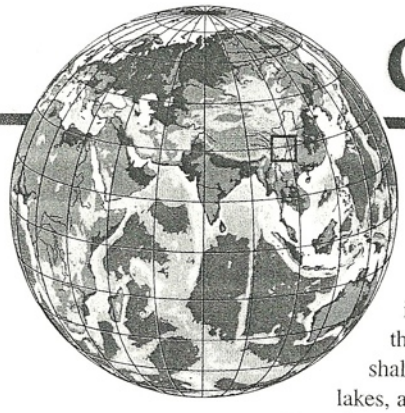

Case Study Sharing the Klamath

A century ago, the Klamath River was the third most productive salmon fishery south of the Canadian border. Originating near Crater Lake in Oregon, the river flows through a broad shallow valley of extensive marshes, lakes, and dry steppe before descending through steep, forested canyons to the Pacific Ocean (fig. 17.1). The 35 km (22 mi) long Upper Klamath Lake, the largest lake in the Pacific Northwest, once contained great schools of C'wam and Qapdo (Lost River and shortnose suckers). The Klamath Basin also teemed with waterfowl and wildlife. At least 80 percent of the birds following the Pacific flyway stopped to feed in the area. Native people, including the Klamath and Paiute in the upper basin and the Yurok, Modoc, and Hoopa downstream, depended on the abundant fish and wildlife for their survival. The United States' first waterfowl refuge, the Lower Klamath Wildlife Refuge, was established in 1908 to protect the area's critical habitat for ducks, geese, and migrating shore birds.

But at the same time that the refuge was created, the newly formed U.S. Bureau of Reclamation was directed to "reclaim the sunbaked prairies and worthless swamps" in the upper Klamath Basin. Spending $50 million, the bureau built 7 dams, 45 pumping stations, and more than 1,600 km (1,000 mi) of canals and ditches. The project drained three-quarters of the wetlands in the upper basin, and provided irrigation water to 90,000 ha (220,000 acres) of new cropland. Promises of cheap land and subsidized water lured some 1,400 farmers to the valley to grow potatoes, alfalfa, sugar beets, mint, onions, and cattle. In the 1990s, irrigators in the Klamath Basin used almost 1 million acre-feet (325 million gallons or 1.2 trillion liters) of surface water per year.

The dams blocked fish migration, water diversions dried-up spawning streams, and oxygen-depleted lake water was contaminated with agricultural runoff and clogged with algae. Downstream, Native American tribes and commercial fishermen, who once had brought in about 500,000 kg (roughly a million pounds) of salmon per year saw their catches decline by as much as 90 percent. More than 7,000 jobs were lost when the fisheries collapsed. In 1997, the C'wam and Qapdo were declared endangered, and Coho salmon were listed as threatened. A coalition of commercial and sports fishermen, environmentalists, and native people sued the government for damaging fish and wildlife resources. A federal judge ordered the Bureau of Reclamation to reduce irrigation flow and to maintain minimum water levels in lakes and the river.

A severe drought in 2001 precipitated a crisis. For the first time in its history, the bureau closed the gates to irrigation canals and cut off water to area farmers. Outraged locals broke open the headgate locks and released water into drying fields. Federal marshals were called to close the gates again. News media flocked to the site to report on the confrontation. Wildlife enthusiasts and hunters clamored for the return of water to the river's vast wetlands. Lost crops ruined some farmers. Passions were further inflamed by politicians who seized on the controversy to advance their own agendas.

The next summer, the Bush administration ordered the bureau to deliver a full supply of irrigation water to farmers.The result was record low river flows that reduced the river in many stretches to a series of stagnant puddles. A disease outbreak caused by low oxygen levels and concentrated pollutants in the warm water killed an estimated 250,000 salmon. To protect the few remaining fish, the federal government severely restricted commercial salmon fishing on the West Coast, crippling the economy of coastal fishing towns. It seemed as if there was no solution in the competition for water. The animosity and mistrust between groups locked in the struggle seemed implacable.

Then, in 2004, a new development altered the equation. The PacifiCorp, a utility owned by investor Warren Buffet's Berkshire Hathaway Company, needed to relicense the four dams it owned on the Klamath. The water storage capacity and cheap electricity provided by these dams, which were originally built by the Bureau of Reclamation, were essential for making the irrigation scheme work. PacifiCorp stunned locals, announcing that as part of relicensing it intended to raise their rate from half a cent per kilowatt-hour to five cents. Although this is still far less than most Americans pay for electricity, farmers claimed that such a steep price hike would put them out of business.

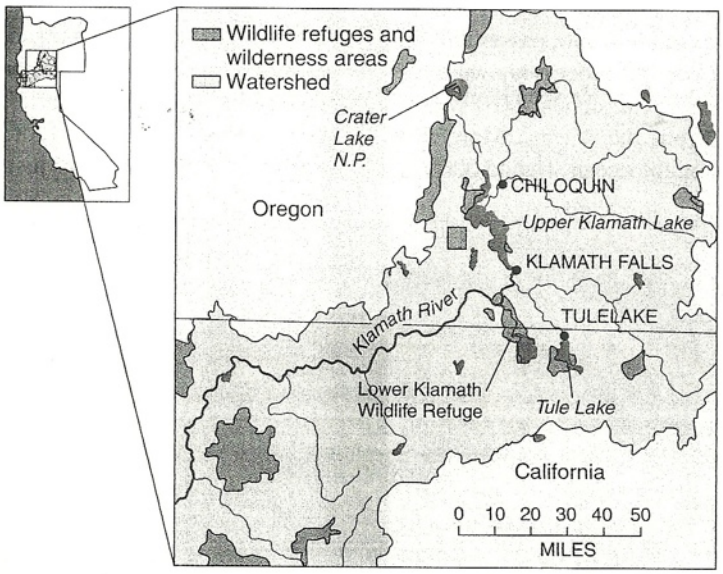

FIGURE 17.1 The Klamath River rises in the Cascade Mountains and flows about 400 km (250 mi) across Oregon and Washington to the Pacific Ocean.

Surprisingly, after decades of ill will and squabbling, the native tribes and some fishers rallied in support of farmers. The former enemies suddenly had a common foe. It helped that the spotlight of political ambitions had been turned away from the Klamath. It also helped that the Bureau of Reclamation had sponsored a long series of "listening sessions" in previous years to discuss how to manage water. Representatives of the opposing groups, who had long viewed the other side as odious, if not evil, had come to know each other—grudgingly—as fellow humans. In a major breakthrough, the tribes and conservation groups recognized the right of the farmers to exist.

Still, it still took many hours of grueling negotiations to come up with a comprehensive management plan for the river. Among the recommendations that emerged are the creation of a stakeholders council to manage water; removal of the four PacifiCorps dams to open the upper river to salmon; a formal water right for the wildlife refuges; reduced-rate electricity for the irrigators; and a plan for how to share water during drought.

Questions of how to divide scarce resources are among the most problematic in Environmental Science. Water shortages increasingly threaten economies, societies, and our national and international environment. Many experts believe that water supplies will be the chief cause of conflict in this century. In this chapter, we'll examine how scientists form and answer questions such as these about our world. For related resources, including Google Earth™ placemarks that show locations where these issues can be seen, visit http://EnvironmentalScience-Cunningham.blogspot.com.