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"No finer trout-streams in the world than these"

The Making of a Recreational Fishery in the Black Hills Forest Reserve

In July 1874, a United States military expedition under the command of Lieutenant Colonel George A. Custer explored the Black Hills of Dakota Territory and recorded much about the region's geology, flora, and fauna. Upon entering the headwaters of Castle Creek, Custer's men were surprised to see the luxuriant biota of the park-like meadows and their numerous springs.[1] "We were continually looking for trout in these streams," wrote expedition chief engineer William H. Ludlow, "which seemed as though made expressly for that fish, which requires an unfailing flow of cold pure water." Peering out over the expanse of spring-fed waterways of the Castle Creek Valley, Ludlow remarked, "There could be no finer trout-streams in the world than these were they once stocked."[2] Within forty years, the watercourses of the Black Hills would be reengineered into an organic machine in which two million trout annually were hatched, distributed, and protected from unsustainable harvesting through the cooperative efforts of individual landowners, railroad companies, state game wardens, federal foresters, and hatchery workers. Black Hills trout became one of the most successful stories of the introduction of a nonnative species into a working landscape during the early twentieth century.

Discussion of the natural and environmental history of the Black Hills of western South Dakota and eastern Wyoming at the turn of the twentieth century has traditionally explored the development of federal policy to manage the region's yellow-pine timber stands after the establishment of the Black Hills Forest Reserve in 1897 or focused on

1. Watson Parker, *Gold in the Black Hills* (Norman: University of Oklahoma Press, 1966), pp. 23–25.

2. William Ludlow, *Report of a Reconnaissance of the Black Hills of Dakota, Made in the Summer of 1874* (Washington, D.C.: Government Printing Office, 1875), p. 16.

William H. Illingworth photographed Lieutenant Colonel George A. Custer's encampment near French Creek in the Black Hills in 1874.

the emergence of a tourist industry at locations such as Hot Springs, Hisega, or Wind Cave National Park prior to 1920.[3] Few such studies, however, speak in meaningful ways to the process by which public and private entities used nature, capital, and conservation law between

3. For early Black Hills conservation in the context of forestry and tourism, *see* Richmond L. Clow, "Timber Users, Timber Savers: Homestake Mining Company and the First Regulated Timber Harvest," *South Dakota History* 22 (Fall 1992): 213–37; Edward Raventon, *Island in the Plains: A Black Hills Natural History* (Boulder, Colo.: Johnson Books, 1994), pp. 246–62; Martha Geores, *Common Ground: The Struggle for Ownership of the Black Hills National Forest* (Lanham, Md.: Rowman & Littlefield, 1996), pp. 57–73; Kathy Mason, "Adapting to Endure: The Early History of Wind Cave National Park, 1903–1916," *South Dakota History* 32 (Summer 2002): 149–64; and Suzanne Barta Julin, *A*

1886 and 1913 to make a viable trout fishery in the Black Hills.[4] The construction of a recreational fishery in the midst of the working mining and logging landscapes of the region offers new insight into environmental change and the emergence of conservation policy within the Black Hills.

During the Progressive Era (ca. 1890–1916), middle-class reformers utilized science and government to rein in the perceived ills and excesses of industrial capitalism. Progressive Era reform movements culminated with state and federal legislation to protect labor, improve living conditions in growing cities, reclaim western lands for agriculture through irrigation, and protect and manage natural resources for long-term sustainability. Conservation, the scientific management of natural resources to ensure their sustainability for future use, developed in the last decades of the nineteenth century as a Progressive response to the growing realization that natural resources were not inexhaustible. In western South Dakota, Progressive ideals concerning the management of nature resulted in the creation of the Black Hills Forest Reserve in 1897, the establishment of a cold-water fish hatchery in the Black Hills in 1899, and the construction of the Belle Fourche Reclamation Project, authorized in 1904.[5]

Progressive Era conservationists, however, were not environmentalists in the present-day sense. Resources were to be managed scientifically to assure continual exploitation for economic or recreational purposes, and some flora and fauna were more valuable than others. For example, native freshwater fish, such as chub, suckers, and dace inhabited Black Hills streams prior to the introduction of brook trout in the 1880s. Farmers, ranchers, miners, and Progressive conservationists, however, placed little value on these species either for food or as

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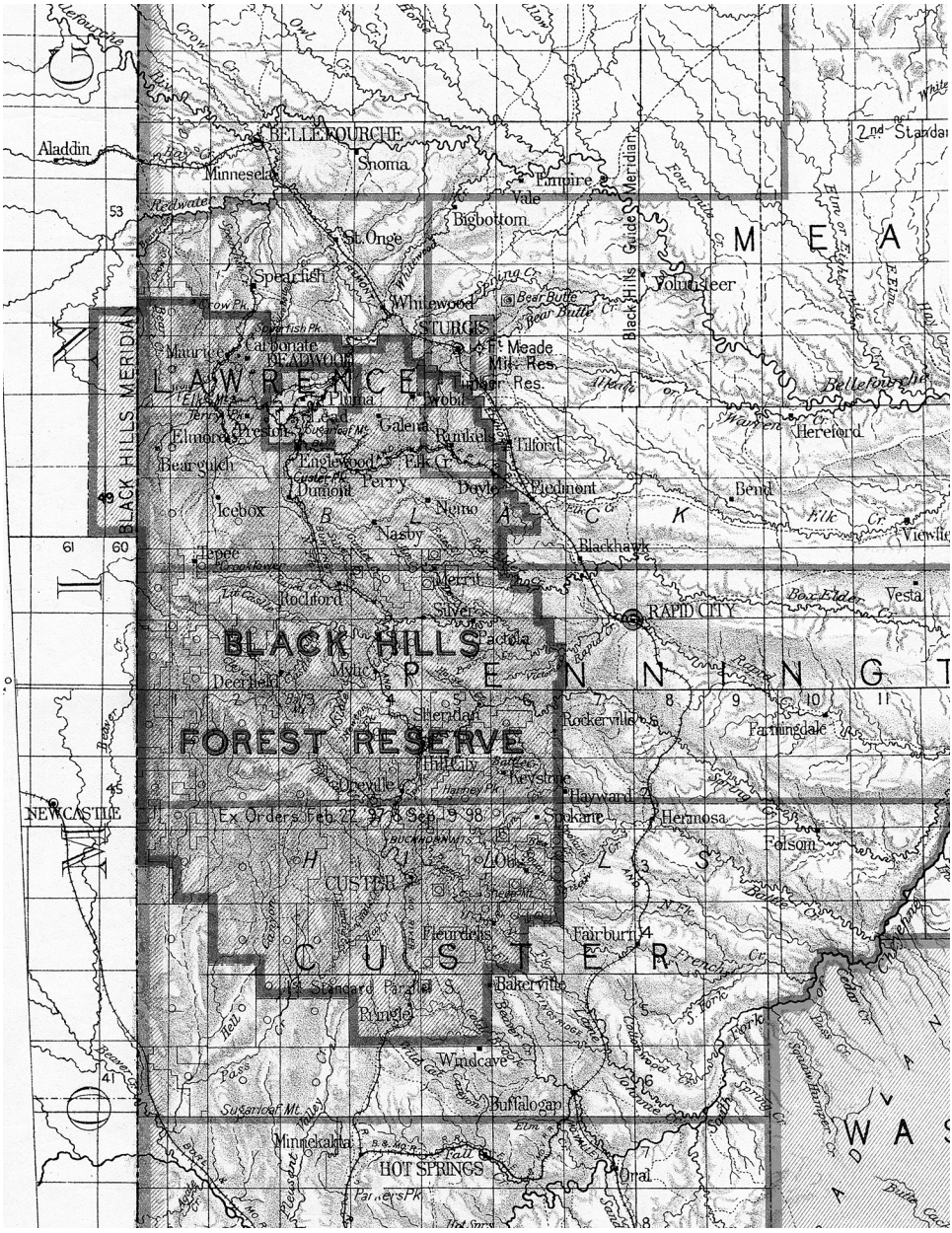
Marvelous Hundred Square Miles: Black Hills Tourism, 1880–1941 (Pierre: South Dakota State Historical Society Press, 2009), pp. 7–39.

4. For authors who do speak to the development of early fisheries in the Black Hills, *see* Raventon, *Island in the Plains*, pp. 246–62, and Geores, *Common Ground*, pp. 57–73.

5. The Belle Fourche Reclamation Project diverts water from the Belle Fourche River to irrigate over fifty-seven thousand acres of farmland in Butte and Meade counties in South Dakota. For more information, *see* U.S., Department of the Interior, "Belle Fourche Project," www.usbr.gov/projects, accessed 12 Aug. 2015.



This detail from a 1901 General Land Office map of South Dakota shows the boundaries of the Black Hills Forest Reserve, which was established in 1897.

recreational game fish and quickly began displacing these native fish with eastern brook trout, whose habits and methods of reproduction were familiar to eastern immigrants populating the region during the 1880s and 1890s. By 1902, the federal hatchery at Spearfish successfully added populations of German brown (Loch Leven) trout, cutthroat (black-spotted) trout, and rainbow trout to Black Hills streams. Too often, the creation of a cold-water recreational trout fishery for recreational purposes went hand in hand with the gradual extirpation of indigenous fishes from local streams.[6]

Early federal efforts to explore the feasibility of planting trout in Black Hills streams are often attributed to the work of Barton W. Evermann, an ichthyologist for the United States Commission of Fish and Fisheries (after 1903, the United States Bureau of Fisheries). Evermann's scientific evaluation of the watersheds forming the upper Missouri River basin during the 1890s was part of a larger national movement to transform the river basins of the Northern Great Plains and the intermountain West. During the last quarter of the nineteenth century, federal and state institutions developed new technological infrastructures and conservation policies designed to increase the numbers of game fish in degraded waterways, manage existing populations for sustainability, and, in rare instances such as in the Black Hills, introduce selected fish species into nonnative waters. Congress had established the agency, better known as the United States Fish Commission, in February 1871 for the restoration of Atlantic fisheries. It broadened the work of the commission in 1872 "to include the investigation of the Great Lakes and inland waters and the propagation and distribution of fishes to water hitherto without fish life." Four decades later, the United States Fish Commission presided over 126 "permanent and auxiliary fish cultural stations" that produced 3.6 billion fish annually.[7]

6. Richard B. Hughes, *Pioneer Years in the Black Hills* (Glendale, Calif.: Arthur H. Clark, 1957), p. 83; John W. Titcomb, "Report on the Propagation and Distribution of Food-Fishes," in U.S., Commission of Fish and Fisheries, *Report of the Commissioner for the Year Ending June 30, 1902* (Washington, D.C.: Government Printing Office, 1904), pp. 68–69.

7. D. C. Booth, "Report of the Spearfish Federal Hatchery to the Department of Commerce, Bureau of Fisheries," 3 May 1915, p. 10, D. C. Booth Historic National Fish Hatchery and Archives, Spearfish, S.Dak. (hereafter Booth Fish Hatchery and Archives).

In 1892 and 1893, Evermann systematically explored Black Hills streams, recording water temperature, streambed conditions, flora above and below the water surface, and aquatic wildlife species. In a preliminary report published in 1894, he found only fifteen species of fish indigenous to the region's streams. Trout were not among them. Although Black Hills streams were perfect trout habitat, they were also perfectly isolated from existing trout populations. Evermann concluded that the lower reaches of the Missouri River and most of the Cheyenne River, which drained the Black Hills, were too warm and alkaline to permit natural migration of trout into Black Hills streams.[8]

Two years later, Evermann and Ulysses O. Cox, a biology professor at the State Normal School at Mankato, Minnesota, published a report confirming that trout were not indigenous to Black Hills streams. The absence of native specimens did not mean, however, that there were no trout residing within Black Hills waterways or that human agency had not already extensively altered the native biomes of these streams. In the fall of 1892, Evermann discovered a brook trout near one of the numerous cold-water discharge springs within the city limits of Spearfish, South Dakota.[9] In July 1893, Evermann and Cox found "fine brook trout and rainbow trout" six miles east of Newcastle, Wyoming, in irrigation ditches connected to Beaver Creek, a small, spring-fed stream draining the western face of the Black Hills.[10]

Local residents first introduced trout into Black Hills ecosystems at Cleghorn Springs, near Rapid City, South Dakota, at least six years prior to Evermann's 1892 exploration of the area. By 1890, trout likely inhabited springs, ice ponds, and irrigation ditches near Spearfish. During this first period of Black Hills aquaculture, private citizens

8. Barton W. Evermann, "The Ichthyologic Features of the Black Hills Region," *Proceedings of the Indiana Academy of Science* 2 (1892): 74.

9. Barton W. Evermann and Ulysses O. Cox, *Report upon the Fishes of the Missouri Basin* (Washington, D.C.: Government Printing Office, 1896), p. 335.

10. Ibid., pp. 337–38. Although Wyoming territorial officials had planted brook trout into Sand Creek in 1889 and workers from the federal fish hatchery in Leadville, Colorado, had placed trout into other Black Hills headwaters streams in 1891, Evermann and Cox failed to find evidence of these plantings. *See Sundance* (Wyo.) *Gazette*, 21 Sept. 1888, 19 May, 30 Aug. 1889, and *Black Hills Daily Times* (Deadwood, S.Dak.), 7, 14 Nov. 1891, 12 Dec. 1893.

usually bore the expense of transporting and planting trout from the federal hatchery in Colorado. Thus, it is not surprising that property owners sequestered such fish in private ponds or small springs within their property boundaries. Placing trout in the confined spaces of ice ponds and springs, rather than public streams, was predicated not only upon issues of ownership of game fish but also upon control of local biomes so that individual owners could be assured that their fish were not subject to the pollutants from mining and logging operations that afflicted many of the region's watersheds.[11]

By the last decade of the nineteenth century, Spearfish residents had already proven themselves to be capable hydraulic engineers. Twelve irrigation ditches watered approximately forty-eight hundred acres of hay, grains, vegetables, small fruits, and winter apples for the mining districts in the northern Black Hills. Privately stocked springs, ditches, and ice ponds near Spearfish were likely the point of origin for the first large-scale introduction of trout into publicly accessible waters. Extensive flooding of the Spearfish Valley inadvertently released these fish into lower Spearfish Creek in 1890 or 1891. Undoubtedly, there were more efficient ways of planting trout in public streams. Still, nearly a decade prior to the construction of the federal hatchery in 1899, Spearfish had already become the center of fish culture in the Black Hills.[12]

Federal attempts to plant trout in Black Hills watersheds began at least one year prior to Evermann's first examination of the region's waterways. Fish from the Leadville hatchery were distributed at lo-

11. Hughes, *Pioneer Years in the Black Hills*, pp. 82–83, 83n43. Trout may have been introduced into Black Hills streams near Custer City in 1882 or Boulder Park in 1883. *See Black Hills Daily Times*, 26 Apr. 1882, 11 Nov. 1883. Farmers and ranchers often introduced trout into new waters on their own initiative throughout the West during the last decades of the nineteenth century. *See* Edwin P. Pister, "Wilderness Fish Stocking: History and Perspective," *Ecosystems* 4 (May 2001): 280.

12. George W. Kingsbury, *History of Dakota Territory*, and George Martin Smith, *South Dakota: Its History and Its People*, 5 vols. (Chicago: S. J. Clarke Publishing Co., 1915), 3:453–54; *Aberdeen Daily News*, 26 Mar. 1896. Though it is not clear when trout were first introduced into the springs and ice ponds of the Spearfish Valley, the *Daily News* reported that John Johnson had placed thirty thousand fingerlings in his ponds around 1890. Evermann and Cox also reported finding *Salvelinus fontinalis* (eastern brook trout) within the city of Spearfish. *See Aberdeen Daily News*, 14 Sept. 1890, and Evermann and Cox, *Report upon the Fishes of the Missouri River Basin*, p. 415.

cations along the newly constructed railroad between Edgemont and Deadwood in 1891. A "fish car," a specially designed railroad car for the transportation of fish from federal hatcheries, arrived in Deadwood that November carrying approximately ten thousand trout. The following winter, another ten thousand trout for northern Black Hills watersheds arrived by rail at Whitewood. By 1894, Lawrence County residents were so taken with planting trout in local streams that they organized a county fish commission in Spearfish.[13] The commission ordered that the state fish laws, such as they were, be "posted along streams, upon school houses, and throughout the country generally."[14] Next, the commissioners asked federal authorities for half a million fish to be planted in the region's streams the following year, prompting the *Deadwood Pioneer* to conclude optimistically that "with proper management the streams of the Black Hills can be made prolific with the speckled beauties in a few years."[15]

The following summer, however, disaster struck the piscatorial endeavors of the Lawrence County fish commission. In June 1895, a fish car arrived at Deadwood carrying "200,000 young black-spotted trout," under the careful observation of R. S. Johnson from the Leadville hatchery, who had accompanied the shipment from the federal hatchery at Lake Tahoe, California. Lawrence County authorities had requested only 150,000 fish, but the hatchery sent the larger number because, as the *Black Hills Daily Times* put it, "The distance is so great some losses were expected."[16] Although some of the exhausted trout revived after their introduction into Spearfish Creek, more than one hundred thousand had perished during the grueling five-day trip to the Black Hills. Federal workers struggled to replace the lost fish throughout that summer but were able to procure no more than five thousand brook trout from the Leadville hatchery by October.[17] It was here on Spearfish Creek, in the autumn of 1895, where federal fisheries officials must have fully recognized the demand for a hatchery in

13. *Black Hills Daily Times*, 7, 14 Nov. 1891, 16 June 1894.
14. Ibid., 16 June 1894.
15. *Deadwood Pioneer,* quoted ibid., 16 June 1894.
16. *Black Hills Daily Times*, 26 June 1895.
17. Ibid., 6 Sept. 1895.

the Black Hills to maintain viable trout populations throughout the region's cold-water streams.

Barton Evermann first proposed a federal hatchery for the Black Hills in 1894. For a number of practical and ecological reasons, Evermann believed, Spearfish was the best location. Not surprisingly, the loss of thousands of black-spotted trout enroute from California only a year later galvanized local support for a fish-culture station. In May 1896, Representative Robert J. Gamble and Senator Richard F. Pettigrew of South Dakota supported a proposal in Congress to appropriate ten thousand dollars for a federal hatchery in the Black Hills.[18] One month later, Congress appropriated five thousand dollars "for establishing a fish cultural station at some point in the Black Hills of South Dakota."[19] During the spring of 1897, Hector Von Bayer, an architect

18. *Queen City Mail* (Spearfish, S.Dak.), 19 Mar. 1896.
19. Booth, "Report of the Spearfish Federal Hatchery," p. 1.

An unidentified man stands in front of the newly completed main building of the Spearfish National Fish Hatchery around 1900.

and engineer for the United States Fish Commission, examined a number of properties with spring-fed streams near Spearfish before recommending the purchase of a ten-acre tract bordering Spearfish Creek at the mouth of Ames Canyon on the city's southern outskirts.[20]

Despite the natural advantages of the Ames Canyon location, the hatchery construction required extensive engineering of the local environment. Between 1899 and 1904, workers under the capable direction of DeWitt Clinton ("D. C.") Booth, first superintendent of the hatchery, built a series of spring-fed trout runs to feed, store, and protect young fry until they were large enough to be planted in Black Hills streams. Hatchery employees also created extensive limestone retaining walls to channel Ames Canyon floodwaters away from the facility and to protect the hatchery grounds from potential high water on neighboring Spearfish Creek. These intensive efforts to manipulate the hydrology of Ames Canyon and surrounding springs eventually paid off. By 1909, the Spearfish National Fish Hatchery produced two million trout annually, and its system of spring-fed catchment basins brought sustainability to fingerling production while the stone channels and retaining walls protected the hatchery from the devastating floods that often visited the Spearfish Valley.[21]

In their natural habitat, brook trout spawn along the gravelly beds of swift-moving cold-water streams each autumn. The fertilized eggs incubate over the winter months. In springtime, the eggs hatch into alevin (sac fry), which subsist on their yolk sacs before eventually transitioning to fry. Eggs, alevin, and fry are often food for adult trout and numerous other predators. Federal hatcheries mechanized the natural reproductive process and reduced the early loss of fish to predators.

20. Evermann and Cox, *Report upon the Fishes of the Missouri River Basin*, pp. 325, 335; "Plat Showing Proposed Location for the U.S. Fish Hatchery," enclosed in John Wolzmuth to United States Commissioner of Fish and Fisheries, 8 Feb. 1897 (copy), Booth Fish Hatchery and Archives; Booth, "Report of the Spearfish Federal Hatchery," p. 1. On modern maps, the former Ames Canyon is labeled "Fish Hatchery Gulch."

21. Booth, "Report of the Spearfish Federal Hatchery," pp. 3–8. The facility's name changed to D. C. Booth Historic National Fish Hatchery and Archives in 1989. Booth Society, Inc., *Spearfish National Fish Hatchery* (Charleston, S.C.: Arcadia Publishing, 2013), p. 103.

Federal fisheries workers engineered significant changes to the local environment at the Spearfish National Fish Hatchery over several decades. This 1991 view of the hatchery's historic main building shows a stone retaining wall at the foot of the embankment in the background as well as concrete "raceways" for harboring fish.

Hatchery workers purchased, imported, or gathered trout eggs from local streams each season, artificially fertilized the eggs in the hatchery room, and transferred fry and fingerlings to protected ponds or races until they were large enough to be planted in streams. Although brook trout began reproducing naturally in a few headwaters streams shortly after their introduction into the Black Hills region, the hatchery process offered protection at the vulnerable alevin and fry stages and produced brook trout populations capable of supporting recreational fishing.[22]

When the Spearfish federal hatchery began production in 1899, nine major watersheds capable of sustaining trout were contained within

22. Nick Karas, *Brook Trout: A Thorough Look at North America's Great Native Trout, Its History, Biology, and Angling Possibilities* (New York: Lyons Press, 1997), pp. 64–66; Christopher Hunter, *Better Trout Habitat: A Guide to Stream Restoration and Management* (Washington, D.C.: Island Press, 1991), pp. 17–18.

the recently established Black Hills Forest Reserve.[23] In the Black Hills, limestone and elevation combine to produce a wellspring of cold, pure, and swiftly flowing streams. The highlands of the central limestone plateau tower nearly three thousand feet above the surrounding prairie, attracting moisture from westerly winds. The Black Hills, especially in their northern portion, average twice the annual precipitation of the surrounding prairie. This water is captured in the aquifers of the Madison and Minnelusa limestone formations and then spit out in a series of fast, easterly running streams, which, with few exceptions, disappear again into limestone loss-zones only to reappear as discharge springs at the eastern base of the Black Hills. Discharge springs near Rapid City and Spearfish, in turn, became the focal points for early attempts to propagate trout and eventually provided a reliable water supply for the federal hatchery. Fisheries officials wanted most, however, to expand trout populations in the vast stretches of publicly accessible streambeds within the Black Hills Forest Reserve.[24]

Of the streams flowing within the forest reserve, the most amenable to recreational fishing were those in the Spearfish Creek and Rapid Creek drainage basins. Both creeks rise from artesian springs in the western portion of the limestone highlands. The catchment basin of Rapid Creek measures about 410 square miles, and the stream's average flow was sixty cubic feet per second. Even with a smaller catchment basin of 230 square miles, Spearfish Creek generated average flows of fifty cubic feet per second. With average drops of sixty to one hundred feet per mile, both streams ran fast and cold on their gravelly beds. Luxuriant plant growth along shaded banks provided excellent trout habitat. Better still, the region's growing timber and mineral economy had only

23. Sand Creek, in the Wyoming Black Hills, was the first successful trout fishery in the region. However, private property entirely surrounded its fishable waters outside the Black Hills Forest Reserve.

24. Perry H. Rahn, "Hydrology of Lower Spearfish Canyon," *Proceedings of the South Dakota Academy of Science* 83 (2004): 91–96; Daniel G. Driscoll, Janet M. Carter, and Donald O. Ohlen, *Hydrologic Effects of the 1988 Galena Fire, Black Hills Area, South Dakota* (Rapid City, S.Dak.: United States Geological Survey, 2004), pp. 3, 9; Sven G. Froiland, *The Genus* Salix *(Willows) in the Black Hills of South Dakota*, Forest Service, Technical Bulletin no. 1269, (Washington, D.C.: United States Department of Agriculture, 1962), pp. 1–4.

a limited environmental impact on the two watersheds in 1900. Fishermen could already access Spearfish Canyon by railroad, while the completion of the Missouri River and Northwestern Railroad through the lower portion of Rapid Canyon would open the segment of Rapid Creek below the hamlet of Mystic to recreational fishing in 1906.[25]

Nestled between the Spearfish and Rapid Creek watersheds were four intermediary streams capable of supporting trout fisheries. In 1909, South Dakota State Engineer Samuel H. Lea described Bear Butte, Box Elder, and Elk creeks as having "practically a continuous flow" in the higher elevations before their waters disappeared into the Madison sandstone formation at the eastern base of the Black Hills.[26] The Black Hills & Fort Pierre Railroad traversed all three watersheds, which were susceptible, in varying ways, to ecological pressures from

25. N. H. Darton, *Geology and Water Resources of the Northern Portion of the Black Hills and Adjoining Regions in South Dakota and Wyoming* (Washington, D.C.: Government Printing Office, 1909), pp. 80–82; Samuel H. Lea, *Irrigation in South Dakota* (Washington, D.C.: Government Printing Office, 1909), pp. 16–17; Rick W. Mills, *125 Years of Black Hills Railroading* (Hermosa, S.Dak.: Battle Creek Publishing, 2004), pp. 50–51, 82–83.

26. Lea, *Irrigation in South Dakota*, p. 18.

Spearfish Canyon has long been a favorite Black Hills fishing spot. This party is trying their luck in Spearfish Creek around 1900.

The turn-of-the-century sportsman at center left on this postcard likely enjoyed Little Spearfish Falls for its spectacular scenery as well as its trout fishing.

timber harvesting or intermittent mining operations in communities such as Roubaix on Elk Creek, Galena on Bear Butte Creek, or the Homestake timber camp of Nemo on Box Elder Creek. A final stream, Whitewood Creek, received the untreated discharge of both the mills and inhabitants of the great Deadwood-Lead mining district and was deemed unfit for trout habitat as early as 1892, with the exception of its highest headwaters above Englewood.[27] Still, the headwaters springs

27. Already burdened with discharge from the region's gold mills in the Lead, Deadwood, Ruby Basin, and Bald Mountain mining districts in 1900, Whitewood Creek was

and streams of the Elk, Box Elder, and Bear Butte basins remained, in many districts, but little degraded by mineral and timber extraction in 1900. Federal hatchery workers, in conjunction with local ranchers, boarding-house keepers, and mine managers, planted trout in this region throughout the first decade of the twentieth century.[28]

In the southern Black Hills, where average annual precipitation was half that of the Spearfish and Rapid Creek basins, only French Creek and Spring Creek had the potential to be developed as trout fisheries. In November 1891, citizens of Custer received three thousand trout and German carp from the Leadville hatchery. Black Hills residents assisted federal fisheries workers in planting an additional fifteen hundred fish in Spring Creek and two thousand fish in French Creek.[29] Evermann's associate Ulysses Cox confirmed the marginal nature of these streams when he explored French Creek near Custer on 31 July 1893. He failed to find any trout and concluded that "there is no creek worth mentioning" because "it consisted of a few stagnant pools." Cox described neighboring Spring Creek in Hill City as "not over 10 feet wide" and containing "very little running water."[30] Spearfish hatchery workers planted trout in both creeks throughout the first decade of the twentieth century. Achieving stable trout populations would have to wait, however, until the creation of Custer State Forest in 1912 permitted the environmental reengineering of the French Creek headwaters to provide pools that were deep enough to remain cool in summer but not freeze to the bottom during cold winters.[31]

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also an open sewer for the communities of Lead (population 6,210) and Deadwood (population 3,408). Watson Parker, *Deadwood: The Golden Years* (Lincoln: University of Nebraska Press, 1981), pp. 112–13; U.S., Department of Commerce and Labor, Bureau of the Census, *Thirteenth Census of the United States, 1910: Population by Counties and Minor Civil Divisions, 1910, 1900, 1890* (Washington, D.C.: Government Printing Office, 1912), pp. 495–96.

28. For examples of such activity, *see* Spearfish Hatchery Letterbook, May–June 1904, DCB Fish 6196, Booth Fish Hatchery and Archives.

29. *Black Hills Daily Times*, 7, 14 Nov. 1891.

30. Evermann and Cox, *Report upon the Fishes of the Missouri River Basin*, p. 338.

31. South Dakota, *Seventh Annual Report of the Department of Game and Fish of South Dakota, June 30, 1915 to June 30, 1916*, p. 20, and *Ninth Annual Report of the Department of Game and Fish of South Dakota, June 30, 1917 to June 30, 1918*, p. 8.

In the years following the opening of the Spearfish hatchery, Superintendent D. C. Booth came to depend on a growing local network of private and corporate interests to make the annual planting of trout in Black Hills streams a reality. Although Barton Evermann had recommended Spearfish as the location for a federal hatchery on account of the valley's abundant discharge springs, an act of corporate hubris in Spearfish Canyon also affected his choice. In early 1893, the Grand Island & Wyoming Central Railroad Company (after 1897, part of the Chicago, Burlington, & Quincy Railroad, commonly called simply the "Burlington") pushed a line from Englewood around Terry Peak and down the length of Spearfish Canyon, terminating it in the valley's namesake city. The construction of this highline, admittedly a spectacular feat of engineering, came at a considerable cost. The railroad based its decision to build the line on nothing more than an emergent sense of the tourist value of Spearfish Canyon and speculation that Spearfish itself might, one day, become the center of a great mining district. Instead, Spearfish remained an agricultural community and, not surprisingly, the seasonal revenue from shipping valley farmers' livestock, grains, hay, and winter apples up the steep and flood-prone canyon seldom paid the cost of operating or maintaining the line.[32]

The absence of good automobile roads before about 1915 limited the numbers of tourists visiting the Black Hills, and railroads were an important means of travel for those who did come. Trout, not unlike seasonal fishermen, transited the regional rail network each spring and early winter to be planted into streams. The Burlington railroad's costly and unprofitable Spearfish branch line served as the primary artery of the federal hatchery's organic machine. At Englewood, the Spearfish branch connected to the Deadwood line, which passed through the major watersheds of the central and southern Black Hills, including those of Rapid, Castle, Spring, and French creeks. A web of narrow-gauge railroad lines radiated south from Englewood, providing access to smaller streams of the central Black Hills, such as Bear Butte,

32. "Finance Docket No. 10069, Chicago, Burlington, & Quincy Railroad Company Abandonment," in U.S., Interstate Commerce Commission, *Interstate Commerce Commission Reports: Decisions of the Interstate Commerce Commission of the United States,* vol. 199 (Washington, D.C.: Government Printing Office, 1935), pp. 758, 764–67.

As superintendent of the Spearfish National Fish Hatchery for over thirty years, D. C. Booth cooperated with the United States Forest Service and with railroads that served the Black Hills. These working relationships facilitated fish stocking in the region's streams.

Box Elder, and Elk creeks. Booth and his staff successfully used a regional rail network originally designed to provision mines to distribute trout into the remaining ecologically viable waterways of the Black Hills region.[33]

Individual Black Hills residents played a key role in the actual distribution of trout at their final destinations, as fisheries workers released only a small proportion of the trout annually produced at Spearfish directly into waterways. Each season, citizens asked the hatchery for the number and kind of trout they desired. Booth's staff evaluated each request, designated the quantity and type of fish to be delivered, and contacted applicants with the date and time to take delivery at the

33. Julin, *Marvelous Hundred Square Miles*, p. 27; "Finance Docket No. 10069," pp. 759–65; Mildred Fielder, *Railroads of the Black Hills* (Seattle, Wash.: Superior Publishing Co., 1964), p. 92.

nearest railroad station. On 23 May 1904, for example, Booth sent out a flurry of correspondence to prepare for the distribution of forty thousand brook trout into the Box Elder and Elk Creek watersheds three or four days later. Taking advantage of free railroad passes, hatchery workers transported four batches of ten thousand trout each in milk cans and arranged to meet applicants at railroad stations at Nemo and Roubaix. Brook trout consigned for Elk Creek and southern Box Elder Creek were apparently within easy reach of the stations, but trout bound for Hay Creek via Nemo and Roubaix required more overland travel. Booth coordinated efforts to share wagon transport for the twenty thousand brook trout destined for applicants Tom Johnson and Fred Reanshaw.[34]

The importance of the Burlington railroad in providing linkages between the production of trout at the Spearfish hatchery and the planting of trout by private individuals in the remaining ecologically viable streams of the Black Hills cannot be understated. In June 1904, summer cloudbursts in the northern Black Hills caused flooding that extensively damaged the Burlington route through Spearfish Canyon. Booth decided to release fifteen thousand brook trout "intended for Squaw Creek" into Spearfish Creek instead. "Owing to the flood and condition of the Spearfish branch of the Burlington," lamented Booth, "it was impracticable to plant them in Squaw Creek, although many will probably ascend the stream."[35] Booth understood the relationship between the hatchery and the Burlington to be reciprocal. During the first decades of the twentieth century, the Burlington promoted a nascent tourist industry in the Black Hills. When company officials made a last-minute request for trout to stock Sylvan Lake in 1904, Booth did not hesitate to shift scarce hatchery resources to that location. The superintendent reasoned that "as the Burlington Route has always granted all the free passes asked for both in collecting and distributing fish[,] it would only be a slight return of courtesy."[36]

34. Booth to Fred Reanshaw, 23 May 1904, Spearfish Hatchery Letterbook, p. 6.

35. Booth to United States Commissioner of Fish and Fisheries, 1 July 1904, ibid., p. 123.

36. Booth to United States Commissioner of Fish and Fisheries, 10 June 1904, ibid., p. 60.

When the Spearfish hatchery began distributing fingerlings throughout the region by rail, it ushered in a new era in Black Hills sport fishing. After 1899, the hatchery produced fish in sufficient numbers to stabilize trout populations in mountain streams throughout the region. In a June 1912 article published in the *Pahasapa Quarterly*, Booth concluded that the Spearfish hatchery had distributed 23.2 million fish between 1899 and 1911. During these years, 76.7 percent of the fish produced at the hatchery were planted in Black Hills streams. By the spring of 1915, the number of fish distributed from the facility had increased by about another 7.5 million, bringing the total to approximately 30.7 million fish since 1899. By far, the majority of fish hatched in Spearfish were of the species most likely to be planted in local streams. They included 19 million black-spotted trout, 9.4 million brook trout, and 1.3 million rainbow trout.[37]

By 1904, federal, corporate, and private interests had created an organic machine in the Black Hills capable of producing and distributing two million trout into the region's streams each year. There were, however, relatively few effective provisions for protecting Black Hills trout populations from poachers, overharvesting, or from the degradation of stream habitat that often followed in the wake of mining and logging operations. Although the South Dakota Legislature passed its first post-statehood legislation for the protection of fish in 1893, it left enforcement of the measure to county fish wardens, who collected no salary but received half of the fines paid by the offenders they brought to justice. Black Hills communities were among the first to implement the new law, as Lawrence County commissioned its first six fish wardens in the fall of 1893.[38] Some of these early county wardens achieved a measure of success. In 1903, for example, Lawrence County fish war-

37. D. C. Booth, "Fish Culture of the Black Hills," *Pahasapa Quarterly* 1 (June 1912): 14–17; Booth, "Report of the Spearfish Federal Hatchery," p. 14. Booth reported that between 1899 and 1 May 1915 the Spearfish hatchery produced 30,673,887 fish, including 9,388,075 brook trout, 872,906 Loch Levin trout, 1,254,500 rainbow trout, 19,001,501 black-spotted trout, 37,290 lake trout, 107,615 steelhead trout, and 12,000 land-locked salmon.

38. South Dakota, *Laws Passed at the Third Session of the Legislature of the State of South Dakota* (1893), chap. 92 (hereafter cited as *Session Laws*); *Queen City Mail*, 13 Sept. 1893.

den M. B. Ocumpaugh gained recognition for "undertaking important measures for the protection of game fish in the northern Black Hills" when he "ordered that screens be placed at the intake of every ditch by which water is diverted from a running stream," thus preventing fish from being trapped in irrigation channels.[39]

The need for fish wardens in the Black Hills was readily apparent. In the forested canyons of the Rapid, Spearfish, and Sand Creek watersheds, violations such as poaching, utilizing seines or dip nets, and fishing with explosives were all too frequent. On Sand Creek in Wyoming, armed encounters between poachers and county officials or local farmers acting as de facto game wardens were not uncommon. Accidents also happened. In July 1897, one man died instantly and another lost his left hand while fishing with dynamite south of Beulah, Wyoming. Trout were commonly dynamited on Spearfish Creek in 1903, while one game warden in Rapid City was actually caught violating the very laws he was supposed to uphold by dynamiting trout in 1904. Confrontations with poachers could occasionally turn violent. Such was the case in May 1914, when Lead resident Henry Timpte encountered two men illegally seining Spearfish Creek below Elmore. The poachers fired revolvers at Timpte, who returned fire with his own weapon. Timpte was unhurt, and his assailants fled. The South Dakota Legislature attempted to strengthen the state's fishing laws in 1905, but real change would not come until 1909. Protecting trout from being swept into irrigation ditches in the Spearfish and Sand Creek agricultural districts was one thing, but the region's county fish wardens proved incapable of protecting trout in mountain streams from armed poachers equipped with dip nets, seines, dynamite, or black powder.[40]

The first decade of the twentieth century was marked not only by ineffective enforcement of game and fish law, but also by extensive human-driven ecological change in the Black Hills. In January 1897, President Grover Cleveland, acting on the strong recommendation of Gifford Pinchot, the first head of the United States Forest Service, cre-

39. *Aberdeen Daily News*, 13 May 1903.

40. *Crook County Monitor* (Sundance, Wyo.), 7 July, 18 Aug. 1897, 15 Sept. 1899; *Sundance Gazette*, 9 July 1897; *Aberdeen Weekly News*, 22 June 1903, 2 June 1904; *Queen City Mail*, 27 May 1914.

ated the Black Hills Forest Reserve to protect the region's diminishing timber resources from mining exploitation, wildfire, and the ravages of the bark beetle. By managing timber stands, fighting wildfires, controlling livestock grazing, and compelling mining interests to reseed areas where too many trees had been harvested, federal foresters inadvertently improved the quality, flow, and temperature of the region's myriad trout streams. Reducing clear-cutting of the district's yellow pine diminished the amount of sawdust polluting fragile trout streams and preserved shade, thus keeping water temperatures cool during warm summers. Pinchot's decisions to restrict cattle grazing and, in 1909, to exclude sheep from the reserve, also protected trout streams. Sheep were particularly voracious, and their grazing habits displaced native, trout-friendly biota along stream banks. Livestock herds also compressed the soil, making it less able to absorb runoff from summer storms and regulate stream flow.[41]

41. Clow, "Timber Users, Timber Savers," pp. 222–25; Raventon, *Island in the Plains*, pp. 247–50; U.S., Department of Agriculture, Forest Service, *Black Hills National Forest 50th Anniversary* (Washington, D.C.: Forest Service, 1948), pp. 35–38; Geores, *Common Ground*, p. 68.

The regulation of logging in the Black Hills not only conserved timber but improved streams. This wagonload of timber was harvested about 1918.

Not all human-directed environmental change at the turn of the twentieth century aided the introduction of stable trout populations into Black Hills watersheds. After 1900, the Homestake Mining Company expanded its already substantial control of water resources in the northern Black Hills. In 1904, Homestake constructed a new pump station at Hanna, on the east branch of Spearfish Creek, for the express purpose of supplying water to gold-mining operations in Lead and Deadwood. More ambitious still, the Homestake Company began that same year to alter radically the hydraulic infrastructure of Spearfish Creek for the production of electricity to power its operations. In 1911, Spearfish Hydroelectric Plant Number 1 went on-line, draining water from the lower seven miles of Spearfish Canyon. Spearfish Hydroelectric Plant Number 2 went live six years later, permanently degrading the last mile of Little Spearfish Creek as a viable trout stream and decreasing the flow of water in Spearfish Creek from Savoy to Maurice. The Homestake hydroelectric projects transformed the hydrology of the Spearfish Creek watershed and likely degraded the artesian springs supplying the federal fish hatchery in Spearfish, as became readily apparent due to decreased spring flow on hatchery grounds after 1919.[42]

A still greater challenge to making a trout fishery in the Black Hills was the direct effect of gold and silver mining upon water quality in the region's streams. In 1896, Barton Evermann and Ulysses Cox reported that prior to the introduction of mining into the Black Hills in 1876, "nearly every stream possessed all the natural conditions necessary to make it a trout stream." They continued, "The waters were clear and cold, not subject to contamination from any source, and suitable food, such as insects and insect larvae, and the smaller crustacea and mollusca, was undoubtedly found then, as now, in abundance." Evermann and Cox cautiously concluded that "with the exceptions of a few streams which are now ruined by mining operations, the creeks of this region are yet excellent for trout."[43] Only a few years later, however, new min-

42. Steven T. Mitchell, *Nuggets to Neutrinos: The Homestake Story* (N.p.: By the Author, 2009), pp. 208–10, 376–92. For the effect of the Homestake Company's hydroelectric projects on spring flow at the Spearfish federal hatchery, *see* Rahn, "Hydrology of Lower Spearfish Canyon," pp. 97–98.

43. Evermann and Cox, *Report upon the Fishes of the Missouri Basin*, p. 382.

ing technologies placed renewed ecological pressures on Black Hills watersheds even as the Spearfish federal hatchery began supplying millions of trout annually for the region's streams.

By 1900, the cyanide process had begun to supersede pyritic smelting of gold ores in the Black Hills. Cyanide refining democratized mining in the region. It made refractory ore districts that heretofore had not been economically viable to mine profitable again, as gold could now be extracted for as little as two dollars per ton of ore. The cyanide process allowed large-scale mining to advance into new watersheds, most notably along Battle Creek near Keystone and along the small streams that drained the southeastern limestone rim of Spearfish Canyon. Cyanide, unfortunately, proved lethal both to trout and to the plants that supported the biota they fed upon.[44] Franklin R. Carpenter, dean of the South Dakota School of Mines in Rapid City and an early pioneer in pyritic smelting, best articulated the mining industry's attitude toward piscatorial endeavors in the Black Hills. "The objection to the defiling of certain streams also by reason of fish culture," wrote Carpenter in 1905, "is, in the opinion of the writer, absurd in [the] extreme, and may prevent the opening of a million dollar mine for the preservation of a hundred dollars worth of fish."[45]

Accidental releases of cyanide-laden tailings, sands, or wastewater into Black Hills streams were not uncommon after 1900. In 1901, the Spearfish Company's holding ponds proved incapable of holding back wastewater from its cyanide mill. The subsequent discharge killed thousands of trout in Spearfish Creek.[46] In 1902, George Baldwin, an early promoter of the Black Hills region, lamented that "in some cases it is impossible to plant the fish in the streams which are near cyanided mills, and polluted therefrom," but he concluded that game fish were still prolific "in the streams throughout the Hills where they are not af-

44. David A. Wolff, "Pyritic Smelting at Deadwood: A Temporary Solution to Refractory Ores," *South Dakota History* 15 (Winter 1985): 321, 334–37.

45. Franklin R. Carpenter, "South Dakota," in U.S., Department of the Treasury, Bureau of the Mint, *Report of the Director of the Mint upon the Production of the Precious Metals in the United States during the Calendar Year 1904* (Washington, D.C.: Government Printing Office, 1905), p. 108.

46. Richmond L. Clow, *Chasing the Glitter: Black Hills Mining, 1874–1959* (Pierre: South Dakota State Historical Society Press, 2002), p. 14.

fected by cyanide water."[47] In 1907, Louis Cuckler, president of the Safe Investment Mining Company, was convicted of dumping "cyanide solution into Box Elder Creek, while engaged in sluicing out a tank." According to a newspaper report, "The poison had killed hundreds of trout."[48]

Cyanide contamination, however, was not the only threat to fish in Black Hills streams. In 1907, an accident on the Black Hills & Fort Pierre Railroad near Runckle's Station, about seven miles south of Sturgis, ended in ecological disaster. Railroad cars carrying lime destined for the Homestake Mining Company's new cyanide slime plant in Deadwood derailed, depositing their contents into Elk Creek.[49] "Shortly afterward," reported the *Aberdeen Daily News*, "the trout in the stream which is one of the favorite fisherman's haunts, began to belly up and float down stream."[50] Area residents confirmed that all trout in the Elk Creek basin below the accident site perished.[51]

Nowhere in the Black Hills was the tension between mining and recreational fishing more pronounced than along the upper reaches of Spearfish Creek. The trouble began in 1903, when Spearfish residents reported trout beginning "to strand themselves on shore." Closer inspection revealed that "their distress consisted of an accumulation of sand in their gills which was strangling them."[52] According to a Deadwood newspaper, the fish suffocated when "one of the cyanide plants had recently flushed out its tanks, filling the stream with its tailings."[53] In 1907, cyanide discharge from the tailings pile of the Reliance Mining Company on Annie Creek emptied into Spearfish Creek below Elmore, killing fish along that stream. A court subsequently ordered the company to construct a settling and retention dam on Annie Creek, at considerable expense. In May 1909, however, a flood carried away the

47. George Baldwin, *The Black Hills Illustrated: A Terse Description of Conditions Past and Present of America's Greatest Mineral Belt* (N.p.: Black Hills Mining Men's Association, 1904), p. 77.

48. *Deadwood Weekly Pioneer-Times*, 19 Dec. 1907.

49. *Aberdeen Daily News*, 26 Sept. 1907; Mitchell, *Nuggets to Neutrinos*, pp. 282–83.

50. *Aberdeen Daily News*, 26 Sept. 1907.

51. Ibid.

52. *Deadwood Daily Pioneer-Times*, 12 Aug. 1903.

53. Ibid., 13 Aug. 1903.

dam, sending cyanide-laden tailings, sands, and slimes down Spearfish Creek. The financial consequences compelled the beleaguered company to reincorporate as the New Reliance Mining Company. Recreational fishermen, area residents, and game wardens blamed the reorganized company for periodic cyanide poisoning or suffocation of trout resulting from the discharge of tailings sands as late as 1913.[54]

The introduction of the cyanide process into Black Hills mining districts after 1900, coupled with endemic violations of fishing laws on area streams, convinced at least a few South Dakota lawmakers to agitate for more comprehensive protection of the region's nascent trout fishery. In 1905, the legislature banned most fishing from November to April.[55] The 1909 legislative session resulted in a rewriting of the state's game and fish laws. In February of that year, Senator Herbert E. Hitchcock introduced a bill for "the protection of fish" that provoked considerable debate "over the relative value of brook trout and [ore] reduction works." Hitchcock, a lawyer from Mitchell, argued "against permitting the tailings from reduction works to spoil the beautiful pure streams, and incidentally to poison the trout."[56] The *Aberdeen American* reported that Senator Joseph Hare, a farmer and newspaper editor from Keystone, "liked trout as well as anybody, and would yield to no man in his admiration for the beautiful streams of the Hills, but [declared that] reduction works are a necessity to a country whose chief industry is mining." The *American* concluded, "The one is beauty, but the other is butter."[57] The South Dakota Legislature passed a new, more comprehensive fish and game law in early 1909 but without any provision for the protection of trout streams from reduction works. Mining operations continued to discharge waste into local streams and degrade Black Hills watersheds for decades.

Progressive South Dakota lawmakers were more successful, however, in passing legislation to restrict further unsportsmanlike fishing practices such as dynamiting and seining and approving funding for

54. *Lead Daily Call*, 27 May 1907, 15 Apr. 1915; *Deadwood Weekly Pioneer-Times*, 1 June 1909; *Deadwood Daily Pioneer-Times*, 19 Aug. 1913.

55. South Dakota, *Session Laws* (1905), chap. 112.

56. *Aberdeen American*, 3 Feb. 1909.

57. Ibid.

fish and game wardens to protect Black Hills streams. The final version of the 1909 fish and game law provided for the new position of state game warden as well as for the employment of individual county game wardens. The legislation clarified the duration of the fishing season for various species, placed minimum size limitations on trout that could be harvested, and required fishing licenses for nonresident anglers. The new state game warden was responsible for directing the efforts of county wardens to enforce fish and game laws, compiling statistics concerning licenses and violations each season, increasing fish populations in public waters, starting a state fish hatchery, and publishing an annual report of the activities of his department. South Dakota's state legislators and sportsmen hoped that this new law would deter poachers, end overfishing, and result in the establishment of a stable trout population in the Black Hills that would support and expand the region's burgeoning tourist industry.[58]

Arrests of poachers and confiscations of illegal fishing paraphernalia on Black Hills streams between 1909 and 1914 spoke to the success of the state's new system of fish and game law. In August 1909, Pennington County Sheriff Tom Hewett and county game warden William P. Baken gained statewide notoriety by breaking up a dynamiting ring on Rapid Creek. State courts eventually convicted six individuals for dynamiting or trapping fish and fined each defendant from ten to fifty dollars. Baken also confiscated a fish trap, explosives, fuse cord, and about ninety trout. In neighboring Lawrence County, game warden August Peterson made thirteen arrests for dynamiting fish on Spearfish Creek and Squaw Creek between 1911 and 1913. Eight men were found guilty of violating the game and fish laws and faced fines of fifty to one hundred dollars and up to thirty days in jail. Despite the successes of county game wardens such as Baken and Peterson, the South Dakota Legislature abolished the county game warden system in 1913. Instead, State Game Warden Harry S. Hedrick was to appoint eight deputies, each a paid state employee with jurisdiction to enforce hunting and

58. South Dakota, *Session Laws* (1909), chaps. 91, 240. W. F. Bancroft, the first state game warden, described the role of both game wardens and the state's new game and fish law in protecting and expanding South Dakota fisheries in 1910. *See* South Dakota, *Annual Report of the Department of Game and Fish* (1910), pp. 5, 21–22, 25–26, 33.

Harry S. Hedrick, pictured here in his office, became state game warden for South Dakota in 1913. He oversaw the transition from county game wardens to deputy state game wardens as the principal enforcers of fish and game laws.

fishing laws statewide. Only three of the deputies, however, held full-time, year-round positions, while the other five were employed on a seasonal basis.[59]

Although arrests and prosecutions for the dynamiting of trout in Black Hills streams garnered significant public attention, game wardens also responded to more ordinary infractions. In July 1914, Spearfish residents R. H. Evans, William Ryan, and Mrs. M. G. Town were fined twenty-five dollars each for "failing to maintain proper screens over the mouth of an irrigating canal."[60] A year later in Lawrence County, Venner Confliglaicco pled guilty "to the charge of killing trout less than six inches in length" and paid a penalty of five dollars.[61] Al-

59. *Aberdeen Daily News*, 6 Aug. 1909; *Aberdeen Weekly News*, 12 Aug. 1909; South Dakota, *Annual Report of the Department of Game and Fish* (1910), pp. 29, 31, (1912), p. 34, (1914), pp. 28–29, (1915), p. 27, and *Session Laws* (1913), chap. 223.

60. South Dakota, *Annual Report of the Department of Game and Fish* (1915), p. 26.

61. Ibid, p. 27.

though county game wardens in the Black Hills made relatively few arrests and confiscations between 1909 and 1913, they did contribute to a change in the culture of fishing in the region. In 1919, Dr. J. M. Walsh of Rapid City, who often wrote of his piscatorial adventures for the *Pahasapa Quarterly*, attributed the excellent trout fishing in the Black Hills to "the State and [federal] government hatcheries" complemented by the "total absence of dynamiting and seining" on local streams.[62] In the years that followed, the enforcement of state game and fish law assured that itinerant poachers and inattentive farmers would be replaced by law-abiding recreational fishermen and tourists on the banks of streams such as Spearfish, Castle, and Rapid creeks.[63]

In the development and management of Black Hills trout fisheries, 1909 proved to be a formative year. Effective state laws, the natural environment, and the federal hatchery infrastructure each played an important part in maintaining trout populations from year to year. At first, federal policy concerning the management and conservation of timber resources in the region remained separate from federal and state efforts to create trout fisheries within the Black Hills National Forest. This state of affairs changed, however, in November 1911 when federal foresters acquired forty thousand black-spotted trout for distribution into Squaw Creek in Spearfish Canyon. A few weeks later, they planted another forty thousand trout into French Creek and Willow Creek in the southern Black Hills. In January 1912, this new interagency cooperation was substantially strengthened when United States Forest Service officials approved the commissioning of head forester Paul D. Kelleter and ten of his staff in the Black Hills National Forest as assistant state game wardens. According to the *Aberdeen American*, the appointments made sense because "foresters are continually ranging over the hills on the lookout for fires" and therefore were "in excellent position to detect violation of the game laws." The foresters' law-enforcement efforts would be especially important, the *American* concluded, "in regard to dynamiting the mountain streams for trout, a frequent offense which is

62. Ibid., pp. 26–27; J. M. Walsh, "It Isn't the Fish or the Fishin [*sic*]," *Pahasapa Quarterly* 9 (June 1920): 204.

63. The creation and enforcement of fishing laws in South Dakota reflected national trends during the Progressive Era, legitimizing elite forms of recreational fishing and

very difficult for the regular wardens, engaged in some other business, to detect."[64] Such was the convergence of conservation interests that by 1913, Kelleter could boast of "constant co-operation" between hatchery workers and "those of the Forest Service in distributing young fish and restocking the waters within the Black Hills."[65]

Collaboration between foresters and game wardens illustrated a gradual convergence of state and federal interests to establish, protect, and expand trout populations in Black Hills streams in the waning years of the Progressive Era. This appropriation of Black Hills watersheds in

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criminalizing cruder working-class methods designed primarily to catch fish for subsistence, such as seining or the utilization of explosives. For more on how ethnic and class tensions affected conservation policy, *see* Karl Jacoby, *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley: University of California Press, 2001), pp. 99–149.

64. *Aberdeen American*, 18 Jan. 1912.

65. Paul D. Kelleter, "The National Forests of the Black Hills," *Pahasapa Quarterly* 2 (June 1913): 12.

Paul D. Kelleter was in charge of United States Forest Service operations in the Black Hills National Forest from 1909 to 1918.

ways contrary to the wishes of the dominant timber and mining interests of the area caused at least one local newspaper editor, as early as 1894, to lament that the Black Hills "used to be a mining country but it seems now it is changed to a summer fish resort."[66] Tensions between recreation and industry shaped the emergence of conservation policy in the Black Hills during the Progressive Era. More significantly, however, the Black Hills trout fishery was unique in the conservation history of the Great Plains and intermountain West. Nowhere else in this vast region were watersheds reengineered to create such an extensive nonnative fishery in an environment so shaped by timber and mining interests as in the Black Hills National Forest between 1899 and 1912.

66. *Sundance Gazette*, 5 Aug. 1894.

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On the covers: Nels P. Christensen recorded the Missouri River scene in 1903, as Louis DeWitt parked his wagon (back) at the former site of Fort George in central South Dakota. In this issue, W. Raymond Wood delves into the history of the fur-trading post, which the Union Fur Company abandoned in 1845. John R. Henris details the introduction of trout (inset) to the Black Hills at the turn of the last century in his article on the development of the region's fishery.