, 60 [hereafter Kuchel Hearing].

86. "Tule Lake National Wildlife Refuge Press Release," October 23, 1959, RG 22, SE-162, Box 152, NA.

87. Floyd Dominy to Rep. Charles Gubser, March 2, 1960, file 565, KPO.

88. "Final Tule Lake Settlement Leaves Much to Be Desired," *San Francisco Examiner*, March 3, 1960.

89. Stewart Udall, Kuchel Hearing, 19–21; Reisner, *Cadillac Desert*, 245. By 1962, there were five federal wildlife refuges in the Klamath Basin, but Lower Klamath and Tule Lake were by far the most important for waterfowl. Annual waterfowl production from basin refuges averaged 78,000 ducks and geese; 160 different species of birds had nested on the refuges, and nearly 250 different species of birds had been seen there.

90. Dick Henzel, Kuchel Hearing, 86–9. Henzel's argument is somewhat surprising, since his family's partnership, Tulana Farms, then received subsidized project water for its nearly eleven thousand acres of irrigated farmland at Lower Klamath. See Henzel interview. See also *The History of Klamath County Oregon* (Klamath Falls: Klamath County Historical Society, 1989), 249–50.

91. Public Law 88–567 (78 Stat. 850), September 2, 1964.

92. George Laycock, *The Sign of the Flying Goose: A Guide to the National Wildlife Refuges* (Garden City, N.Y.: The Natural History Press, 1965), 199; George Harrison, *Roger Tory Peterson's Dozen Birding Hot Spots* (New York: Simon & Schuster, 1976), 258; Robert Murphy, *Wild Sanctuaries, Our National Wildlife Refuges: A Heritage Restored* (New York: E.P. Dutton, 1968), 183; Laura Riley and William Riley, *Guide to the National Wildlife Refuges* (Garden City, N.Y.: Anchor Press, 1979), 541.

93. Klamath Termination Act, 25 U.S.C. Sec. 564. See also Hundley, *The Great Thirst,* 533–4. In 1983, a federal appeals court ruled that the Klamath Indians retained a non-consumptive water right — a minimum instream flow — to support their treaty hunting and fishing rights on former reservation lands and that this water right must be sufficient to sustain a population of game and fish that would provide the Klamaths with a livelihood. *U.S. v. Adair*, 723 F.2nd 1394 (Ninth Cir., 1983). In 1986, federal legislation "restored" the Klamath Indians as a federally recognized tribe. Public Law No. 99–398, 100 Stat. 849. While the Klamath Tribes' water rights for instream flows have yet to be quantified, their treaty-based rights could someday pose a significant challenge to consumptive water users in the Klamath Basin, including Klamath Project farmers.

94. Hundley, *The Great Thirst,* 360–2, 465; Endangered Species Act of 1973, 16 U.S.C.A. 1531–44, sec. 2(a)(1) and 4(b)(2).

95. According to Jim Bryant, chief of land and water for the Bureau of Reclamation's Klamath Area Office, the Endangered Species Act did not apply to private irrigators in 2001 because the act generally holds federal agencies to a higher standard than private citizens, especially when there may be "problems of proof," such as showing the cumulative effects of water flows on endangered fish. Project farmers will not be given priority over irrigators with junior water rights until the Klamath Basin water rights adjudication is resolved in Oregon state court, which could take many more years. Even then, private irrigators in California will not be affected because that state has its own system of water law. Jim Bryant, interviews with author, July 17, September 17, 2001; Endangered Species Act of 1973, sec. 7, 9.