



Ecologist William L. Bray was an expert on the vegetation of western Texas.

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conservation potential.³ Moreover, they offer a striking set of analyses of the environmental pressures and human challenges that confronted those living in, and off, these resource-rich areas. If Texans hoped to address some of the dilemmas they faced and realize economic opportunities, Bray asserted, they would have to adopt a rigorous commitment to conservation that balanced economic needs with environmental protections. To achieve this balance, and ensure a more sustainable future, Texans also would need to ensure collaboration between competing industries and seemingly distinct geographical regions. Protecting the resource-rich regions of the state, he averred, must be a multigenerational commitment, a cooperative venture, and a governmental priority.

Although the reports reinforced Bray's growing reputation as a formidable scholar of and advocate for the conservation of the state's forests, his innovative scholarship has been largely forgotten. Forest historian Robert S. Maxwell, for example, credits W. Goodrich Jones, a banker-turned-activist, for "much of the motivating force for reforestation and conservation in Texas. A tenacious advocate for tree planting across the state, Jones lamented that the state's pinelands were being harvested so quickly that they might disappear within a quarter-century."⁴

Bray was similarly concerned about the disappearance of the Texas pineries, and the two men shared a conviction that the state government and timber companies needed to encourage reforestation to ensure the logging industry's survival. Yet whereas Bray demanded the

William L. Bray (1865–1953)

By Char Miller

In 1899, Professor William L. Bray of the University of Texas–Austin spent a fortuitous evening with Gifford Pinchot, then head of the USDA Division of Forestry, at the latter's home in Washington, D.C. Afterward, the chief forester, impressed by Bray's ecological expertise, hired him as a "Collaborator," or a special agent.

Bray's task was to write a pair of reports assessing natural resources in Texas, with a special focus on those landscapes in greatest need of conserving—the Piney Woods and the Edwards Plateau.¹

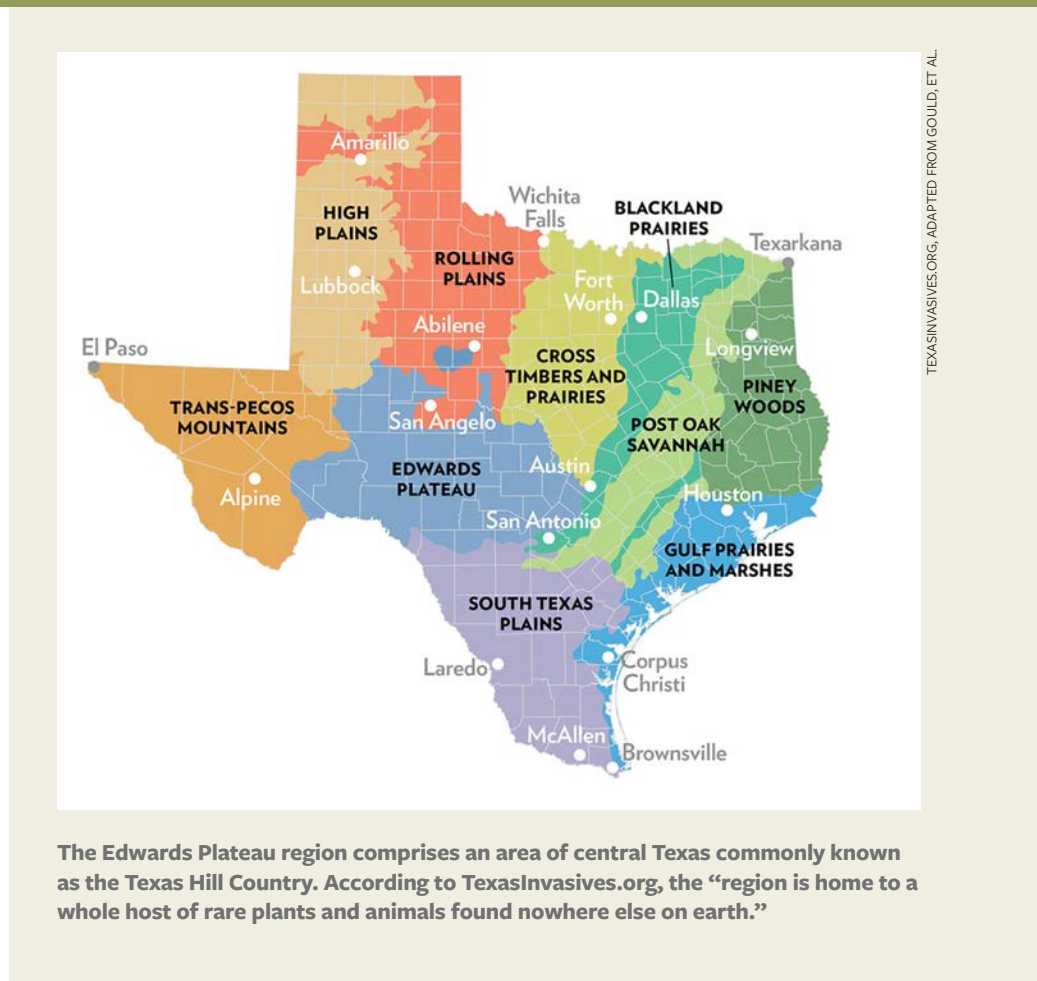
These reports furthered Bray's professional career and advanced his teaching (his research led him to develop the first classes on forests and forestry in the state).² They also signaled Bray's keen awareness of the region's economic value and

implementation of state or national mandates and regulations in his 1904 *Forest Resources of Texas* report, Jones “urged that the commercial forest belt be held by companies in large fenced tracts, and that a sustained yield program should be enforced.”⁵ To build support for these ideas, in 1910 Jones helped establish the short-lived Conservation Association of Texas, and when that organization folded four years later, he organized the Texas Forestry Association; through this later organization, he lobbied the state legislature to create a department of forestry (which it did, but without adequate funding). In the end, Maxwell observes, Jones “was a catalyst who produced action by the decision-makers.”⁶

By contrast, Jones acknowledged Bray as the progenitor: “Much of the credit of inaugurating the first real work in forestry in our State,” Jones wrote in 1915, “is due to Prof. William L. Bray, who in the year 1900 was botanist of the Texas university and published the only reliable work that has ever been done on Texas forests.” More pointedly, Bray’s insights significantly challenged those who “in that year and even now discredit the idea that there could ever be an end to the Texas forests.”⁷ Such praise from the man regarded as “the Father of Texas Forestry” makes Bray’s absence from the history of Texas forestry all the more curious.

A PERIPATETIC CAREER

Born in Burnside, Illinois, on September 19, 1865, the ninth of William and Martha Bray’s thirteen children, William L. Bray was educated in local public schools. After high school, Bray earned a teaching degree at Missouri’s Kirkland Normal School (now Truman State University) and spent the next several years as a teacher and administrator



The Edwards Plateau region comprises an area of central Texas commonly known as the Texas Hill Country. According to TexasInvasives.org, the “region is home to a whole host of rare plants and animals found nowhere else on earth.”

in Iowa and Missouri. Showing his inclination toward the social gospel, he took a twelve-month leave to direct the YMCA in Fresno, California. During his free time, the intrepid young man spent his summers studying the Midwest’s biota and cultivated a special interest in the region’s tallgrass prairies. To expand his botanical expertise, he decided to go back to college, matriculating at Cornell University from 1889 to 1891.

Rather than completing his studies at Cornell, however, Bray transferred to Indiana University, where he received his first degree in botany in 1893; while there, he signaled his emerging commitment to research, publishing an article with one of his mentors.⁸ The next year he completed a master’s in botany at Lake Forest University (now College)—with more

articles to his credit—and, while teaching there, began his doctoral work at the nearby University of Chicago. In 1896, midway through his studies, Bray traveled to Germany to spend a year in the lab of Heinrich Gustav Adolf Engler, a noted botanist, at the Royal Botanical Garden in Berlin. He then returned to Chicago to complete his dissertation in 1898, finishing up a year after accepting a teaching position at the University of Texas. The move placed him near the despoiled landscape that would be the focus of his work for the next decade.⁹

After ten years in the Lone Star State, however, Bray resigned to become a full professor at Syracuse University, a decision probably made easier because his wife hailed from upstate New York.¹⁰ He became head of the Department of Botany, then

organized the university's new College of Agriculture, and was appointed acting dean of the school's new College of Forestry. Later he served as dean of the university's graduate division and, in 1915, became a charter member of the Ecological Society of America.¹¹ These commitments came at the cost of his scholarship, one of his admiring colleagues wrote. "It is regretted that so able a man did not continue to publish and produce more research." That said, because of his "keen perception in the laboratory and the field and his well-organized mind, all of Dean Bray's publications have remained of great value to the present."

This assertion only underscores the significance of Bray's Texas-based research: it was there that he made his mark and became the state's leading scholarly promoter of a deeper understanding of its diverse ecosystems and the pressing need to conserve these varied resources.¹²

A PRESCRIPTION NEVER FILLED

Bray's influence on forestry in Texas was magnified as well because unlike his contemporaries, he recognized that the ecological imperatives and social needs of the Edwards Plateau were as important as the Piney Woods. Given that the "welfare of the Edwards Plateau itself and the Coastal Plain adjacent to it strongly demand the retention of permanent timber covering on the plateau," it was necessary to develop a proactive forest policy that involved "the

purchase and reservation of timber tracts" in that rumples terrain.¹³

This strategy to produce long-term sustainability gained fuller explication in *The Timber of the Edwards Plateau: Its Relation to Water Supply, Climate, and Soil*, published in 1904. Here again Bray pursued an ecological approach to the issue that emerged as a result of his fieldwork. He roamed the plateau and its environs, cutting up and down the Balcones Escarpment, moving back and forth between the communities beneath it, from Austin to San Antonio. Along the way, he assessed the interplay

between the region's ecology, geology, and geography; its climate, precipitation, and soils; and vegetative cover. He also calibrated how this physical realm interacted with the human economy.¹⁴

That was the cause of considerable concern: the speed with which people were exploiting the plateau's upland resources had a direct bearing on downstream

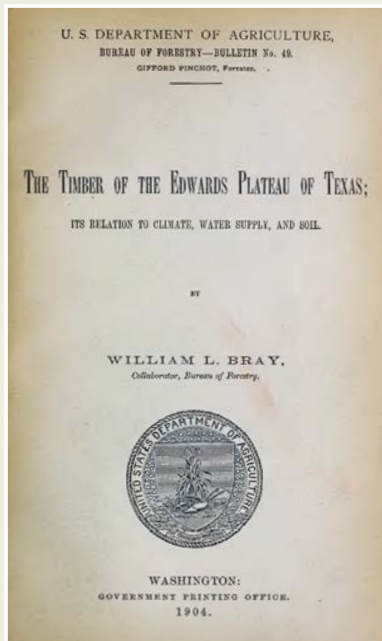
environmental damages. "For our present purpose the important considerations concerning the Edwards Plateau are, that it is a vast receiving area for rainfall, and that its structure is such as to give special significance to the behavior of water after it is precipitated."¹⁵ What he meant by "special significance" is water's rapid downhill movement. Periodically, floodwaters ripped through each of the cities that hugged the Balcones Escarpment, at times fatally so. The Colorado River

routinely inundated Austin; San Antonio suffered repeatedly as its eponymous river swept all in its path.¹⁶

Bray focused on the condition of upstream terrain. There, in the first decades of the twentieth century, two stories were emerging. The first was that cedar was quickly gaining ground on former grasslands; mesquite and cactus were also making inroads.¹⁷ One reason for the transition was settlers' suppression of the fires that once had burned off the brush and allowed grass to retain its dominance. This shift came coupled with human activities that were compromising the health of local ecosystems.

Trees—cedar and oak, particularly—were being clearcut to provide fuel and building materials and to clear land for agricultural production. The grasslands, in turn, were being overgrazed by large herds of cattle, goat, and sheep. The combination of interrelated effects intensified the threat of flooding. It is "a matter of common observation that forest denudation is followed by marked changes in the character of stream flow and the permanency of the springs."¹⁸

The managerial goal must be to regenerate forest and grass cover as well as a "deep layer of rich soil covered by an unreduced debris of fallen leaves and twigs."¹⁹ Once that had been achieved, the dense tree canopy and porous ground would deflect and absorb heavy precipitation, a result that Bray argued would restore the Edwards Plateau's ecological functions. What was true of the Texas plateau would also be true across the U.S. West. The Edwards Plateau's downstream relation to its coastal plain, he wrote, was like that of "the Sierras to the San Joaquin Valley in California, the Wasatch Mountains to the irrigable lands of the Great Salt



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To prevent further environmental damage to the Edwards Plateau, in this report Bray pleaded for “absolute ownership and management by the State.”

Lake basin, and the Rocky Mountains to the high Plains in Colorado.”²⁰

To better manage this relationship required thoughtful policies and effective interventions. Yet Bray held out little hope that “individual enterprise” alone would make this happen, “although if cooperation between private owners and the State could be brought about, it would result in mutual gain.”²¹ Instead, conservative stewardship of the all-important “rough breaks of the margins of the plains”—like the Piney Woods—needed greater oversight. “Nothing short of the absolute ownership and management by the State will suffice.”²²

One other vital commitment was necessary. Those who lived within the full extent of the river systems that rose in the Edwards Plateau and flowed to the Gulf of Mexico needed to recognize, value, and act

on their shared experience. “The rice planter on the coast wants the most constant flow possible of the Colorado, Guadalupe, San Antonio, and other rivers.”²³ Those ranchers and farmers occupying “the inner border of the coastal plain want the largest possible flow of artesian water.” Inhabitants of the plateau, in turn, needed to preserve and build up their soils while maintaining the level of soil moisture “near enough to the surface to be available for crops.”²⁴ Regardless of the differences in their economic activity and where they lived and worked, what bound these individuals together was water. “All desire to see destructive floods prevented,” he wrote, “all want this water held back to be given so as to be utilized.”²⁵ That being so, if these disparate groups learned to think like a watershed, they could establish cooperative land-management schemes that would benefit them individually and collectively.

Bray’s prescription was consistent with what geologist John Wesley Powell had declared in 1890: that upstream and downstream interests must collaborate if settlement in the arid West was to endure.²⁶ But whereas Powell thought cooperation was uniquely critical for the survival of Anglo settlers living west of the 100th meridian, Bray applied that same logic to those living to the meridian’s east. “At the last it will rest with cattlemen of the plains and the ranchmen of the hills whether their pastures are

worn out by overgrazing and their hills denuded by unwise cutting,” He observed. “In the long run, these men will find that they can both pasture the plains and market the timber without destroying the protective value of a grass cover on the one hand or a timber cover on the other.”²⁷ By joining together in voluntary association based on mutual need and a shared dependence on nature, they could construct a new human community.

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movement did not begin to take off until the mid-1910s, after he had left Texas. But his ideas continued to persuade, at least within the Forest Service. In September 1921, W. W. Ashe, a Forest Service scientist, met with the Texas State Water Board and reiterated Bray’s arguments about the need for the state to intervene in the management of the plateau and its river basins. Ashe urged

the construction of flood-control infrastructure downstream and forest-and-grassland conservation management upstream and suggested that creating a national forest on the Edwards Plateau could demonstrate the importance of conservation management. That never happened.²⁸ By the late 1920s, Texas had placed some of its remaining forested lands in the eastern pineries in four tiny state forests.²⁹ A decade later, federally funded dams began to be slotted into some of the upper reaches of

the plateau's rivers. Only after World War II did these major watersheds come under the management of such entities as the Lower Colorado River Authority and the San Antonio River Authority, which regulate the water in their respective basins but do not manage the lands from which that flow arises, as Bray had urged.³⁰

Bray's arguments for state-mandated conservation were far ahead of his time—and ours. That would not have bothered him. Rather, it confirmed that his primary scientific goal was to gather benchmark data, elucidate the nuances of ecological conditions, and explore the subtle interplay among climate, soils, and precipitation, research that could and should shape public policy. It “behooves a democracy to take a long look ahead,” Bray noted in 1925. A century later, Texas continues to struggle to enact Bray's conservation prescriptions to make the state more resilient, sustainable, and environmentally enriched.³¹

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NOTES

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- In developing his forestry class, Bray consulted with Carl A. Schenck, founder of the Biltmore Forest School, and Bernhard Fernow, inaugural director of the New York State College of Forestry at Cornell University. William L. Bray to Carl A. Schenck, Dec. 12, 1901, Biltmore Estate Manuscript Collection (Biltmore Estate, Asheville, NC), 2.1/1 Box 5, Folder 12; William L. Bray to Bernhard Fernow, Aug. 19, 1901, Box 1, B. E. Fernow Papers (Division of Rare and Manuscript Collections, Cornell University Library, Ithaca, NY).
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- Cedar in this context is in fact a juniper, *Juniperus ashei*; see F. E. Smeins and S. D. Fuhlendorf, “Biology and Ecology of Ashe Juniper,” Texas Natural Resources Server, <https://texnat.tamu.edu/library/symposia/juniper-ecology-and-management/biology-and-ecology-of-ashe-juniper/>.
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