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THE GREATER YELLOWSTONE ECOSYSTEM REVISITED: LAW, SCIENCE, AND THE PURSUIT OF ECOSYSTEM MANAGEMENT IN AN ICONIC LANDSCAPE

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Thirty years ago, the Greater Yellowstone Ecosystem (GYE) concept and ecosystem management surfaced as key to preserving this legally fragmented region's public lands and wildlife in the face of mounting development pressures. Yellowstone's grizzly bears were in sharp decline and wolves were absent from the landscape, while bison and elk management issues festered. The GYE's national forest lands were subject to extensive logging, energy leasing, and other commercial activities that cumulatively threatened the region's ecological integrity. In the face of extreme jurisdictional complexity and a strong commitment to agency discretion, a high-profile federal "Vision" effort to improve and better coordinate resource management practices cratered under intense political pressures. Since then, however, much has changed in the GYE.

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This article, drawing upon extensive personal interviews, official documents, and other materials, updates my 1989 study of the GYE and emergent ecosystem management concepts. After describing regional economic, social, and other changes, the article examines the principal resource management issues confronting the GYE during the past thirty years, focusing on national park, national forest, and wildlife management controversies as well as the emerging role of private lands in regional conservation efforts. Although these issues have primarily been addressed piecemeal, intensive development activities have mostly been held at bay on the GYE national forests while most GYE wildlife populations are in better shape today than thirty years ago. The article analyzes how this has come to pass, highlighting the role of science, law, and advocacy in safeguarding the GYE's natural heritage and promoting ecosystem management principles. It concludes that the GYE concept is now widely accepted, but related ecosystem management principles have yet to be fully embraced by the responsible agencies.

Looking forward, the article identifies several difficult new problems confronting the GYE: escalating park visitation, mounting recreation pressures, private land development, chronic wasting disease, and climate change. To address these looming problems, GYE ecosystem management efforts must be expanded to a larger landscape scale, while federal resource management coordination efforts must be intensified and extended to include the three GYE states. The law—including state law—will continue playing a prominent role in GYE nature conservation efforts. Absent enhanced coordination efforts, contested GYE natural resource management issues will continue to be addressed piecemeal in this legally complex environment. And the prospect of litigation and political intervention will lurk in the background, as has been the case during the past thirty years.

INTRODUCTION

During the late 1980s, the concept of ecosystem management emerged in the Yellowstone region, captured in the alluring notion of the Greater Yellowstone Ecosystem (GYE). Focused largely on the region's expansive federal public lands, the ecosystem management concept was promoted by conservation organizations concerned about the area's wildlife populations, particularly the grizzly bear, and potential damage to the area's iconic geothermal features. It was tentatively embraced by the region's federal land management agencies and then gained additional legitimacy during the 1990s under the Clinton Administration. Since then, much has transpired both in the Greater Yellowstone region and with ecosystem management, reflecting an array of economic, scientific, political, legal, and other changes. Drawing upon my earlier study of the GYE,[1] this

1. Robert B. Keiter, *Taking Account of the Ecosystem on the Public Domain:*

article updates how the region and ecosystem management have fared during the intervening thirty years and offers observations on the challenges now confronting this world-renowned setting, widely regarded as the cradle of conservation.

My earlier study endorsed the notion of a Greater Yellowstone Ecosystem and suggested "the ecosystem concept provides the fundamental premise for regional management and thus brings a compelling new vision to the ongoing debate over the future of the public domain."[2] The article identified the scientific basis for ecological management of the public lands, described the GYE as well as the principal threats confronting the region, and analyzed the role that law played in addressing these threats and promoting new ecologically driven natural resource policies. It concluded that a more conservation-oriented approach to resource management was emerging, one that transcended conventional boundaries to address on-the-ground realities of the region's wildlife and other natural features. While reviewing controversies over timber harvesting, energy development, and wilderness designation, the article highlighted the region's jurisdictional fragmentation and the role of administrative discretion, particularly related to the competing preservationist and multiple-use management policies of the National Park Service and the U.S. Forest Service. A primary goal of ecosystem management, it argued, was to promote meaningful coordination between these two agencies in order to safeguard Greater Yellowstone's unique wildlife populations and other natural attributes, which collectively represented the area's cultural importance and economic future.

Thirty years later, the GYE concept has attained legitimacy within the local populace as well as among the responsible federal agencies, the region's ecological health has generally improved, and some ecosystem management concepts have taken hold. Large-scale timber harvesting has virtually disappeared from the region's national forests, oil and gas development is mostly limited to the ecosystem's southernmost reaches, wilderness designation remains controversial, and recreational conflicts have escalated in both the national parks

Law and Ecology in the Greater Yellowstone Region, 60 U. COLO. L. REV. 923 (1989) [hereinafter Keiter, *Taking Account*]; *see also* THE GREATER YELLOWSTONE ECOSYSTEM: REDEFINING AMERICA'S WILDERNESS HERITAGE (Robert B. Keiter & Mark S. Boyce ed., 1991) [hereinafter THE GREATER YELLOWSTONE ECOSYSTEM].

2. Keiter, *Taking Account*, *supra* note 1, at 1007.

and forests. The Yellowstone grizzly bear population has rebounded to levels where the federal government is seeking to remove it from the endangered species list. The long-absent wolf has been reintroduced to the ecosystem, restoring the full complement of wildlife found in the region when white explorers first arrived. Bison populations are thriving though still stirring controversy when they disperse beyond national park boundaries. New wildlife migration routes have been identified and, in one instance, officially protected. Wildfire continues to help shape the region's forests, Yellowstone's thermal features remain intact, and the federal land management agencies still meet regularly as the Greater Yellowstone Coordinating Committee (GYCC), which serves as a forum for discussion and relationship building.[3]

However, the notion that the GYE would become the model for ecosystem management of the public lands has not come to pass. Ecosystem management generally seeks to promote science-driven, coordinated, and adaptive resource management efforts to conserve biodiversity and natural processes at an ecologically appropriate scale, while also supporting economically and socially sustainable communities.[4] Despite movement in this direction, the GYE region remains jurisdictionally fragmented with evident policy divides between the federal agencies and the surrounding states as well as within the area's diverse communities. Moreover, the region faces daunting new threats in the form of private land development, mounting recreational pressures, wildlife disease, and climate change. But it lacks, for the most part, the strong legal tools to address these mounting concerns. In short, ecosystem management has yet to fully take hold, and resource management conflicts still grip the region.

This article begins by describing the GYE in terms of its natural attributes, human communities, and jurisdictional complexity. It then reviews the major issues that have generated controversy in the region, focusing on how the Park Service and

3. For description and analysis of the GYCC and its role in the GYE, see *infra* notes 103–109 and accompanying text.

4. This "ecosystem management" definition draws upon the numerous definitions of ecosystem management that have been advanced over time. *See* ROBERT B. KEITER, KEEPING FAITH WITH NATURE: ECOSYSTEMS, DEMOCRACY, AND AMERICA'S PUBLIC LANDS 71–78 (2003); *see also infra* notes 77–82 and accompanying text (providing additional elaboration on the ecosystem management concept).

Forest Service have dealt with such matters as logging, energy development, mining proposals, winter recreation, wilderness designation, and wildlife management. In doing so, the article examines how past controversies have been resolved and how newer concerns are being addressed, emphasizing the role of ecological science and legal doctrine in promoting ecosystem management. It concludes by identifying the challenges lying ahead for the GYE, including the ongoing jurisdictional fragmentation problem, a reduced role for federal law, and the expanding scale of ecosystem conservation efforts in the face of climate change and an escalating human presence across the region.

I. GREATER YELLOWSTONE: AN INTACT YET CONTESTED LANDSCAPE

The GYE is best understood in natural, legal, and socioeconomic terms, which suggest the region is ecologically integrated, culturally diverse, and legally fragmented. During the past thirty years, the GYE idea has taken hold and provides a powerful, unifying image for a region largely defined by its abundant, relatively pristine public lands that are administered by several different federal agencies and central to community identity across the region. At the same time, the notion of ecosystem management—now also referred to as "landscape conservation"[5]—has emerged as an important federal resource management policy that encourages the responsible agencies to safeguard the region's natural attributes while meeting their individual statutory obligations. Moreover, the science underlying ecosystem management has matured, not only validating the original ecological concepts defining the region but also supporting even more expansive conservation efforts to address biodiversity concerns and climate change. Despite this evolution, controversy persists on the federal estate and now stretches beyond it, while the region's conservation issues have changed over time.

5. *See* NATIONAL ACADEMIES OF SCIENCE, A REVIEW OF THE LANDSCAPE CONSERVATION COOPERATIVES (2016); MATTHEW MCKINNEY ET AL., LARGE LANDSCAPE CONSERVATION: A STRATEGIC FRAMEWORK FOR POLICY AND ACTION (2010); Robert F. Baldwin et al., *The Future of Landscape Conservation*, 68 BIOSCIENCE 60, 60–63 (2018).

A. The Natural Setting: An Ecological Wonderland

The GYE spans three states—Wyoming, Montana, and Idaho—and covers roughly twenty million acres, depending on how its boundaries are calculated.[6] It sits astride a high plateau, much of which is covered in dense stands of pine and fir trees. An assortment of mountain ranges sprawl across the region, giving birth to the Green, Snake, and Yellowstone rivers, which serve respectively as headwaters for the Colorado, Columbia, and Mississippi river systems. Extensive volcanic activity shaped the region, accounting for its unique geothermal features. The core of the ecosystem consists of two world-renowned national parks, Yellowstone and Grand Teton, which originally were set aside to protect their scenic wonders and abundant wildlife resources.[7] Managed by the National Park Service under a preservationist mandate,[8] the parks embrace more than 2.5 million acres (an area larger than Rhode Island and Delaware combined). The parks serve as the centerpiece of a thriving regional tourism and recreation economy, attracting millions of visitors annually. As park visitation has mounted, the agency has faced ongoing controversies over its resource management responsibilities.

The national parks are encircled by five national forests that encompass more than fifteen million acres.[9] Administered by the Forest Service, the Bridger-Teton, Shoshone, Caribou-Targhee, Gallatin-Custer, and Beaverhead-Deerlodge national forests are managed for multiple-use purposes that include

6. On defining the Greater Yellowstone Ecosystem, see Duncan T. Patten, *Defining the Greater Yellowstone Ecosystem*, *in* THE GREATER YELLOWSTONE ECOSYSTEM *supra* note 1, at 19 (Robert B. Keiter & Mark S. Boyce, eds., 1991); RICK REESE, GREATER YELLOWSTONE: THE NATIONAL PARK & ADJACENT WILDLANDS 55 (2d ed. 1991).

7. PAUL SCHULLERY, SEARCHING FOR YELLOWSTONE: ECOLOGY AND WONDER IN THE LAST WILDERNESS 31–67 (1997); ROBERT W. RIGHTER, CRUCIBLE FOR CONSERVATION: THE CREATION OF GRAND TETON NATIONAL PARK 22–23, 39–40 (1982); ALFRED RUNTE, AMERICA'S NATIONAL PARKS: A HISTORY 41–47, 118–28 (4th ed. 2010).

8. 54 U.S.C. § 100101(a) (2018).

9. Thirty years ago, the GYE contained seven, not five, national forests; since then, the Gallatin and Custer national forests have been joined as one forest, and the same is true for the Caribou and Targhee national forests. This is primarily to improve efficiency and to save on administrative expenses. Today's five forests still report to three different regional Forest Service offices, another complicating factor when it comes to regional coordination. Keiter, *Taking Account*, *supra* note 1, at 937 n.60.

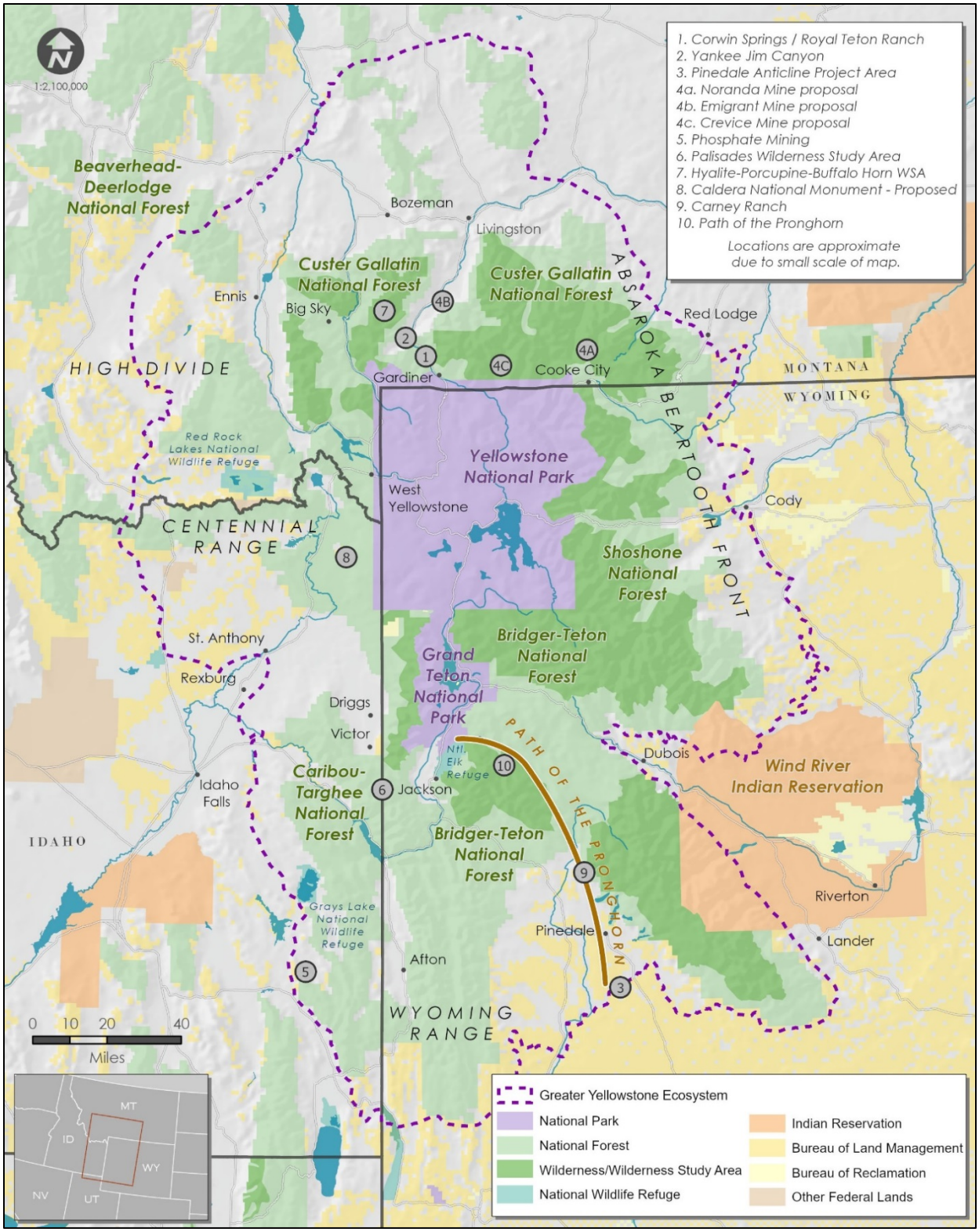

FIGURE 1. The Greater Yellowstone Ecosystem. The Greater Yellowstone Ecosystem encompasses roughly twenty million acres in and around Yellowstone National Park, including more than seven million acres of wilderness and wilderness study areas on national forest lands. The map depicts the GYE's diverse political boundaries, land ownerships, and legal designations, revealing the region's jurisdictional complexity. Numbers on the map are keyed to issues and references in the article. © University of Utah Department of Geography DIGIT Lab

mining, timber, energy development, livestock grazing, recreation, fish and wildlife habitat, and wilderness.[10] All of these resource uses still occur in the GYE national forests, and while the extractive uses have declined markedly in recent years, pockets of intense industrial activity are still quite evident. Meanwhile, recreational activity on the region's forest lands—including downhill skiing at several major resorts, off-road motorized travel, and mountain biking—has increased noticeably. More than seven million acres in the national forests are officially designated as wilderness or wilderness study areas,[11] which precludes most industrial activity as well as road construction or motorized access. Several of the wilderness areas, such as the Absaroka-Beartooth and the Jedidiah Smith, abut national park boundaries, creating an unbroken expanse of undisturbed lands that provide important sanctuary to the region's wildlife. How the Forest Service manages its lands has long been a focal point of contention across the region, though the nature of these controversies has shifted during the past thirty years.

Other federal lands also occupy important roles in the regional ecosystem. Three wildlife refuges administered by the U.S. Fish & Wildlife Service (FWS) provide important habitat for various species, including the National Elk Refuge north of Jackson, Wyoming, which serves as winter habitat and a feeding ground for more than 7,500 elk migrating south from Yellowstone and Grand Teton national parks.[12] The Elk Refuge, with its seasonally dense elk and bison residents, is also a popular wintertime attraction for visitors and a spawning ground for troublesome wildlife diseases.[13] On the GYE fringes, the Bureau of Land Management (BLM) oversees extensive

10. Multiple Use-Sustained Yield Act of 1960, 16 U.S.C. §§ 528–531 (2018); National Forest Management Act of 1976, 16 U.S.C. § 1604(e) (2018).

11. Wilderness Act of 1964, 16 U.S.C. §§ 1131–1134(c) (2018); *see also infra* notes 531–539 and accompanying text describing and analyzing the GYE wilderness areas and wilderness study areas.

12. 16 U.S.C. §§ 673–673(c) (2018). In addition to the National Elk Refuge, the GYE embraces two other refuges: Red Rock Lakes National Wildlife Refuge in Montana's Centennial Valley west of Yellowstone National Park, and Grays Lake National Wildlife Refuge in Idaho southwest of Grand Teton National Park.

13. The state of Wyoming also maintains twenty-two winter feedgrounds for elk in western Wyoming; these feedgrounds are designed to maintain the state's elk population by providing substitute winter habitat. *See infra* notes 340–377 and accompanying text for analysis of GYE elk management and the role of the Wyoming feedgrounds.

acreage for multiple-use purposes, including oil and gas development and winter range for numerous species.[14] Across the region, lower-elevation BLM lands have come to be regarded as ecologically important, providing critical habitat for sage grouse and other wildlife as well as migratory and dispersal corridors that promote genetic diversity by connecting isolated wildlife populations.[15] Lengthy segments of Wyoming's Snake and Clarks Fork rivers have been designated federal wild and scenic rivers,[16] safeguarding these important watercourses as well as adjacent river-corridor lands. In 2018, Congress added Montana's East Rosebud Creek to the region's still modest list of federally protected waters,[17] representing the state's first designated wild and scenic river since 1976.

Wildlife is abundant across the GYE and represents one of the region's defining characteristics. Although all the major species resident in the early 1800s are present today—including grizzly bears, wolves, elk, bison, pronghorn, big horn sheep, moose, deer, wolverine, cougars, lynx, beavers, bald eagles, sage grouse, trumpeter swans, and cutthroat trout[18]—the GYE wildlife have confronted significant challenges. Thirty years ago, the Greater Yellowstone grizzly bear population, widely regarded as a barometer for the overall health of the ecosystem, was on a steep downward trajectory, earning it a federal endangered species designation.[19] An interagency grizzly bear management committee has gradually succeeded in recovering the Yellowstone bear population—so much so that the FWS has proposed removing it from federal protection.[20] In 1994, after

14. See *infra* notes 457–470 and accompanying text for discussion of the Pinedale Anticline oil field and related wildlife impacts.

15. *See* Rob Thornberry, *Escape to Idaho's High Divide Right Now*, THEODORE ROOSEVELT CONSERVATION PARTNERSHIP (Oct. 11, 2017), http://www.trcp.org/2017/10/11/escape-idahos-high-divide-right-now/ [https://perma.cc/TLP5-ACRG].

16. Clarks Fork Wild and Scenic River Designation Act of 1990, Pub. L. No. 101-628, 104 Stat. 4509 (1990); Snake River Headwaters Legacy Act, Pub. L. No. 111-11, title V, § 5002(d), 123 Stat. 1149 (2009).

17. East Rosebud Wild and Scenic River Act, Pub. L. No. 115-229, 132 Stat. 1629 (2018).

18. Non-native species are also present in parts of the GYE, perhaps most notably lake trout that have been found in Yellowstone Lake, where they have reduced the native cutthroat trout population, depriving the Park's grizzly bears and other animals of an important seasonal food source. Todd M. Koel et al., *Non-Native Lake Trout Induce Cascading Changes in the Yellowstone Lake*, 25 YELLOWSTONE SCI. 42 (2017).

19. 50 C.F.R. § 17.11 (2019).

20. Proposed Rule Removing the Greater Yellowstone Ecosystem Population of

prolonged political debate and litigation, the FWS reintroduced the extirpated wolf to Yellowstone National Park; its numbers have swelled to more than five hundred wolves across the GYE, prompting its removal from federal protection.[21] Disease concerns that cast Yellowstone's bison as a culprit thirty years ago persist today and continue to limit bison movement outside the Park, though bison numbers continue to grow.[22] The regional elk population has dropped, partly in response to wolf reintroduction, while disease concerns have increased.[23] New research has revealed a spider web of wildlife migration routes crisscrossing the GYE, both reinforcing and expanding the ecological connections between the region's various public and private lands.[24] Controversy continues to plague efforts to safeguard Greater Yellowstone's wildlife populations, often exacerbating federal-state tensions across the region.

Any description of the GYE environment today must also include the impact of climate change on the region's ecological integrity. Thirty years ago, the term "climate change" rarely appeared in the vocabulary of conservation, nor was it mentioned in connection with the GYE ecosystem management debate.[25] Today, discussions about conservation regularly include

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Grizzly Bears From the Federal List of Endangered and Threatened Wildlife, 81 Fed. Reg. 13,173 (Mar. 11, 2016) (to be codified at 50 C.F.R. pt. 17). See *infra* notes 184–237 and accompanying text for discussion and analysis of the Yellowstone grizzly bear management and delisting controversy.

21. Final Rule to Identify the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and to Revise the List of Endangered and Threatened Wildlife, 74 Fed. Reg. 15,123 (Apr. 2, 2009) (to be codified at 50 C.F.R. pt. 17); Removal of the Gray Wolf in Wyoming From the Federal List of Endangered and Threatened Wildlife and Removal of the Wyoming Wolf Population's Status as an Experimental Population, 77 Fed. Reg. 55,530 (Sept. 10, 2012) (to be codified at 50 C.F.R. pt. 17). See *infra* notes 238–274 and accompany-ing text for discussion and analysis of Yellowstone wolf reintroduction.

22. See *infra* notes 275–323 and accompanying text for discussion and analysis of the bison management controversy.

23. See *infra* notes 324–390 and accompanying text for discussion and analysis of GYE elk management issues.

24. Arthur D. Middleton et al., *Animal Migration amid Shifting Patterns of Predation and Phenology: Lessons from a Yellowstone Elk Herd*, 94 ECOLOGY 1245 (2013); Nathan C. Martin, *On the Path of Yellowstone's Elk*, ATLANTIC (June 21, 2016), https://www.theatlantic.com/science/archive/2016/06/on-the-path-of-yellowstones-elk/488063/ [https://perma.cc/3UGW-D8JW]; Hall Sawyer et al., *Mule Deer and Pronghorn Migration in Western Wyoming*, 33 WILDLIFE SOCIETY BULLETIN 1266 (2005). See *infra* notes 378–390 and accompanying text for discussion of GYE wildlife migration patterns and related wildlife corridor protection issues.

25. Indeed, my 1989 article made no mention of climate change as a consideration for ecosystem management in the GYE, nor was climate change a

references to global warming and corresponding management adaptations. In the GYE, temperatures are expected to rise, and more precipitation is expected to fall as rain rather than snow.[26] These climatic changes will alter seasonal start dates, accelerate spring runoff in mountain streams, and dry out area vegetation during summer months. These changes will, in turn, modify animal migration patterns, impact native trout habitat, increase as well as intensify wildfire events, alter forest habitat, and endanger habitat-specific wildlife, like the wolverine, which depends on deep snow cover.[27] Indeed, climate change impacts are already evident in the GYE, where a raging pine bark beetle epidemic has killed large numbers of whitebark pine trees, an important seasonal food source for the grizzly bear.[28] Although current and forecasted climate change impacts vary across the ecologically diverse GYE, there is little doubt that the region's wildlife, water, and vegetation will experience notable changes, which will also affect nearby communities that depend on the region's natural attributes for their economic sustenance and identity.

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topic addressed in my co-edited volume. *See* THE GREATER YELLOWSTONE ECOSYSTEM, *supra* note 1. The principal law school teaching casebook on federal public lands (GEORGE C. COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW (3rd ed. 1993)) likewise did not mention the topic. Bill McKibben's groundbreaking book about the subject of global warming and its impact on the natural world was first published in 1989. *See* BILL MCKIBBEN, THE END OF NATURE (1989).

26. TONY CHANG & ANDREW J. HANSEN, CLIMATE CHANGE BRIEF, GREATER YELLOWSTONE ECOSYSTEM (2013), http://www.montana.edu/lccvp/documents/GYEclimateprimer1AJHsmall.pdf [https://perma.cc/5WCK-VZ8F] (stating the minimum temperature in the GYE expected to increase); Adam J. Sepulveda et al., *The Shifting Climate Portfolio of the Greater Yellowstone Area*, 10 PLOS ONE (Dec. 16, 2015) (stating increasing spring temperatures in the GYE has likely increased the fraction of precipitation that falls as rain rather than snow); Interview with Tom Oliff, Coordinator, National Park Service, U.S. Geological Service Northern Rocky Mountain Science Center, Landscape Conservation Cooperative, in Bozeman, MT (2017).

27. Winston D. Hansen & Monica G. Turner, *Origins of Abrupt Change? Postfire Subalpine Conifer Regeneration Declines Nonlinearly with Warming and Drying*, 89 ECO. APPL. 1 (2018).

28. Andrew Hansen et al., *Complex Challenges of Maintaining Whitebark Pine in Greater Yellowstone under Climate Change: A Call for Innovative Research, Management, and Policy Approaches*, 7 FORESTS 54 (2016); Sarah Jane Keller, *The Massive Yellowstone Fish Die-Off: A Glimpse Into Our Climate Future?*, SMITHSONIAN (Aug. 25, 2016), https://www.smithsonianmag.com/science-nature/yellowstone-fish-die-off-glimpse-climate-future-180960259/ [https://perma.cc/ZNS3-LGSH].

B. The Human Element: Economy, Community, and Culture

A largely rural area, the GYE spans three states, encompassing an array of communities and a growing populace. The GYE states—Wyoming, Montana, and Idaho—are all lightly populated, politically conservative, and boast large federal landholdings. The states' economies historically relied upon natural resources, and Wyoming notably remains closely tied to the mineral industry.[29] Ranching interests hold considerable political sway in all of the states. Because roughly two-thirds of the GYE is located in Wyoming, the state plays a major role in regional resource management debates, frequently opposing federal conservation policies. During my interviews, one long-time observer volunteered that the state is both "forceful and strident" in these matters.[30] Another explained that the GYE states "will pursue their own interests and preserve their own authority."[31]

The GYE's principal communities include Jackson, Pinedale, Cody, and Afton in Wyoming; Driggs, Victor, and Idaho Falls in Idaho; and West Yellowstone, Red Lodge, and Bozeman in Montana; as well as numerous, scattered small towns. Most of the region's communities are linked to the surrounding public lands; several serve as gateways to the nearby national parks. The local population is rapidly expanding, growing from just over 300,000 in 1990 to 472,000 in 2015, far exceeding prior forecasts.[32] Although the three GYE

29. SAMUEL WESTERN, PUSHED OFF THE MOUNTAIN SOLD DOWN THE RIVER: WYOMING'S SEARCH FOR ITS SOUL (2002).

30. Interview with Angus Thuermer, Jr., Journalist, WyoFile; formerly with Jackson Hole News & Guide, in Jackson, WY (2017). Other observers viewed Wyoming as particularly "problematic" on GYE conservation issues. Interview with Caroline Byrd, Executive Director, Greater Yellowstone Coalition, in Bozeman, MT (2017, 2019); interview with Ed Lewis, Former Greater Yellowstone Coalition Executive Director, in Bozeman, MT (2017).

31. Interview with Mike Brennan, Former U.S. Fish & Wildlife Service Attorney, in Jackson, WY (2017).

32. Andrew J. Hansen & Linda Phillips, *Trends in Vital Signs for Greater Yellowstone: Application of a Wildland Health Index*, 9 ECOSPHERE 8, 11 (2018); *see also* Todd Wilkinson, *Greater Yellowstone Needs New Blueprint*, JACKSON HOLE NEWS AND GUIDE (June 10, 2015), https://www.jhnewsandguide.com/opinion/columnists/the_new_west_todd_wilkinson/article_c359961c-56ab-5e04-a560-4ec777dd9c25.html [https://perma.cc/FGA7-PFLZ]; *see generally* ANDREW HANSEN ET AL., CLIMATE CHANGE IN WILDLANDS: PIONEERING APPROACHES TO SCIENCE AND MANAGEMENT (2016).

states and the region's communities exhibit diverse economic profiles, tourism, recreation, and the service sector have grown in importance, as reflected in the creation of new state outdoor recreation offices.[33] Given the predominance of public lands, private lands are limited and therefore at a premium in several counties.[34] Nonetheless, large ranches remain ubiquitous across the region, providing abundant open space and crucial wildlife habitat.

During the past thirty years, the profile of the GYE communities has evolved as the area has become a "hot spot" for visitors and new arrivals alike. Towns like Jackson and West Yellowstone have long served as gateway communities to the national parks, drawing much of their economic sustenance from tourism and recreation business. While still true, Jackson has moved to another level where real estate is also a dominant economic factor. The community continues to draw wealthy newcomers enamored with the scenery and outdoor recreation opportunities—making Teton County now the wealthiest county per capita in the nation and expanding the income gap between the town's residents.[35] To support its resort economy, the small

33. *See* WYOMING'S OUTDOOR RECREATION OFFICE, http://wyoparks.state.wy.us/WYOutdoorRecreation/index.php/about (last visited July 17, 2019) [https://perma.cc/4KEU-WJQR]; Shauna Farnell, *Wyoming Doubles Down on Its Outdoor Recreation Economy* (Nov. 14, 2018), https://outdoorindustry.org/article/wyoming-doubles-outdoor-recreation-economy/ (last visited July 17, 2019) [https://perma.cc/5ARL-GLTD]; MONTANA GOVERNOR'S OFFICE OF OUTDOOR RECREATION, https://business.mt.gov/Office-of-Outdoor-Recreation (last visited July 17, 2019) [https://perma.cc/GY6K-69H8]; *see also* IDAHO OUTDOOR RECREATION, https://www.idaho.gov/recreation/outdoor-recreation/ (last visited July 17, 2019) [https://perma.cc/AL4W-5ZMK].

34. In Teton County, Wyoming, for example, 97 percent of the land is federally owned. Troy McMullen, *Jackson Hole, Wyoming – Where Prices Are Rising and Taxes Are Low*, FIN. TIMES (Nov. 6, 2015), https://www.ft.com/content/55bbddae-7e66-11e5-98fb-5a6d4728f74e [https://perma.cc/JW6K-V79W]; *see also* WILLIAM TRAVIS ET AL., RANCHLAND DYNAMICS IN THE GREATER YELLOWSTONE ECOSYSTEM: A REPORT TO YELLOWSTONE HERITAGE (July 2002), https://www.centerwest.org/futures/ranchlands/ranchland_dynamics_gye.pdf [https://perma.cc/H5VU-FAD3] (putting public lands in Lincoln County, Wyoming, at 79 percent, in Fremont County, Wyoming, at 85 percent, and in Sublette County, Wyoming, at 81 percent).

35. In 2015, Teton County, Wyoming, boasted the largest per capita personal income nationally at an average of $194,861. BUREAU OF ECONOMIC ANALYSIS, LOCAL AREA PERSONAL INCOME (2015), https://www.bea.gov/newsreleases/regional/lapi/2016/pdf/lapi1116.pdf. In 2013, the top one percent in the Jackson metropolitan area "earned on average 213 times the average income of the bottom 99 percent of families." Estelle Sommeiller, & Mark Price, & Ellis Wazeter, *Income Inequality in the U.S. by State, Metropolitan Area, and County*, ECONOMIC POL'Y INST. THE NEW GILDED AGE (2016), http://www.epi.org/publication/income-

Jackson airport now boasts more than two dozen nonstop flights coming from major cities across the country during the peak seasons, along with regular private jet arrivals.[36] The affluent Jackson community has historically supported wildlife conservation and other environmental initiatives, prompting one long-term resident to observe: "If we can't save GYE here with this community's resources, then we can't save it anywhere."[37]

Until recently, the Idaho towns of Driggs and Victor were sleepy agricultural communities across the Teton mountain range from Jackson, but they are now home to many of Jackson's service industry workers who cannot afford housing in Jackson.[38] Both Driggs and Victor underwent a major growth spurt before the 2008 Great Recession as longtime farms were subdivided for new vacation homes, many of which were never constructed, leaving the community with "zombie subdivisions."[39] As the Recession has faded, development pressures are once again evident in Idaho's Teton Valley. Similar pressures have also surfaced in Afton and other historically agricultural communities in Star Valley, roughly thirty miles southwest of Jackson. In fact, Jackson resort businesses are now providing daily bus transportation from these communities for their housekeepers, dishwashers, and other low-wage workers.

In Wyoming, the town of Pinedale also experienced an

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inequality-in-the-us/ [https://perma.cc/F34E-PTM3].

36. Interview with Mary Scott Gibson, Former Superintendent, Grand Teton National Park, in Jackson, WY (2019); interview with Hank Phibbs, retired Commissioner, Teton County, Wyoming, Co-founder, Greater Yellowstone Coalition, in Jackson, WY (2017); interview with Luther Propst, Commissioner, Teton County, Wyoming, in Jackson, WY (2019); interview with Liz Storer, President & CEO, Storer Foundation, in Jackson, WY (2019).

37. Interview with Susan Clark, Author and Professor, Yale University School of Forestry and the Environment, in Jackson, WY (2017).

38. *See* Megan Barber, *Unequal City: How Wealthy Tourists Have Gentrified Jackson Hole, Wyoming, into a Housing Crisis*, CURBED (July 6, 2016), https://www.curbed.com/2016/7/6/12101006/jackson-hole-real-estate-tourism [https://perma.cc/2VLM-NHVQ] (describing the affordable housing shortage in Jackson Hole); *see also* Christie Koriakin, *God's Country, Renter's Hell*, PLANET JACKSON HOLE (June 3, 2014), https://archive.planetjh.com/2014/06/03/gods-country-renters-hell/ [https://perma.cc/6BR7-MPVN] (describing Jackson's available housing and the need to find alternatives); McMullen, *supra* note 34 (noting that median home prices in Jackson Hole reached $823,500 in 2015, a 15 percent increase from 2014).

39. Interview with Kathy Rinaldi, Former Commissioner, Teton County, Idaho (by telephone, 2019); interview with Michael Whitfield, Conservationist; retired High Divide Initiative Coordinator, in Driggs, ID (2019).

enormous boom in the early 2000s, spurred by extensive oil and gas development on the Pinedale Anticline, significantly transforming the community.[40] Nearby ranches, as is true elsewhere in the GYE, are changing hands to wealthy newcomers or being subdivided for second homes that are springing up across what was once open space. One mountain range over, the town of Dubois, Wyoming, has sought to reinvent itself as an artist, retirement, and recreation community after the local sawmill closed during the mid-1980s.[41] To the north, Cody, Wyoming, serves as the eastern gateway to Yellowstone National Park. Tourism has long been the town's main business, anchored by the renowned Buffalo Bill Center of the West and numerous western-themed art galleries. The town of Lander, Wyoming, situated in the shadow of the Wind River mountain range at the eastern edge of the GYE, boasts the international headquarters for the National Outdoor Leadership School and a strong tourism-driven economy complimented by ranching and agriculture outside the town. North of Lander, the Wind River Indian Reservation is home to the Arapahoe and Shoshone tribes, who have long managed nearly 190,000 acres of undeveloped reservation lands as a roadless area.[42]

Similar transformations are afoot elsewhere in the GYE. To the north, the college town of Bozeman, Montana, is growing rapidly, attracting new high-tech businesses and residents drawn to its small-town, outdoor lifestyle. Today, Bozeman is among the nation's fastest growing midsize cities. Its population doubled during the past thirty years to 45,000 residents, and sprawl is noticeable across the surrounding countryside. Gallatin County, Montana, reached 107,810 residents in 2017, putting it twenty-first nationally in growth among the nation's counties and first by a wide margin for Montana counties.[43]

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40. Alexandra Fuller, *Boomtown Blues: How Natural Gas Changed the Way of Life in Sublette County*, NEW YORKER (Feb. 5, 2007), https://www.newyorker.com/magazine/2007/02/05/boomtown-blues [https://perma.cc/8ULF-UFNA]; *see also* ALEXANDRA FULLER, THE LEGEND OF COLTON H. BRYANT (2009).

41. Sarah Bates, *Public Land Communities: In Search of a Community of Values*, 14 PUB. LAND L. REV. 81, 90–103 (1993).

42. Dan Aragon, *The Wind River Indian Tribes*, 13 INT'L J. WILDERNESS 14, 16 (2007).

43. *Community Facts*, U.S. CENSUS BUREAU (2017), https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk [https://perma.cc/VJF6-PFYD]; *see also* Eric Dietrich, *Gallatin County Growth Rate Ranked 24th in Nation*, BOZEMAN DAILY CHRON. (Mar. 30, 2016), https://www.bozemandailychronicle.com/news/city/gallatin-county-growth-rate-ranked-th-in-nation/article_5edb6073-

Immediately adjacent to Yellowstone, West Yellowstone, Montana, remains a small gateway community of 1,300 year-round residents whose population swells with roughly 2,500 daily visitors during the summer months, many of whom come from abroad.[44] Once a railroad and mill town, Livingston, Montana, is being transformed by the region's new economic priorities.[45] In Gardiner, a modest gateway community adjacent to Yellowstone's northern entrance, absentee owners are purchasing the town's limited housing stock for vacation rentals. Nearby Red Lodge, Montana, originally built on mining but today a busy summer tourist center, serves as a gateway to Yellowstone over the renowned Beartooth Highway. And in eastern Idaho, Idaho Falls and Rexburg have experienced roughly 50 percent population growth, generally at the expense of surrounding agricultural lands.

The GYE's shifting demographic profile reflects related economic changes, many with implications for public lands and resource management policy. Energy development has long occupied a priority position on public lands across much of Wyoming,[46] and a large oil field development now occupies sagebrush-covered BLM lands south of Pinedale.[47] Although oil and gas exploration was once a very real threat in Teton County national forest lands, that threat has now dissipated, while the nearby Wyoming Range has been put off-limits to oil and gas activity in order to protect its natural and recreational values.[48] Where logging dominated the Targhee National Forest in Idaho thirty years ago, the large lumber mills serving the area have

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ed16-5eba-b996-fe9b9d180211.html [https://perma.cc/D7HN-WWBV] (putting Gallatin County population at 100,000 and the county at twenty-fourth in growth among the nation's counties).

44. Interview with Mike Brennan, *supra* note 31; interview with Caroline Byrd, *supra* note 30; interview with Tom Oliff, *supra* note 26; interview with Tim Preso, Attorney, Earthjustice, in Bozeman, MT (2017).

45. Livingston's longtime timber mill also recently closed. Interview with Bill Berg, Commissioner, Park County, MT, in Livingston, MT (2019); interview with Louisa Willcox, Conservationist, Grizzly Times, formerly with Natural Resources Defense Council, in Livingston, MT (2019).

46. Gary C. Bryner, *The National Energy Policy: Assessing Energy Policy Choices*, 73 U. COLO. L. REV. 341, 403 (2002) (noting that 94 percent, or about 17 million acres, of the state's public lands are open for development); *see also* T.A. LARSON, HISTORY OF WYOMING 433–38 (2d ed. 1978).

47. *See infra* notes 457–470 and accompanying text (discussing the Pinedale Anticline oil field development).

48. *See infra* notes 475–484 and accompanying text (describing the Wyoming Range controversy).

closed, and the Forest is gradually regenerating.[49] In Montana's Gallatin Canyon, the Big Sky ski area has grown from a modest operation to a year-round resort with second homes and commercial buildings now filling an entire mountain valley, topped with the millionaires-only Yellowstone Club.[50] Throughout the GYE, longtime ranches and farms are changing hands, often sold to wealthy newcomers seeking their own private retreats or developers eyeing subdivision development opportunities.[51] Moreover, tourism- and recreation-oriented businesses are proliferating.

The transformation occurring across much of the GYE appears to herald arrival of the New West.[52] According to a recent study of the changing GYE, this emergent "social reality" reflects "a shift away from the 'old west' heritage of utilitarian extraction toward a new culture of natural amenity-minded transplants, influenced by new ideas about nature and motivated to both enjoy and protect its natural amenities."[53] Economic growth in the region's New West communities involves the service industries, real estate development, investments, transfer payments, and retirement income. This growth has spawned an array of new amenities ranging from high-end restaurants and brewpubs to wildlife guides and outdoor equipment retailers. Well-educated newcomers to the region are starting new high-tech and recreational-equipment-manufacturing businesses as well as bringing telecommuting positions with them. Drawn to the GYE by its scenery, lifestyle, and recreational opportunities, they harbor strong opinions about the need to protect the landscape and wildlife. By background and interest, they stand in stark contrast to the region's old-time westerners, who have long made their living off the land through the consumptive use of its resources. These longtime residents, often found in the region's smaller towns, tend to view

49. *See infra* notes 397–405 and accompanying text.

50. *See infra* notes 414, 598–601 and accompanying text (discussing ski area development on the GYE national forests).

51. *See infra* notes 602–606 and accompanying text (examining private land issues in the region).

52. On the New West concept, see THOMAS M. POWER & RICHARD BARRETT, COWBOY ECONOMICS: PAY AND PROSPERITY IN THE NEW AMERICAN WEST (2d ed. 2001); THE NEXT WEST: PUBLIC LANDS, COMMUNITY, AND ECONOMY IN THE AMERICAN WEST (John A. Baden & Donald Snow eds., 1997); ATLAS OF THE NEW WEST: PORTRAIT OF A CHANGING REGION (William E. Riebsame ed., 1997).

53. JUSTIN FARRELL, THE BATTLE FOR YELLOWSTONE: MORALITY AND THE SACRED ROOTS OF ENVIRONMENTAL CONFLICT 6 (2015).

themselves as rugged individualists. They strongly endorse private property rights and suspect federal regulatory changes. Fearing many of the changes occurring around them, they are making powerful efforts to preserve their standing and cultural heritage.[54] Tensions between the two groups can be understood as a fundamental moral clash manifested in the region's environmental controversies.[55]

These changes have been accompanied by a remarkable rise in the number of nonprofit conservation organizations focused on preserving the GYE, creating an extremely diverse and sometimes conflicted local environmental community. In 2011, more than 180 nonprofit conservation organizations were working in the GYE region, with two thirds of the groups having come into existence since 1986.[56] Those present not only include national groups, such as The Wilderness Society, Sierra Club, and National Parks Conservation Association, but also local groups, which pursue more focused individual agendas.[57] The list also includes a Northern Rockies Earthjustice office, established in 1993, which has made experienced environmental lawyers readily available to these groups to litigate troublesome environmental decisions.[58]

During the 1980s, the newly created Greater Yellowstone Coalition (GYC)—which pioneered the GYE concept and as-

54. *See id.* at 70–89 (describing New West and Old West residents, characteristics, and beliefs).

55. *Id.* at 89–100.

56. David N. Cherney, Environmental Saviors? The Effectiveness of Nonprofit Organizations in Greater Yellowstone 16 (2011) (unpublished Ph.D. thesis, University of Colorado) (on file with the University of Colorado Environmental Studies Department); *see also* JUSTIN FARRELL, THE BATTLE FOR YELLOWSTONE: MORALITY AND THE SACRED ROOTS OF ENVIRONMENTAL CONFLICT 100–03 (2015) (identifying 183 environmental organizations in the region, with a combined annual budget of $150 million, 500 employees, and over 700 board members).

57. In particular, the towns of Bozeman, Montana, and Jackson, Wyoming, have witnessed a growth in nonprofit conservation organizations, owing to both community's longstanding commitments to preserving the surrounding landscape, sizeable pools of wealthy, more liberal residents and newcomers, and the potential for raising substantial funds to support these organizations. FARRELL, *supra* note 56, at 112–13; interview with Caroline Byrd, *supra* note 30; interview with Scott Christensen, Deputy Director, Greater Yellowstone Coalition, in Bozeman, MT (2017, 2019); interview with Bob Ekey, Former Northern Rockies Regional Director, The Wilderness Society, in Bozeman, MT (2017); interview with Hank Phibbs, *supra* note 36; interview with Angus Thuermer, Jr., *supra* note 30.

58. *Regional Office: Northern Rockies Office*, EARTHJUSTICE, https://earthjustice.org/about/offices/northern-rockies (last visited Sept. 2, 2019) [https://perma.cc/4P62-YDU8].

sumed the heady mission of safeguarding the region—took the lead on most GYE-related environmental issues. Today, GYC shares the stage with other organizations and can find itself at loggerheads with them over regional goals and strategies.[59] The GYE region has also witnessed a surge in new land trusts that have the mission of acquiring private lands for conservation purposes,[60] complementing the largely public lands focus of the other environmental groups. This proliferation of conservation organizations has contributed to a growing regional consciousness about the GYE concept, reflected in the number of communities and businesses that today identify themselves with the GYE name.[61] It has also prompted new resource management priorities, confronting the responsible agencies with sometimes conflicting demands and the prospect of litigation.

From an ecological perspective, the combination of regional population growth and private land development presents new challenges. More people are putting more pressures on the GYE's public lands, particularly for recreational access and uses—part of a nationwide phenomenon that recently led Congress to add outdoor recreation expenditures to the nation's gross domestic product calculation.[62] With the national parks now drawing record numbers of visitors and with visitation

59. *See infra* note 261 and accompanying text.

60. Craig L. Shafer, *Land Use Planning: A Potential Force for Retaining Habitat Connectivity in the Greater Yellowstone Ecosystem and Beyond*, 3 GLOBAL ECOLOGY & CONSERVATION 256, 271 (2015); *see also infra* notes 641–659 and accompanying text (discussing the land trust activity in the GYE).

61. Interview with Caroline Byrd, *supra* note 30; interview with Scott Christensen, *supra* note 57; interview with Hank Phibbs, *supra* note 36; interview with Tim Preso, *supra* note 44; interview with Michael Scott, Hewlett Foundation; former Executive Director, Greater Yellowstone Coalition, in Bozeman, MT (2017); interview with Angus Thuermer, Jr., *supra* note 30. Notably, the region's federal land management agencies seem to persist in using the term "Greater Yellowstone Area" to define the region, a term that first surfaced during the Vision document process. *See* GREATER YELLOWSTONE COORDINATING COMMITTEE, https://www.fedgycc.org/ (last visited Sept. 16, 2019) [https://perma .cc/L84K-F9BP]. When queried about the name difference, the region's federal officials dismissed the matter, suggesting that the two names were actually used interchangeably by the federal agencies. Interview with David Diamond, Coordinator, Greater Yellowstone Coordinating Committee, in Bozeman, MT (2019); interview with Mary Erickson, Supervisor, Custer-Gallatin National Forest, in Bozeman, MT (2019); interview with Tricia O'Connor, Supervisor, Bridget-Teton National Forest, in Jackson, WY (2019).

62. Outdoor Recreation Jobs and Economic Impact Act of 2016, Pub. L. No. 114-249, 130 Stat. 999.

extending into the autumn "shoulder season," the GYE's public lands are beginning to feel crowded and to incur new forms of environmental damage.[63] Powerful off-road vehicles and snowmobiles provide access to previously inaccessible areas, as do mountain bikes that have proliferated on backcountry trails.[64] Wildlife encounters that displace animals are increasing, as are conflicts with other recreational users who seek solitude rather than exhilaration and speed. Subdivisions and new homes are increasingly built adjacent to the region's public lands, not only fragmenting wildlife habitat but also creating wildland fire management risks and, in many instances, eliminating historic access to nearby public lands.[65] As one keen observer put it, "the GYE front country is now filled up, and the back country is becoming increasingly crowded,"[66] presenting a new set of problems for the region's public land managers.

C. The Legal-Policy Framework: Institutional Change Amidst Jurisdictional Complexity

An array of agencies, laws, and policies govern the GYE, creating serious jurisdictional and other complexities that affect the quest for common ground. The four federal land management agencies overseeing the region's public lands are each governed by individual organic (or enabling) laws that define their basic resource management responsibilities, as well as various cross-jurisdictional laws that impose uniform legal obligations on all of them. Within this legal milieu, the agencies and their policies have evolved, as has the Greater Yellowstone Coordinating Committee (GYCC), which is designed to improve collaboration among themselves. In addition, state law occupies an important role in the region, not only governing wildlife management on public lands outside the national parks and wildlife refuges, but also defining property rights and land use

63. *See infra* notes 171–179 and accompanying text (addressing national park visitation in the GYE).

64. *See infra* notes 565–583 and accompanying text (discussing recreational challenges in the GYE national forests).

65. *See infra* notes 588–659 and accompanying text (discussing private land development and conservation challenges).

66. Interview with Todd Wilkinson, Author and Journalist, Mountain Journal, in Bozeman, MT (2017, 2019); interview with Andrew Hansen, Professor, Montana State University, in Bozeman, MT (2017).

requirements on the region's privately owned lands. With jurisdictional authority dispersed across the region, the net result is significant legal complexity.

The basic laws governing the GYE federal public lands have changed little in the past thirty years. Congress has not substantially altered the principal statutes governing the Park Service, Forest Service, or BLM—namely the National Park Service Organic Act,[67] Multiple Use-Sustained Yield Act,[68] National Forest Management Act (NFMA),[69] Federal Land Policy and Management Act (FLPMA),[70] National Environmental Policy Act (NEPA),[71] and the Endangered Species Act (ESA).[72] At the same time, Congress has added new legislation that affects how the GYE agencies approach their resource management responsibilities. For example, the National Parks Omnibus Management Act of 1998 gave the Park Service scientific research and related management responsibilities, while also acknowledging that parks are part of larger ecosystems.[73] The National Wildlife Refuge System Improvement Act of 1997 established a new comprehensive conservation planning process for the nation's wildlife refuges and directed the FWS to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans."[74] Following several destructive fire seasons, Congress adopted the Healthy Forests Restoration Act of 2003,[75] giving the Forest Service new wildfire management authority and reducing its environmental compliance obligations. In 2009, the Collaborative Forest Landscape Restoration legislation provided federal funding for strategic thinning and prescribed fire projects that address forest health and wildfire concerns.[76] These new laws, taken

67. 54 U.S.C. §§ 100101–320303 (2018).
68. 16 U.S.C. §§ 528–531 (2018).
69. 16 U.S.C. §§ 1600–1614 (2018).
70. 43 U.S.C. §§ 1701–1784 (2018).
71. 42 U.S.C. §§ 4321, 4331–4335, 4341–4347 (2018).
72. 16 U.S.C. §§ 1531–1541 (2018).
73. National Park Service Concession Management Improvement Act of 1998, Pub. L. 105-391, § 101, 112 Stat. 3498 (codified at 54 U.S.C. § 100701 (2018)).
74. 16 U.S.C. § 668dd(a)(4)(B) (2018).
75. Healthy Forests Restoration Act of 2003, Pub. L. 108-148, 117 Stat. 1888 (codified at 16 U.S.C. §§ 6501–6517 (2018)); *see* Robert B. Keiter, *The Law of Fire: Reshaping Public Land Policy in an Era of Ecology and Litigation*, 36 ENVTL. L. 301, 344–350 (2006).
76. Omnibus Public Land Management Act of 2009, Pub. L. 111-11, §§ 4001–

together, have integrated important ecological concepts into the basic legal framework governing how federal lands are managed, and, in some instances, altered preexisting legal obligations.

Within this legal framework, federal resource management policies have evolved considerably with significant implications for the GYE national forest lands. During the 1990s, the Clinton Administration embraced the ecosystem management concept, defining it to include science-based decision making, biodiversity conservation goals, large-scale planning, interagency coordination, and adaptive management protocols.[77] The Forest Service, smarting from its experience in the Pacific Northwest where the northern spotted owl forced drastic changes in its timber harvesting practices, adopted ecosystem management as agency policy.[78] After two false starts, the Forest Service finally succeeded in revising its NFMA planning regulations in 2012. The revisions endorsed "ecological sustainability" as a primary forest management goal;[79] articulated new landscape assessment and broad-scale monitoring obligations;[80] required agency planners to use the "best available scientific information;"[81] and enumerated climate change, ecosystem integrity, wildfire, ecosystem services, and connectivity as factors to be addressed in the planning process.[82] In 2000, the Forest Service adopted a roadless area rule that, after surviving numerous court challenges,[83] prohibits logging and road building on 58.5 million acres of roadless forest lands,[84] which includes roughly

4004, 123 Stat. 1141 (codified at 16 U.S.C. §§ 7301–7304 (2018)).

77. Robert B. Keiter, *Wildlife Conservation, Climate Change, and Ecosystem Management*, *in* THE LAWS OF NATURE: REFLECTIONS ON THE EVOLUTION OF ECOSYSTEM MANAGEMENT LAW AND POLICY 235, 238–41 (Kalyani Robbins ed., 2013). *See generally* JAMES R. SKILLEN, FEDERAL ECOSYSTEM MANAGEMENT: ITS RISE, FALL, AND AFTERLIFE (2015); KEITER, KEEPING FAITH, *supra* note 4.

78. *See* KATHIE DURBIN, TREE HUGGERS: VICTORY, DEFEAT AND RENEWAL IN THE NORTHWEST ANCIENT FOREST CAMPAIGN (1996); STEVEN L. YAFFEE, THE WISDOM OF THE SPOTTED OWL: POLICY LESSONS FOR A NEW CENTURY (2d ed. 1994).

79. 36 C.F.R. § 219.8 (2019).

80. 36 C.F.R. §§ 219.5, 219.6 (2019) (planning framework for assessments and monitoring); 36 C.F.R. § 219.12 (2019) (monitoring).

81. 36 C.F.R. § 219.3 (2019).

82. 36 C.F.R. §§ 219.8, 219.10 (2019).

83. Wyoming v. U.S. Dep't of Agric., 661 F.3d 1209 (10th Cir. 2011); California ex rel. Lockyer v. U.S. Dep't of Agric., 575 F.3d 999 (9th Cir. 2009).

84. Special Areas; Roadless Area Conservation, 66 Fed. Reg. 3244, 3245 (to be codified at 36 C.F.R. pt. 294).

six million acres in the GYE.[85] Along the way, the Forest Service has identified landscape-scale forest restoration, watershed improvement, wildfire management, and enhanced recreational opportunities as policy priorities throughout the national forest system.[86]

The other federal land management agencies have also pursued important new conservation-oriented policies. In 2000, the BLM administratively conceived a National Landscape Conservation System to oversee its growing portfolio of protected lands, including wilderness areas, wilderness study areas, national monuments, and national conservation areas.[87] In 2009, Congress legislatively acknowledged the agency's preservationist responsibilities by adopting the National Landscape Conservation System Act.[88] Awash in controversy over its oil and gas leasing practices during the Bush Administration, the BLM instituted several reforms during the Obama Administration. These included a new Master Lease Planning process,[89] which required managers to assess leasing proposals from a larger landscape perspective. The Trump Administration, however, has jettisoned this policy.[90] During the Obama Administration, the BLM also revised its resource

85. *See Roadless Area Conservation*, U.S. DEP'T OF AGRIC., https://www.fs.usda.gov/detail/roadless/2001roadlessrule/maps/statemaps/?cid=fsm8_037741 (last visited May 26, 2017) [https://perma.cc/Y49E-6CRJ].

86. FOREST SERV., U.S. DEP'T OF AGRIC., FS-1045, USDA FOREST SERVICE STRATEGIC PLAN: FY 2015–2020 (2015); *Concerning President's Fiscal Year 2017 Proposed Budget for the USDA Forest Service Before the S. Comm. on Energy and Nat. Res.*, 114th Cong. (2016) (statement of Tom Tidwell, Chief, United States Forest Service).

87. JAMES R. SKILLEN, THE NATION'S LARGEST LANDLORD: THE BUREAU OF LAND MANAGEMENT IN THE AMERICAN WEST 155–56 (2009).

88. Omnibus Public Land Management Act of 2009, Pub. L. 111-11, §§ 2001–2003, 123 Stat. 1094 (codified at 16 U.S.C. §§ 7201–7203 (2018)).

89. BUREAU OF LAND MGMT., INSTR. MEMORANDUM NO. 2010-117 (May 17, 2010), https://www.blm.gov/policy/im-2010-117 [https://perma.cc/28ZT-C6NP]. The BLM has also undertaken several large-scale Rapid Ecological Assessments (REAs), including the Southern Great Plains REA in 2018, designed to improve land use decisions in the face of climate change and other environmental forces affecting the agency's lands. *See* Bureau of Land Mgmt., *Rapid Ecoregional Assessments (REAs)*, LANDSCAPE APPROACH DATA PORTAL, https://landscape.blm.gov/geoportal/catalog/REAs/REAs.page (last visited Feb. 11, 2019) [https://perma.cc/YC7C-QE35].

90. Darryl Fears, *Trump Administration Tears Down Regulations to Speed Drilling on Public Land*, WASH. POST (Feb. 1, 2018), https://www.washingtonpost.com/news/energy-environment/wp/2018/02/01/trump-administration-tears-down-regulations-to-speed-drilling-on-public-land/?utm_term=.d80936ff9995 [https://perma.cc/YYQ2-Z92C].

management planning rules to include a landscape assessment, but Congress blocked those revisions following the 2016 election.[91]

In 2006, the National Park Service revised its Management Policies,[92] which establish agency-wide resource management standards and practices. The revisions instruct park officials to "use all available tools to protect park resources and values from unacceptable impacts"; to ensure that plans "consider the park in its full ecological . . . contexts . . . as part of a surrounding region"; and to work cooperatively with neighbors to mitigate potentially harmful external activities.[93] Similarly, the FWS has translated its 1997 "ecological integrity" and comprehensive conservation planning mandates into policy documents governing refuge management. These policies instruct refuge managers "to maintain populations of breeding individuals that are genetically viable and functional" and also "to maximize the size of habitat blocks and maintain connectivity between blocks."[94]

Institutionally, the agencies have evolved during the past several decades. The Forest Service has diversified its workforce, noticeably reducing the ranks of its silviculturists (timber managers) and adding employees with backgrounds in biology, archeology, hydrology, sociology, and the like.[95] The agency's leadership has changed too. The appointment of Jack Ward Thomas as the Chief in 1993 marked the first time a biologist oversaw the agency. Women have also increasingly

91. Resource Management Planning, 81 Fed. Reg. 89,580 (Dec. 12, 2016) (to be codified at 43 C.F.R. pt. 1600); Act of Mar. 27, 2017, Pub. L. No. 115-12, 131 Stat. 76.

92. *Management Policies 2006*, NAT'L PARK SERV. (2006), https://www.nps.gov/policy/MP_2006.pdf [https://perma.cc/2RXM-26ES] [hereinafter NPS MANAGEMENT POLICIES].

93. *Id.* at 1.6.

94. U.S. FISH & WILDLIFE SERV., FISH & WILDLIFE SERVICE MANUAL, 601 FW 3.10B (July 31, 2006); Policy on Maintaining the Biological Integrity and Diversity, and Environmental Health of National Wildlife Refuge System, 66 Fed. Reg. 3809, 3820 (Jan. 16, 2001) (to be codified at 40 C.F.R. pts. 31 and 35); *see also* Robert B. Keiter, *Ecological Concepts, Legal Standards, and Public Land Law: An Analysis and Assessment*, 44 NAT. RES. J. 943, 954 (2004).

95. CHAR MILLER, PUBLIC LANDS, PUBLIC DEBATES: A CENTURY OF CONTROVERSY 162 (2012); interview with Peter Aengst, Senior Regional Director, Northern Rockies Region, The Wilderness Society, in Bozeman, MT (2017); interview with Scott Christensen, *supra* note 57; interview with Bob Ekey, *supra* note 57; interview with Virginia Kelly, Forest Planner, Gallatin National Forest; former Greater Yellowstone Coordinating Committee Executive Coordinator, in Bozeman, MT (2017); interview with Tricia O'Connor, *supra* note 61.

assumed management roles. In the GYE, four of the five current forest supervisors are women. More than 50 percent of the Forest Service's budget is now directed toward wildfire management, representing a pronounced shift in spending priorities that has left the agency without the resources to address pressing recreation, wildlife, and other resource management problems.[96] These workforce, budgetary, and policy changes have prompted one historian to conclude that "the agency has been wandering in the wilderness . . . in search of a mission to replace its post-World War Two [timber production] purpose."[97]

A similar transformation has occurred in Park Service leadership, both in terms of gender and disciplinary diversity.[98] Women have ascended to the Director and Regional Director positions, and they have recently served as superintendents at Yellowstone and Grand Teton.[99] The BLM leadership and workforce is also now more diversified, reflecting the agency's expanded responsibilities, though its budget remains woefully inadequate for the tasks it faces.[100] Citing the BLM's pivot from ecosystem management to all-out energy production between the Clinton and Bush administrations (and again between the Obama and Trump administrations), observers believe the agency is still searching for a defining mission.[101] In addition,

96. *The Rising Cost of Wildlife Operations*, U.S. FOREST SERV. 2 (Aug. 4, 2015), https://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf [https ://perma.cc/82KV-NZL3]; *FY 2018 Budget Justification*, U.S. FOREST SERV. C-3 (May 2017), https://www.fs.fed.us/sites/default/files/usfs-fy18-budget-overview .pdf [https://perma.cc/WUX5-HCKY] (timber management receipts and credits total $129 million out of a 2017 budget of $4.73 billion, which equals about 2.7 percent of the budget); interview with Susan Clark, *supra* note 37; interview with Virginia Kelly, *supra* note 95.

97. MILLER, *supra* note 95, at 161.

98. Interview with Tom Oliff *supra* note 26; interview with Mary Gibson Scott, *supra* note 36. *Cf.* Lyndsey Gilpin, *How the National Park Service is Failing Women*, HIGH COUNTRY NEWS (Dec. 12, 2016), https://www.hcn.org/issues/48.21/how-the-park-service-is-failing-women [https://perma.cc/T2XB-GWZ7] (re-porting that 44 percent of NPS supervisors and 37 percent of NPS superintendents are women).

99. Suzanne Lewis served as Yellowstone's superintendent from 2002–2010, while Mary Gibson Scott served as Grand Teton's superintendent from 2004–2013.

100. SKILLEN, NATION'S LARGEST LANDLORD, *supra* note 87, at 192–95; JAMES MUHN ET AL., OPPORTUNITY AND CHALLENGE: THE STORY OF BLM 236, 238, 251–57 (1988).

101. SKILLEN, NATION'S LARGEST LANDLORD, *supra* note 87, at 193. The BLM has undergone a similar policy shift in the transition from the Obama Administration to the Trump Administration, moving from an emphasis on alternative energy, climate change, and landscape conservation to an all-out fossil fuel development agenda.

examples of interagency cooperative efforts are mounting at the national level, as illustrated by the multi-agency Landscape Conservation Cooperatives designed to facilitate research on climate change and its impact on resource management across the federal estate.[102] But with the Trump Administration's endorsement of energy production as its paramount objective, it remains to be seen whether these institutional and policy changes are sufficiently embedded in agency cultures to prevent a wholesale shift back toward resource production at the expense of ecological sustainability and restoration.

In the GYE, the GYCC is the formal federal institution seemingly best positioned to promote and implement ecosystem-wide resource planning and management policies. Conceived in 1964 by the Park Service and Forest Service, the GYCC consists of the managers from the GYE's two national parks and five national forests, along with more recently added representatives from the FWS and the BLM, plus an Executive Coordinator who staffs the commission.[103] Though lacking explicit statutory authority, the GYCC nonetheless meets twice annually, providing a forum for discussing common resource problems and building personal relationships among the region's land managers.[104] During the mid-1980s, faced with congressional concern over the dwindling grizzly bear population and lack of coordination among the GYE agencies, the GYCC undertook a high-profile "Vision" exercise designed to establish coordinated, region-wide resource management goals and planning protocols.[105] Although the GYCC's Vision process produced an initial draft document calling for a "world[-]class model" of ecosystem management on "a landscape where natural processes are operating with little hindrance on a grand

102. U.S. DEP'T. OF THE INTERIOR, OFF. OF THE SECRETARY, S.O. 3289 (Sept. 14, 2009); *see also* NAT'L ACADEMIES OF SCIENCE, *supra* note 5.

103. On the history and evolution of the GYCC, see SUSAN G. CLARK, ENSURING GREATER YELLOWSTONE'S FUTURE: CHOICES FOR LEADERS AND CITIZENS 71–79 (2008); *History*, GREATER YELLOWSTONE COORDINATING COMM., https://www.fedgycc.org/history (last visited May 24, 2019) [https://perma.cc/5W3Z-49TW].

104. Interview with David Diamond, *supra* note 61; interview with Mary Erickson, *supra* note 61; interview with Tricia O'Connor, *supra* note 61; interview with Mary Gibson Scott, *supra* note 36. GYCC officials also note that the GYCC's interagency composition and ongoing dialogue fosters similar interagency relationships and coordination efforts among lower-level field staff addressing shared resource management issues across boundary lines.

105. *See infra* notes 676–682 and accompanying text.

scale,"[106] the effort ultimately floundered in the face of intense local political opposition.[107] Since then, outside observers have regarded the GYCC as cautious and somewhat ineffective, with little notable influence over the fate of the GYE.[108] Although some progress has occurred in efforts to coordinate resource management policies among the GYE federal agencies,[109] memories of the failed Vision process and ever-present political pressures have kept the GYCC mostly sidelined on high-profile issues. Change, meanwhile, has proceeded on the ground in a less centralized, less structured fashion.

State law and policy also play an important role on the

106. GREATER YELLOWSTONE COORDINATING COMM., DRAFT VISION FOR THE FUTURE: A FRAMEWORK FOR COORDINATION IN THE GREATER YELLOWSTONE AREA (1990).

107. The Vision process concluded with the issuance of a Framework document that largely endorsed the status quo. *Id.* The GYCC's Vision process is described and analyzed in Bruce Goldstein, *Can Ecosystem Management Turn an Administrative Patchwork into a Greater Yellowstone Ecosystem?*, 8 NW. ENVTL. J. 285 (1992); Pamela Lichtman & Tim W. Clark, *Rethinking the "Vision" Exercise in the Greater Yellowstone Ecosystem*, 7 SOC. & NAT. RES. 459 (1994); John Freemuth & R. McGreggor Cawley, *Science, Expertise and the Public: The Politics of Ecosystem Management in the Greater Yellowstone Ecosystem*, 40 LANDSCAPE & URB. PLAN. 211 (1998).

108. CLARK, ENSURING GREATER YELLOWSTONE'S FUTURE, *supra* note 103, at 73–74, 120–23; interview with Peter Aengst, *supra* note 95; interview with Mike Brennan, *supra* note 31; interview with Scott Christensen, *supra* note 57; interview with Mike Clark, Executive Director, Greater Yellowstone Coalition (retired), in Bozeman, MT (2017); interview with Bob Ekey, *supra* note 57; interview with Tom Oliff, *supra* note 26; interview with Ray Rasker, Executive Director, Headwaters Economics, in Bozeman, MT (2017); interview with Michael Scott, *supra* note 61; interview with Gary Tabor, Executive Director, Center for Large Landscape Conservation, in Bozeman, MT (2017); interview with Todd Wilkinson, *supra* note 66; interview with Louisa Willcox, *supra* note 45. Several of these interviewees also lamented that ecosystem management concepts now seem further advanced in the Crown of the Continent Ecosystem that embraces Glacier National Park in northwestern Montana. Interview with Peter Aengst, *supra*; interview with Mike Clark, *supra*; interview with Michael Scott, *supra*; interview with Gary Tabor, *supra.* For a brief description of the Crown of the Continent Ecosystem and regional management efforts, see Joseph L. Sax & Robert B. Keiter, *The Realities of Regional Resource Management: Glacier National Park and Its Neighbors Revisited*, 33 ECOLOGY L. Q. 233, 302–04 (2006); *see also* CROWN MANAGERS PARTNERSHIP, https://www.crownmanagers.org/ (last visited August 26, 2019) [https://perma.cc/LS5J-QC95].

109. Much of the GYCC's work is done through numerous subcommittees charged with addressing specific issues, such as wildfire management, the decline of whitebark pine, aquatic and terrestrial invasive species, and native fish restoration. Although the GYCC is a purely federal entity, these subcommittees typically include non-federal members, including state, local, and non-profit participants. Interview with David Diamond *supra* note 61; interview with Virginia Kelly, *supra* note 95.

GYE's multiple-use federal lands, adding more complexity to resource management across the region. On national forest and BLM lands, when Congress has not preemptively legislated in an area, state law applies and largely governs wildlife management, water administration, and environmental standards.[110] This lack of federal preemption explains why Montana, Wyoming, and Idaho are responsible for elk, bison, deer, and antelope found outside the GYE national parks and wildlife refuges. It also explains why these animals are not hunted inside the parks but are subject to hunting when found on other federal lands, including designated wilderness areas. And it explains why these states are now in charge of the GYE's wolves outside of the national parks and are managing them under the so-called "North American Model of Wildlife Conservation."[111] The possibility of state management of the GYE grizzly bears, moreover, helps explain the intense resistance to grizzly bear delisting within conservation groups.[112]

The states also govern the region's private lands through state property laws as well as related local planning and zoning requirements. These laws generally delegate planning authority to the twenty counties and numerous towns that are spread across the GYE.[113] And these local governmental bodies then oversee commercial and residential construction adjacent to national forest lands, an important concern in this era of intensified wildfires. State law similarly defines the standards and procedures governing the establishment of conservation

110. Cal. Coastal Comm'n v. Granite Rock Co., 480 U.S. 572 (1987); *see* GEORGE C. COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW 161–77 (7th ed. 2014).

111. The "North American Model of Wildlife Conservation" is an unofficial set of principles that views wildlife as a public trust responsibility primarily of the states, which have generally relied upon hunting and angling fees to support their wildlife conservation efforts. Valerius Geist et al., *Why Hunting Has Defined the North American Model of Wildlife Conservation*, *in* TRANSACTIONS OF THE 66TH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 175 (2001), http://conservationvisions.com/sites/default/files/why_hunting_has_defined_the_north_american_model_of_wildlife_conservation.pdf (last visited July 31, 2017) [https://perma.cc/ZG2E-PZBA]. See Martin Nie et al., *Fish and Wildlife Management on Federal Lands: Debunking State Supremacy*, 47 ENVTL. L. 797, 811–14 (2017), for a description and critical analysis of the North American Model.

112. *See infra* notes 211–213, 227–234 and accompanying text.

113. *See, e.g.*, IDAHO CODE § 67-6501 (2019); MONT. CODE ANN. § 76-1-101 (2019); WYO. STAT. ANN. §§ 18-5-301, 18-5-201 (2019).

easements on private lands,[114] a matter of great regional concern given the ongoing loss of winter habitat and open space.

These overlapping federal and state laws have created extreme jurisdictional complexity across the tristate GYE, which makes adopting and implementing common conservation policies a difficult challenge. Longstanding state antipathy toward the federal government only adds to this problem, as evidenced by a Wyoming law creating a "federal natural resource policy account" to fund state and local efforts to participate in and to influence federal land management as well as environmental decisions through litigation, lobbying, commenting, and research.[115] All three GYE states have also flirted with the movement to transfer federal lands to the states through legislative provisions or proposals.[116] When these jurisdictional complexities and intergovernmental antagonisms are multiplied across the GYE federal agencies, three different states, and more than twenty counties, the hard realities of promoting coherent and coordinated ecological management policies become painfully evident.

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114. *See, e.g.*, MONT. CODE ANN. § 76-6-201 (2019); IDAHO CODE § 55-2101 (2019); WYO. STAT. ANN. § 34-1-201 (2019); *see also infra* notes 641–651 and accompanying text (discussing conservation easements in the GYE).

115. WYO. STAT. ANN. § 9-4-218 (2019); *see also* WYO. STAT. ANN. § 9-14-102 (2019) (authorizing the State Attorney General, with the Governor's approval, to initiate legal challenges to "unauthorized federal agency actions" by the Environmental Protection Agency and Occupational Safety and Health Administration that impact the state's economic interests); Mike Koshmrl, *State Won't Cross Feds, Illegally Hunt Grizzlies*, JACKSON HOLE NEWS & GUIDE (April 30, 2019), https://www.jhnewsandguide.com/news/environmental/state-won-t-cross-feds-illegally-hunt-grizzlies/article_3e082e70-fc59-5cfd-9878-de2c246a41e2.html [https://perma.cc/WW75-3SA4] (explaining that in February, 2019, the Wyoming legislature authorized grizzly bear hunting notwithstanding the ESA, but the Wyoming Game & Fish Commission ultimately decided not to approve the hunt).

116. *See* Rebecca Wordy, *In Wyoming, A Cautious Public Lands Victory*, HIGH COUNTRY NEWS (Feb. 3, 2017), http://www.hcn.org/articles/in-wyoming-a-cautious-public-lands-victory [https://perma.cc/J2J6-9PTW] (reporting that since 2013, the Wyoming legislature has considered nine different federal land transfer-related bills); H.R. Cong. Res. 22, 62d Leg. Reg. Sess. (Idaho 2013), https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2013/legislation/HCR022.pdf [https://perma.cc/SAS5-K7AB] (demanding that the federal government immediately transfer all federal lands within Idaho to the state); H.R. 496, 64th Leg. Reg. Sess. (Mont. 2015), https://leg.mt.gov/bills/2015/billpdf/HB0496.pdf [https://perma.cc/5LER-2S7P] (calling for a Public Land Task Force, but vetoed by the Governor who stated that transfer of federal land was "the intended direction for this task force"); *see* Letter from Steve Bullock, Governor, Mont., to Linda McCulloch, Sec'y of State, Mont. (May 4, 2015), https://leg.mt.gov/bills/2015/AmdHtmH/HB0496GovVeto.pdf [https://perma.cc/3RH9-UDLS].

D. Conservation Science: Coming of Age

Ecosystem science has matured during the past thirty years with profound implications for nature conservation in the GYE. The scientific insights, which originally supported the ecosystem management concept in the GYE, have not only been validated but are of even greater immediacy in the face of accelerating human pressures, wildlife habitat losses, and looming climate change impacts. The ecosystem—defined in terms of components, processes, and functions—provides a comprehensive basis for understanding the natural world and how it functions.[117] Though scientists originally endorsed a stable view of nature that tended toward "equilibrium" through evolutionary processes, that "balance of nature" view is now discredited and replaced by one that conceives ecosystems in a perpetual state of change that is reflected in disequilibrium conditions.[118] To preserve ecosystems, it is therefore necessary to protect the various species, natural processes, and functional services that ecosystems provide. The ultimate goal is to maintain or restore ecological integrity and resiliency to enable native species as well as ecosystems to withstand ongoing change, whether natural or manmade.[119] Doing so also safeguards vital ecosystem services—including water filtration, flood control, nutrient cycling, and carbon sequestration—which are essential to human welfare.[120]

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117. On the ecosystem concept, see FRANK B. GOLLEY, A HISTORY OF THE ECOSYSTEM CONCEPT IN ECOLOGY: MORE THAN THE SUM OF THE PARTS (1993); JOEL B. HAGEN, AN ENTANGLED BANK: THE ORIGINS OF ECOSYSTEM ECOLOGY (1992); DONALD WORSTER, NATURE'S ECONOMY: A HISTORY OF ECOLOGICAL IDEAS (1985).

118. DANIEL B. BOTKIN, DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY (1990); S.T.A. Pickett & Richard S. Ostfeld, *The Shifting Paradigm in Ecology*, *in* A NEW CENTURY FOR NATURAL RESOURCES MANAGEMENT 261 (Richard L. Knight & Sarah F. Bates eds., 1995); Norman L. Christensen et al., *The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management*, 6 ECOLOGICAL APPLICATIONS 665 (1996).

119. David N. Cole et al., *Naturalness and Beyond: Protected Area Stewardship in an Era of Global Environmental Change*, 25 GEORGE WRIGHT FORUM 36, 44–47 (2008); Mark L. Shaffer & Bruce A. Stein, *Safeguarding Our Precious Heritage*, *in* PRECIOUS HERITAGE: THE STATUS OF BIODIVERSITY IN THE UNITED STATES 307–10 (Bruce A. Stein et al. eds., 2000). *See generally* CLIMATE AND CONSERVATION: LANDSCAPE AND SEASCAPE SCIENCE, PLANNING, AND ACTION (Jodi A. Hilty et al. eds., 2012) (providing an overview of conservation strategies in an era of climate change).

120. *See* NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen Dailey ed., 1997); James Salzman et al., *Protecting*

Over time, the discipline of conservation biology has emerged to make a compelling case for nature conservation and to define essential conservation strategies.[121] Drawing upon ecosystem science, biologists have identified three essential conservation strategies: (1) establish and maintain large, interconnected nature reserves; (2) plan and manage at an ecosystem (or landscape) scale; and (3) employ adaptive management concepts.[122] As predicted by island biogeography theory,[123] the enclave approach to nature conservation—simply setting aside national parks and wildlife refuges in order to protect species from extinction—has not proven to be an effective, long-term strategy for safeguarding biodiversity.[124] Rather, scientists have realized that biodiversity conservation must be pursued at a larger, ecosystem scale that enables natural processes to unfold with minimal human intervention.[125]

Conservation at this more expansive scale provides the opportunity for ecosystems to absorb the unpredictable disturbances endemic to disequilibrium systems, such as the 1988 Yellowstone fires. This approach is designed to promote resiliency, including the ecological capacity to withstand widespread or cumulative human-caused disturbances. Although the GYE wildland complex, including Yellowstone and Grand Teton

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Ecosystem Services: Science, Economics, and Law, 20 STAN. ENVTL. L. J. 309 (2011).

121. Michael F.E. Soulé, *What Is Conservation Biology?*, 35 BIOSCIENCE 727 (1985); Reed F. Noss, *Some Principles of Conservation Biology, as They Apply to Environmental Law*, 69 CHICAGO KENT L. REV. 893 (1994).

122. Robert B. Keiter, *Toward a National Conservation Network Act: Transforming Landscape Conservation on the Public Lands into Law*, 42 HARV. ENVTL. L. REV. 61, 90–93 (2018); Jocelyn L. Aycrigg et al., *Completing the System: Opportunities and Challenges for a National Habitat Conservation System*, 66 BIOSCIENCE 774 (2016).

123. *See* ROBERT H. MACARTHUR & EDWARD O. WILSON, THE THEORY OF ISLAND BIOGEOGRAPHY (1967); DAVID QUAMMEN, THE SONG OF THE DODO: ISLAND BIOGEOGRAPHY IN AN AGE OF EXTINCTIONS (1996).

124. William D. Newmark, *Legal and Biotic Boundaries of Western North American National Parks: A Problem of Congruence*, 33 BIOLOGICAL CONSERVATION 197 (1985); William D. Newmark, *Extinction of Mammal Populations in Western North American National Parks*, 9 CONSERVATION BIOLOGY 512 (1995); REED F. NOSS & ALLEN Y. COOPERRIDER, SAVING NATURE'S LEGACY: PROTECTING AND RESTORING BIODIVERSITY 172–74 (1994).

125. Reed F. Noss et al., *Core Areas: Where Nature Reigns*, *in* CONTINENTAL CONSERVATION: SCIENTIFIC FOUNDATIONS OF REGIONAL RESERVE NETWORKS 99 (Michael E. Soulé & John Terborgh eds., 1999); Richard J. Hobbs et al., *Evolving Ecological Understandings: The Implications of Ecosystem Dynamics*, *in* BEYOND NATURALNESS: RETHINKING PARK AND WILDERNESS STEWARDSHIP IN AN ERA OF RAPID CHANGE (Laurie Yung ed., 2010); NOSS & COOPERRIDER, *supra* note 124, at 157–72.

national parks as well as adjoining wilderness areas, closely tracks these nature reserve designation goals, it is still not large enough to guarantee the long-term survival of native species like the grizzly bear.[126] Scientists thus advocate connecting the GYE with other wildland complexes to ensure ecological resiliency and to promote genetic diversity within species.[127] This larger-scale conservation effort specifically seeks to link Greater Yellowstone with central Idaho wilderness areas and the Glacier-Bob Marshall wildland complex, thus expanding the effort to the landscape level.

Because existing protected lands are rarely sufficient to ensure ecosystem integrity and ecological resiliency in the face of inevitable changes, scientists have endorsed ecosystem- or landscape-level planning and management to achieve conservation objectives. The goal is to coordinate resource management efforts among the responsible agencies and landowners toward a common set of long-term biodiversity conservation goals within an ecologically defined setting.[128] Planning and management decisions should therefore be framed at an appropriate spatial and temporal scale, taking account of the ecosystem as well as the evolutionary and unstable nature of ecological processes. In the GYE, such an ecosystem management approach necessitates coordinating planning and decision processes among the four federal land management agencies, as well as with the three states, their political subdivisions, and local Native American tribes. It also requires identifying and protecting wildlife movement corridors to enable species to migrate and disperse to suitable habitat as well as to mate with other populations for genetic diversity purposes.[129] To

126. NOSS & COOPERRIDER, *supra* note 124, at 161–65; Craig L. Shafer, *The Unspoken Option to Help Safeguard America's National Parks: An Examination of Expanding U.S. National Park Boundaries by Annexing Adjacent Federal Lands*, 35 COLUM. J. ENVTL. L. 65–66 (2010).

127. Christopher P. Peck et al., *Potential Paths for Male-Mediated Gene Flow to and from an Isolated Grizzly Bear Population*, 8 ECOSPHERE 1 (2017); *see generally* CONTINENTAL CONSERVATION: SCIENTIFIC FOUNDATIONS OF REGIONAL RESERVE NETWORKS (Michael E. Soulé & John Terborgh eds., 1999) (explaining need for and strategies to achieve landscape-scale connectivity).

128. On ecosystem management, see KEITER, KEEPING FAITH, *supra* note 4, at 47–78; SKILLEN, ECOSYSTEM MANAGEMENT, *supra* note 77, at 156–57; ECOLOGICAL STEWARDSHIP: A COMMON REFERENCE FOR ECOSYSTEM MANAGEMENT (Nels C. Johnson et al. eds., 1999).

129. R. Travis Belote et al., *Identifying Corridors Among Large Protected Areas in the United States*, 11 PLOS ONE 1 (2016); Lynne Gilbert-Norton et al., *A Meta-Analytic Review of Corridor Effectiveness*, 24 CONSERVATION BIOLOGY 660, 667

sustain the GYE, these corridors should be designed to facilitate movement within the ecosystem and beyond it, which then expands the conservation effort to the landscape scale.

Given the disequilibrium quality of ecosystems, scientists have also endorsed adaptive management as a necessary component of any nature conservation strategy. The adaptive management concept is designed to address the uncertainties presented by often unpredictable ecological changes.[130] The goal is to maintain (or restore) ecological integrity and resilience by managing the various risks confronting wildlife as well as ecosystems, ensuring population viability and functional ecological processes.[131] To do so, adaptive management involves establishing baseline conditions, selecting management goals and strategies, monitoring ecological changes, assessing the effectiveness of the chosen strategy, and readjusting management approaches as necessary to achieve predefined conservation goals. It may also involve employing fine-filter or species-focused conservation strategies to ensure the survival of particular at-risk species not adequately protected by this ecosystem (or coarse-filter) approach.[132] In a warming world, these adaptive management strategies could prompt more active management efforts—such as the "assisted translocation" of displaced species—than is currently the practice in national parks and other protected areas.[133] Such proposals have already surfaced in the GYE, most notably as an alternative to secure

(2010); *See also* Symposium, *Animal Migration Conservation*, 41 ENVTL. L. 270, 270–79 (2011).

130. *See* F. Stuart Chapin III et al., *Planning in the Context of Uncertainty: Flexibility for Adapting to Change*, *in* BEYOND NATURALNESS, *supra* note 125, at 216; John D. Leshy, *Federal Lands in the Twenty-First Century*, 50 NAT. RESOURCES J. 111, 124–30 (2010); J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 427–44 (2010); Robert L. Glicksman, *Ecosystem Resilience to Disruptions Linked to Global Climate Change: An Adaptive Approach to Federal Land Management*, 87 NEB. L. REV. 833 (2009).

131. *See, e.g.*, 36 C.F.R. 219.8 (2019) (ecological integrity); NPS MANAGEMENT POLICIES, *supra* note 92, at 4.1 (maintain all components and processes of park ecosystems).

132. On the coarse and fine filter approaches to biodiversity conservation, see NOSS & COOPERRIDER, *supra* note 124, at 105–07; Malcolm L. Hunter, Jr., *Coping With Ignorance: The Coarse-Filter Strategy for Maintaining Biodiversity*, *in* BALANCING ON THE BRINK OF EXTINCTION: THE ENDANGERED SPECIES ACT AND LESSONS FOR THE FUTURE 266 (Kathryn A. Kohm ed., 1991).

133. Scott R. Loss et al., *Assisted Colonization: Integrating Conservation Strategies in the Face of Climate Change*, 144 BIOLOGICAL CONSERVATION 92 (2011); Alejandro E. Camacho, *Assisted Migration: Redefining Nature and Natural Resources Law under Climate Change*, 27 YALE J. REG. 171 (2010).

wildlife movement corridors.

These science-driven ecological conservation principles reflect the urgency scientists perceive as the world enters the newly labeled Age of the Anthropocene.[134] The Anthropocene describes a world where the human imprint is now ubiquitous across the globe because human activities—cultivated agriculture, mining, dam building, fossil fuel usage, atomic explosions, and the like—have noticeably altered the natural world with dramatic environmental consequences. This sweeping geoscience insight has potentially profound implications for nature conservation. It has spawned recent debates about whether wilderness is a true natural setting or a mere cultural construct in a human-dominated world, whether protected nature reserves are effective as a conservation strategy, and whether more, not less, human manipulation is called for to preserve species as well as ecological processes.[135] Regardless of the epochal label applied, profound challenges confront nature conservation efforts. Even in heavily protected areas like the GYE, human presence is ever more evident and its cumulative impacts mount across the landscape.

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134. Whether the Anthropocene represents a new geological epoch has stirred debate. Richard Monastersky, *Anthropocene: The Human Age*, 519 NATURE 144 (2015); Stanley C. Finney & Lucy E. Edwards, *The "Anthropocene" Epoch: Scientific Decision or Political Statement?*, 26 GSA TODAY 4 (2016); Elizabeth Kolbert, *Enter the Anthropocene-Age of Man*, NAT'L GEOGRAPHIC (Mar. 2011), https://www.nationalgeographic.com/magazine/2011/03/age-of-man/ [https://perma.cc/ERJ3-SDNS].

135. *Compare* EMMA MARRIS, RAMBUNCTIOUS GARDEN: SAVING NATURE IN A POST-WILD WORLD (2011), *and* Ronald Bailey, Opinion Editorial, *The Myth of Pristine Nature*, REASON (Aug. 26, 2011), https://reason.com/2011/08/16/the-myth-of-pristine/ [https://perma.cc/LK74-2W94], *and* Peter Kareiva, Michelle Marvier & Robert Lalasz, *Conservation in the Anthropocene*, BREAKTHROUGH INST., https://thebreakthrough.org/journal/issue-2/conservation-in-the-anthropocene (last visited July 17, 2019) [https://perma.cc/FG6L-79BM], *with* KEEPING THE WILD: AGAINST THE DOMESTICATION OF EARTH (George Wuerthner et al. eds., 2014), *and* PROTECTING THE WILD: PARKS AND WILDERNESS, THE FOUNDATION FOR CONSERVATION (George Wuerthner et al. eds., 2015), *and* Peter Landres, *Let It Be: A Hands-Off Approach to Preserving Wildness in Protected Areas*, *in* BEYOND NATURALNESS, *supra* note 125, at 88; *see also* George Wuerthner, *Anthropocene Boosters and the Attack on Wilderness Conservation*, INDEP. SCI. NEWS (May 12, 2015), https://www.independentsciencenews.org/environment/anthropocene-boosters-and-the-attack-on-wilderness-conservation/ [https://perma.cc/HN4B-33YT].

II. REVISITING THE GREATER YELLOWSTONE ECOSYSTEM: A THIRTY-YEAR REVIEW

Thirty years ago, the relationship between the Park Service and the Forest Service across much of the GYE was rife with controversy despite efforts to improve coordination. The Park Service, under its nonintrusive, natural regulation management policy, was committed to protecting the parks and park wildlife from degradation due to logging, drilling, and other activities occurring in the adjacent national forests. The Forest Service, long imbued with its utilitarian multiple-use philosophy, was equally intent on putting its forest lands to productive use and therefore reluctant to curtail industrial activities to accommodate the Park Service's concerns. During the intervening years, major conflicts played out over commercial logging, drilling, and mining on GYE national forest lands, though gradually the parties have mostly resolved these disputes. New recreation-related conflicts have come to the fore, however, while wilderness designation has languished. Wildlife management issues involving the GYE federal agencies and the three states have persisted, prompting both collaboration and conflict. Meanwhile, private lands have assumed an ever more important role in ensuring ecological sustainability as well as cultural and aesthetic continuity across the region. In this often-contested landscape, the need for an ecosystem-wide vision and meaningful coordination at all levels is undeniable in the face of conservation challenges that continue to defy the GYE's conventional boundaries.

A. The National Parks: Keeping Resource Preservation Foremost

Yellowstone and Grand Teton national parks sit at the center of the GYE. Under the National Parks Organic Act, the Park Service manages the parks "to conserve the scenery, natural and historic objects, and the wild life [therein] and to provide for the enjoyment of the [same] . . . by such means as will leave them unimpaired for the enjoyment of future generations."[136] As explained in the agency's Management Policies, this fundamentally preservationist mandate means:

136. 54 U.S.C. § 100101 (2018).

"[W]hen there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant."[137] To meet its non-impairment mandate, the Park Service acknowledges the need to constrain its own management actions within park boundaries and to address external threats to park resources.[138] Accordingly, the agency has endorsed the notion of landscape conservation to promote healthy ecosystems.[139] This intensified concern over resource issues external to the parks and related landscape conservation efforts represents a significant shift in management focus for an agency long regarded as insular and timid in extending itself outside park boundaries.[140]

1. Natural Regulation: Deferring to Nature

Thirty years ago, Yellowstone was in the early stages of its experiment with natural process—or natural regulation—management as conceived in the groundbreaking 1963 Leopold Report.[141] The goal of park management, according to the scientists who authored the report, should be to maintain or, when necessary, recreate biotic associations "as nearly as possible in the condition that prevailed when the area was first visited by

137. NPS MANAGEMENT POLICIES, *supra* note 92, § 1.4.3.

138. *Id.* §§ 1.5–1.6.

139. NAT'L PARK SERV., A CALL TO ACTION: PREPARING FOR A SECOND CENTURY OF STEWARDSHIP AND ENGAGEMENT 17 (2011); DEP'T OF THE INTERIOR ET AL., AMERICA'S GREAT OUTDOORS: A PROMISE TO FUTURE GENERATIONS 57 (2011); *see also* NAT'L PARK SYS. ADVISORY BD. SCI. COMM., REVISITING LEOPOLD: RESOURCE STEWARDSHIP IN THE NATIONAL PARKS (2012).

140. My 1989 GYE study examined the scope of the Park Service's regulatory authority outside Park boundaries while noting that political considerations generally deterred the agency from exercising any such authority. Keiter, *Taking Account*, *supra* note 1, at 948–51. Although the Management Policies impose a responsibility on park managers to address threatening external resource issues, there are few instances where the Park Service has sought to regulate directly what occurs on adjacent or nearby non-park lands. William J. Lockhart, *External Threats to Our National Parks: An Argument for Substantive Protection*, 16 STAN. ENVTL. L. J. 3, 35–45 (1997). Instead, the agency is approaching these concerns through a "cooperative conservation" strategy. *See* NPS MANAGEMENT POLICIES, *supra* note 92, § 1.6.

141. A.S. Leopold et al., *Wildlife Management in the National Parks* (1963), *reprinted in* AMERICA'S NATIONAL PARK SYSTEM: THE CRITICAL DOCUMENTS 237 (Lary M. Dilsaver ed. 1994) [hereinafter *Leopold Report*]. The report was commissioned by the Secretary of the Interior in response to public outrage over Yellowstone's aggressive elk culling policy, which was based on a livestock range carrying capacity model for managing the Park's elk. *See* RICHARD WEST SELLARS, PRESERVING NATURE IN THE NATIONAL PARKS: A HISTORY 195–201 (1997).

the white man . . . [so a] national park should represent a vignette of primitive America."[142] Taking the report to heart, the Park Service reversed its longstanding wildlife and wildfire management policies, adopting strategies to sustain and restore native species while also letting nature take its course without extensive human intervention.[143]

Under this new policy, the Park Service's natural process management approach was soon subject to intense scrutiny in Yellowstone. During the summer of 1988, massive wildfires—augmented by unusual drought conditions and high winds—burned across one-third of the Park and nearly consumed the historic Old Faithful Inn.[144] Following months of congressional investigations, internal agency reviews, and harsh outside criticism, Yellowstone's fire policy was reaffirmed, though subject to additional constraints.[145] Since then, as scientists predicted, the Park's forests, grasslands, and shrubs have rejuvenated themselves, lending credence to the restorative powers of nature when left to its own devices.[146] Park managers now carefully monitor naturally caused fires and continue to

142. *Leopold Repor*t, *supra* note 141, at 239. The report also characterized national parks as "ecological islands," explained that "most biotic communities are in a constant state of change due to natural or man-caused processes of ecological succession," and asserted that management "must be based upon current and continuing scientific research."

143. SELLARS, *supra* note 141, at 243–61; ROBERT B. KEITER, TO CONSERVE UNIMPAIRED: THE EVOLUTION OF THE NATIONAL PARK IDEA 177–99 (2013). *See also* Koel et al., *supra* note 18 (describing the Park Service's efforts to control non-native lake trout in Yellowstone Lake).

144. On the 1988 fires, see ROCKY BARKER, SCORCHED EARTH: HOW THE FIRES OF YELLOWSTONE CHANGED AMERICA (2005); MICAH MORRISON, FIRE IN PARADISE: THE YELLOWSTONE FIRES AND THE POLITICS OF ENVIRONMENTALISM (1993); Norman Christensen et al., *Interpreting the Yellowstone Fires of 1988*, 39 BIOSCIENCE 678 (1989).

145. The new constraints basically tightened the standards for when the Park Service would allow lightning-ignited fires to burn unchecked. U.S. DEP'T OF AGRIC. & U.S. DEP'T OF THE INTERIOR, FINAL REPORT AND RECOMMENDATIONS OF THE FIRE MANAGEMENT POLICY REVIEW TEAM AND SUMMARY OF PUBLIC COMMENTS, *reprinted in* 54 Fed. Reg. 25,660 (June 16, 1989). Subsequent federal fire policy reviews have basically reconfirmed this approach to wildfire management. U.S. DEP'T OF THE INTERIOR & U.S. DEP'T OF AGRIC., FEDERAL WILDLAND FIRE MANAGEMENT POLICY & PROGRAM REVIEW: FINAL REPORT (1995); U.S. DEP'T OF THE INTERIOR ET AL., REVIEW AND UPDATE OF THE 1995 FEDERAL WILDLAND FIRE MANAGEMENT POLICY (2001); U.S. DEP'T OF THE INTERIOR ET AL. GUIDANCE FOR IMPLEMENTATION OF FEDERAL WILDLAND FIRE MANAGEMENT POLICY (2009).

146. William H. Romme et al., *Twenty Years After the 1988 Yellowstone Fires: Lessons About Disturbance and Ecosystems*, 14 ECOSYSTEMS 1196, 1208–10 (2011); Daniel C. Donato et al., *Regeneration of Montane Forests 24 Years After the 1988 Yellowstone Fires: A Fire-Catalyzed Shift in Lower Treelines?*, 7 ECOSPHERE (2016).

employ controlled burns to help restore overgrown forest areas,[147] allowing nature to take its course when conditions are safe and intervening when necessary. Not only did the 1988 fires essentially validate the agency's natural process management policy, but, having burned indiscriminately across park and forest boundaries, they graphically highlighted the GYE's ecological connectedness, bringing the region's federal and state agencies together to better coordinate fire management policies.[148]

2. Recreation Controversies: Snowmobiles and Beyond

Both GYE national parks have regularly grappled with determining what recreational activities are appropriate given their legal obligation to preserve park resources in an unimpaired condition while allowing for public enjoyment. In Yellowstone, the acrimonious and long-running snowmobile controversy pitted an environmental community intent on ridding the Park of these loud, polluting machines during the quiet winter months against snowmobile enthusiasts and the town of West Yellowstone, which had proclaimed itself the "snowmobile capitol of the world."[149] During the 1960s, to attract visitors in the wintertime, Yellowstone officials approved snowmobile use in the Park, which gradually accelerated over the ensuing years. By the mid-1990s, more than 60,000 snowmobiles were entering the Park during the winter months, far outstripping the Park Service's predictions.[150] In 1997, following the killing of more than one thousand bison, the Fund for Animals filed a lawsuit claiming that the Park's bison were being enticed to follow its hard-packed, snowmobile-traveled winter roads in search of forage only to be killed by the state of Montana upon exiting the Park out of fear they might infect local

147. U.S. DEP'T OF THE INTERIOR, NAT'L PARK SERV., YELLOWSTONE NATIONAL PARK 2014 FIRE MANAGEMENT PLAN 8–9, 11–12 (2014), https://www.nps.gov/yell/learn/management/upload/YELL-2014-FMP-Final_sm.pdf [https://perma.cc/LF5G-Z5U5].

148. GREATER YELLOWSTONE COORDINATING COMM., WILDLAND FIRE MGMT. SUBCOMM., GYA INTERAGENCY WILDLAND FIRE MANAGEMENT PLANNING AND COORDINATION GUIDE (2017), https://docs.wixstatic.com/ugd/a0f00b_fee510c92a854db890ea3b01491eda34.pdf [https://perma.cc/U3YJ-CPT6].

149. *See* MICHAEL J. YOCHIM, YELLOWSTONE AND THE SNOWMOBILE: LOCKING HORNS OVER NATIONAL PARK USE (2009).

150. *Id.* at 128.

cattle with the brucellosis bacteria.[151] To settle the case, the Park Service agreed to prepare an environmental impact statement examining its winter-use policies, which finally provided the public an opportunity to comment on the unregulated snowmobile policy. The agency's conclusion was unequivocal: "Continued [snowmobile] use hinders the enjoyment of resources and values for which the parks were created, most notably natural soundscapes, clean and clear air, and undisturbed wildlife in a natural setting."[152] Citing its governing legal authorities, the Park Service announced in late 2000 that it would phase out snowmobiles over a three-year period, while encouraging less intrusive snowcoach access to enable visitors to continue enjoying the Park in winter.

What ensued was an epic struggle between competing federal courts over the Park's vacillating efforts to manage winter snowmobiling. After the Bush Administration assumed office in 2001, the Park Service reversed course and increased the number of snowmobiles permitted in the Park, subject to new noise control and guide requirements.[153] A Washington, D.C., federal district court, acting at the behest of environmental organizations, enjoined this new snowmobile plan, finding that the Park Service had not explained its policy reversal in light of its conservation mandate and that the change "was politically-driven and result-oriented" with no regard for the overwhelming public opinion opposing snowmobiles in the Park.[154] At the behest of the International Snowmobile Industry Association, a Wyoming federal district court promptly enjoined the reinstated Clinton-era no-snowmobiles rule, finding that the Park Service had not properly evaluated its environmental and safety aspects, had short-circuited public comment opportunity, and had ignored the economic harm to local businesses.[155]

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151. *Id.* at 126–27. *See also infra* notes 275–323 and accompanying text for discussion of the bison-brucellosis controversy.

152. Winter Use Plans for the Yellowstone and Grand Teton National Parks and John D. Rockefeller, Jr., Memorial Parkway, 65 Fed. Reg. 80,908, 80,917 (Dec. 22, 2000).

153. Winter Use Plans Final Rule for the Yellowstone and Grand Teton National Parks and John D. Rockefeller, Jr., Memorial Parkway, 68 Fed. Reg. 69,268 (Dec. 11, 2003) (to be codified at 36 C.F.R. pt. 7).

154. Fund for Animals v. Norton, 294 F. Supp. 2d 92, 108 (D.D.C. 2003). *See* Joanna M. Hooper, *Blowing Snow: The National Park Service's Disregard for Science, Law, and Public Opinion in Regulating Snowmobiling in Yellowstone National Park*, 34 ENVTL. L. REP. 10975 (2004).

155. Int'l Snowmobile Mfrs. Ass'n v. Norton, 304 F. Supp. 2d 1278 (D. Wyo.

In 2007, after the Park Service issued another plan allowing more than five hundred snowmobiles into the Park daily,[156] the D.C. federal court again blocked the plan. The court stated that "the fundamental purpose of the national park system is to conserve park resources and values" and that "conservation is to be predominant."[157] The Wyoming court responded by reinstating an earlier temporary rule, noting again the economic effect a snowmobile shutdown would have on local businesses.[158] Somehow, the Park Service then managed to strike an acceptable balance, which both quelled the litigation and dissuaded Congress from intervening.[159] The final plan adopted a flexible "daily transportation event" quota system that regulated access split between guided snowmobile parties and snow coaches, imposed a best-available technology requirement to control emissions and noise, and retained the guide requirement.[160] Pressured by Cody, Wyoming, politicians, the Park Service also agreed to keep Sylvan Pass open at the Park's eastern entrance to support a local snowmobile rental business, despite the $325,000 annual cost to control the area's extreme avalanche danger.[161]

Wintertime in Yellowstone is now cleaner and quieter, the Park's wildlife is more secure, and more environmentally benign

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2004). The D.C. federal court had reinstated the 2000 Clinton-era snowmobile rule after enjoining the new Bush Administration rule.

156. NATIONAL PARK SERVICE, WINTER USE PLANS FINAL ENVIRONMENTAL IMPACT STATEMENT: YELLOWSTONE AND GRAND TETON NATIONAL PARKS, VOL. JOHN D. ROCKEFELLER, JR. MEMORIAL PARKWAY VOL. 1 (2007), https://www.nps.gov/yell/learn/management/upload/vol1_abstract_table_contents_summary.pdf [https://perma.cc/L3UU-5C2G].

157. Greater Yellowstone Coal. v. Kempthorne, 577 F. Supp. 2d 183, 191 (D.D.C. 2008).

158. *See* Wyoming v. U.S. Dep't of the Interior, 587 F.3d 1245, 1249–51 (10th Cir. 2009) (describing the Wyoming federal district court's decision and finding the case moot).

159. *See, e.g.*, National Park Snowmobile Restrictions Act of 2001, H.R. 1465 107th Cong. (2001); Yellowstone Protection Act, S. 965 108th Cong. (2003); National Park Service Winter Access Act, S. 365 107th Cong. (2001).

160. 36 C.F.R. § 7.13 (2019); U.S. DEP'T OF THE INTERIOR, NAT'L PARK SERV., YELLOWSTONE NATIONAL PARK WINTER USE PLAN/SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (2013); Special Regulations; Area of the National Park System; Yellowstone National Park; Winter Use, 78 Fed. Reg. 63,069 (Oct. 23, 2013) (to be codified at 36 C.F.R. pt. 7).

161. Cory Hatch, *Sylvan Pass Pricey to Open*, JACKSON HOLE NEWS & GUIDE (Mar. 9, 2011), https://www.jhnewsandguide.com/news/environmental/article_18c87c9f-4e26-5e01-81cc-c989d0716a10.html [https://perma.cc/XEJ7-3QYX]; interview with Dan Wenk, recently retired Yellowstone National Park Superintendent, by telephone (2019).

snow coach travel seems to be displacing snowmobiles as the preferred way to experience this winter wonderland. The combination of determined litigation, detailed scientific research, and persistent public pressure seems to have ultimately moved the Park Service to take seriously its responsibility to privilege conservation and to reevaluate the role of high-speed motorized recreation in the Park. The outcome reflects the view that more contemplative or reflective forms of recreation consistent with the protected natural setting should ordinarily be the norm in national parks.[162]

Besides, opportunities abound to explore the GYE on snowmobiles in the national forests outside the Park, a fact that reinforces the linkages between the region's various public lands for recreational purposes.[163] The entire episode suggests that once a recreational activity gains a toehold in a national park, the activity will be difficult to terminate or regulate, particularly once local businesses and national organizations acquire a financial interest in it.[164] The Yellowstone snowmobiling controversy thus serves as a cautionary tale for whenever particular recreation constituencies and related business interests seek approval of their own activity inside a national park.

The Yellowstone snowmobile issue ultimately extended beyond the GYE and spawned a major national controversy over the relationship between recreation and conservation in the national park setting. The controversy arose in 2005 over proposed revisions to the Park Service's all-important Management Policies. The revisions would have altered the agency's longstanding interpretation of the Organic Act by privileging recreation over conservation and, thus, opening the door for more motorized recreation in the parks.[165] A public

162. YOCHIM, YELLOWSTONE AND THE SNOWMOBILE, *supra* note 149, at 211–14. *See generally* JOSEPH L. SAX, MOUNTAINS WITHOUT HANDRAILS: REFLECTIONS ON THE NATIONAL PARKS (1980) (advocating for reflective forms of recreation in national parks).

163. *See* GREATER YELLOWSTONE WINTER VISITOR USE MGMT. WORKING GRP., WINTER VISITOR USE MANAGEMENT: A MULTI-AGENCY ASSESSMENT (1999).

164. In contrast to the Yellowstone snowmobile controversy, Glacier National Park never permitted snowmobiles into the Park and thus had little difficulty adopting a rule that prohibited them. *See* Michael J. Yochim, *Snow Machines in the Gardens: The History of Snowmobiles in Glacier and Yellowstone National Parks*, MONTANA: THE MAGAZINE OF WESTERN HISTORY, Autumn 2003, at 2.

165. Following the 2004 election, Deputy Assistant Secretary of the Interior, Paul Hoffman, who previously managed the Cody, Wyoming, Chamber of

outcry ensued, accusing the Interior Department of reversing a half-century of consistent national park policy for political purposes. Following a Senate hearing and robust editorial criticism in national newspapers, the Park Service relented and made only minor changes to its policies, preserving its conservation-first priority.

Other recreational controversies have also bedeviled the GYE national parks in recent years, posing similar conservation-versus-enjoyment issues. Since the 1950s, Yellowstone has banned boats from the Park's rivers, but beginning in the 1980s, whitewater kayak enthusiasts have regularly pushed to open Park waters to their sport. In a 1988 decision, the Park rejected the request, finding that paddlers plying the Park's pristine rivers could damage geothermal features, displace wildlife, harm streamside vegetation, and create safety problems.[166] In 2000, Park officials again demurred, rejecting a new proposal for an experimental limited permit system.[167] Since then, the kayaking proponents have turned to Congress to intervene, eventually convincing Wyoming's lone representative to introduce legislation requiring the Secretary of the Interior "to promulgate regulations to allow the use of hand-propelled vessels on certain [GYE national park] rivers and streams," but the bill failed.[168] A similar controversy has surfaced over the use of pack rafts for fishing on remote rivers and lakes in the two parks, but the Park Service has rejected requests to allow these

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Commerce, where he led the opposition to Yellowstone's proposed ban on snowmobiling in the Park, quietly drafted revisions to the agency's Management Policies that altered its longstanding interpretation of the Organic Act prioritizing its resource conservation responsibility. Hoffman's revisions would have refocused "impairment" assessments to consider visitor enjoyment along with resource conditions, equated visitor enjoyment with recreational use, and reduced the protection given to natural soundscapes. KEITER, TO CONSERVE UNIMPAIRED, *supra* note 143, at 75.

166. Michael J. Yochim, *Kayaking Playground or Nature Preserve?: Whitewater Boating Conflicts in Yellowstone National Park*, MONTANA: THE MAGAZINE OF WESTERN HISTORY, Spring 2005, at 52, 58–59; U.S. DEP'T OF THE INTERIOR YELLOWSTONE NAT'L PARK, BOATING ON YELLOWSTONE'S RIVERS: AN ANALYSIS AND ASSESSMENT 13–39 (1988).

167. Yochim, *Kayaking*, *supra* note 166, at 60–62*; see also* American Whitewater's Yellowstone Proposal (1998) (available from author).

168. Yellowstone and Grand Teton Paddling Act, H.R. 974 114th Cong. (2015); William Freihofer, *A Group of Paddlers Works to Make Kayaking Legal on Yellowstone's Rivers*, HIGH COUNTRY NEWS (Nov. 21, 2013), https://www.hcn.org/issues/45.19/a-group-of-paddlers-works-to-make-kayaking-legal-on-yellowstones-rivers [https://perma.cc/PYQ6-KL7B].

intrusive devices into the backcountry.[169]

Another recreation controversy recently engulfed Grand Teton over requests to extend a paved bicycle trail through the Park's primitive Moose-Wilson corridor, where a semi-paved road provides a slow, narrow automobile route connecting the town of Wilson with Park headquarters at Moose. Cycling enthusiasts sought to complete a bike loop trail parallel to the road, but the Park Service concluded that the environmental impacts would negatively affect the area's natural as well as cultural resources and increase the development footprint.[170] Taken alone, these various recreational activity requests may only marginally affect the natural setting, but collectively and over time they would permanently reshape the landscape and alter forever how people experience these special places.

3. Park Visitation: Dealing with Crowds

In recent years, the sheer number of annual visitors to the GYE national parks has begun to alarm the Park Service and environmental advocates, while the region's gateway communities have experienced record-setting seasons. Since Yellowstone's Fishing Bridge controversy during the 1980s,[171] the Park Service has not expanded overnight accommodations or campgrounds in the two parks, relying on the nearby communities along with Forest Service and private campgrounds to handle the mounting crush of seasonal visitors. Park visitor numbers are revealing: Yellowstone's annual visitation has surged from 2,226,000 in 1985 to 4,257,000 in 2016 (nearly a 50 percent increase), while Grand Teton's visitation increased from 1,334,000 in 1985 to 3,270,000 in 2016

169. Yellowstone and Grand Teton Paddling Act, *supra* note 168; River Paddling Protection Act, H.R. 3492, 113th Cong. (2013); *see* Kurt Repanshek, *NPS Director Jarvis States Agency's Opposition to Yellowstone-Grand Teton Paddling Bill*, NAT'L PARKS TRAVELER (Nov. 21, 2015), https://www.nationalparkstraveler.org/2015/11/nps-director-jarvis-states-agencys-opposition-yellowstone-grand-teton-paddling-bill [https://perma.cc/URJ8-MZDX].

170. U.S. DEP'T OF THE INTERIOR NAT'L PARK SERV., MOOSE-WILSON CORRIDOR FINAL COMPREHENSIVE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT v–vii, 8–9 (2015).

171. *See* Keiter, *Taking Account*, *supra* note 1, at 945; SCHULLERY, *supra* note 7, at 187–90 (describing the Fishing Bridge controversy, which involved the Park Service ultimately declining to close a campground in grizzly bear habitat despite earlier representations that it would, largely due to political pressure from the Wyoming congressional delegation and the town of Cody).

(a 60 percent increase).[172] The result is overcrowding and environmental damage at popular sites,[173] deteriorating Park roads, facilities and waste systems, and increasing visitor-wildlife incidents—all of which strain park personnel and budgets in a time of regular funding shortfalls. At the same time, visitors to the two parks spent nearly $1.04 billion locally, highlighting the strong economic connection between the parks and neighboring communities.[174]

The Park Service has the legal authority to address the growing visitation problem. The National Parks Organic Act, as interpreted by the courts and the agency's Management Policies, prioritizes resource protection over visitation.[175] Indeed, the courts have consistently sustained Park Service-imposed limitations on backcountry visitation and use.[176] Park officials, however, have been notably reluctant to impose any limits on visitor or automobile numbers during the peak summer season.[177] Park concessionaires and the nearby gateway communities, both heavily dependent upon the seasonal revenues park visitors generate, have shown no inclination to support any limits on park visitation. Discussions about alternate transportation systems to reduce the number of automobiles in Yellowstone have occurred, but the Park's vast size and wary neighbors make this a difficult, expensive, and

172. *Yellowstone National Park Visitation Statistics*, NAT'L PARK SERVICE, https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=YELL (last visited May 25, 2019) [https://perma.cc/EL9F-2AJ6].

173. Interestingly, a recent Yellowstone National Park survey reveals that 75 percent of the Park's visitors are first-time visitors and that more than 90 percent of these visitors are satisfied with their national park experience. Todd Wilkinson, *Cam Sholly's Agenda for Safeguarding Yellowstone*, MOUNTAIN J. (June 10, 2019), https://mountainjournal.org/yellowstone-is-confronting-many-major-threats [https://perma.cc/QC3K-7PRN].

174. CATHERINE CULLINANE THOMAS ET AL., 2017 NATIONAL PARK VISITOR SPENDING EFFECTS: ECONOMIC CONTRIBUTIONS TO LOCAL COMMUNITIES, STATES, AND THE NATION 23, 30 (2019).

175. *See supra* note 137 and accompanying text.

176. *See, e.g.*, River Runners for Wilderness v. Martin, 593 F.3d 1064 (9th Cir. 2010) (sustaining Park Service limits on Grand Canyon raft trips); Southern Utah Wilderness Alliance v. Dabney, 387 F. Supp. 2d 1178 (D. Utah 2005) (sustaining Park Service decision closing road to off-road vehicles to protect park resources).

177. *See* KEITER, TO CONSERVE UNIMPAIRED, *supra* note 143, at 41–63 (reviewing the history of tourism in the national parks and the Park Service's approach to tourism, including efforts to regulate visitor numbers and automobiles).

politically fraught option.[178] Though the GYE agencies have identified visitation pressures as a region-wide issue, they have yet to figure out how to dissuade visitors from flocking to the premier attractions in the two national parks by promoting alternative sightseeing options. Because the ongoing growth in park visitation is not likely to abate, the obvious question is what might constitute a breaking point, compelling the Park Service to take action. That question, according to Yellowstone's recently retired superintendent, "needs to be addressed, and we need to start the conversation."[179] And that conversation will need to include the parks' gateway communities and other neighbors.

4. The Grand Teton Jurisdictional Controversy: Who's in Charge?

A major jurisdictional controversy with important resource management overtones has surfaced in Grand Teton National Park. Although federal-state tensions have long simmered in the Park over wildlife and other issues, the Park Service decision to cede jurisdictional authority to Wyoming on non-federal lands inside the Park raised the matter to another level. In late 2014, in response to an inquiry from the Wyoming Game and Fish Department about hunting wolves on private inholdings in the Park, the regional Park Service office concluded that a blanket wildlife protection regulation prohibiting hunting in national parks would no longer apply on private and state inholdings within Grand Teton National Park.[180] This has opened the door

178. Todd Wilkinson, *Booming Tourism Becomes a Stress Test for Yellowstone*, NAT'L GEOGRAPHIC (May 2016), http://www.nationalgeographic.com/magazine/2016/05/yellowstone-national-parks-tourism/ [https://perma.cc/C5TL-QL3F]; Gazette Opinion, *Traffic's Toll on Yellowstone*, BILLINGS GAZETTE (Sept. 3, 2017), https://billingsgazette.com/opinion/editorial/gazette-opinion-traffic-s-toll-on-yellowstone/article_3755d49a-0cb5-568f-975f-b4edc5d63a29.html [https://perma.cc/2USZ-6M95].

179. Interview with Dan Wenk, *supra* note 161.

180. Letter from Tammy Whittington, Associate Regional Director, National Park Service, to Brian Nesvik, Chief Game Warden, Wyoming Game and Fish Department (Nov. 11, 2014) (on file with author). The Park Service wildlife regulation at issue is found at 36 C.F.R. § 2.2 (2019), which generally prohibits hunting in national park areas unless "specifically mandated by Federal statutory law." According to the letter, the Park Service no longer asserts legislative jurisdiction over private lands within the Park, a concession that would also seem to apply to the two-state school trust land sections also found within the Park. *See* Mike Hoshmrl, *Park Service Decision Opens Way for Hunting in Teton Park*

for Wyoming to permit hunting on roughly 2,300 acres within the Park. The decision reversed a longstanding agreement between the Park and Wyoming that conceded wildlife regulatory authority to the Park Service within the Park's boundaries, except for a statutorily established elk reduction program.[181]

This jurisdictional controversy raises several concerns. Wildlife management inside the national parks is generally the exclusive responsibility of the Park Service, so this new arrangement sets a troublesome precedent. Hunting has long been regarded as inappropriate within national parks, where conservation is the watchword. Moreover, park visitors and their park experience could be put at risk with any hunting inside park boundaries. Conservation groups are now litigating the matter, asserting that the Park Service cannot legally relinquish its authority to the state. A Wyoming federal district court rejected that argument,[182] however, and the case is now on appeal. This unexplained concession muddles jurisdictional arrangements within Grand Teton National Park—a matter that is already quite complicated on federal lands outside the region's national parks.[183] The litigation's resolution will not only clarify wildlife management jurisdiction on inholdings in Grand Teton but could also support similar state jurisdictional claims over inholdings in other national parks if Wyoming prevails.

These manifold national park resource management issues have obvious implications within the GYE and beyond. First, they illustrate the innate connections between the GYE national parks and the surrounding landscape, highlighting the importance of coordinated management approaches. Second, as the regional economy continues to transition from resource extraction to tourism and recreation, economic and other pressures will only mount to expand recreational activities into

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Inholdings, JACKSON HOLE DAILY (Dec. 11, 2014), http://www.jhnewsandguide.com/news/environmental/park-service-decision-opens-way-for-hunting-in-teton-park/article_553771aa-5cd6-51b8-8187-613ed762238e.html [https://perma.cc/44DF-H8B8].

181. 16 U.S.C. § 673c (2018); *cf.* Mayo v. Reynolds, 875 F.3d 11 (D.C. Cir. 2017) (describing legal authority for hunting in Grand Teton National Park and related policy).

182. Nat'l Parks Conservation Ass'n v. U.S. Dep't of the Interior, No. 16-CV-306-SWS (D. Wyo. 2018) (slip opinion on file with author).

183. *See infra* notes 742–750 and accompanying text for additional discussion about jurisdictional complexity in the GYE.

the national parks. Third, if the Park Service—with its preservationist, conservation-first mandate—is unable to regulate or otherwise control motorized and other intrusive recreational activities, there is little likelihood the Forest Service and other agencies will fare any better. This would inevitably put additional stress on wildlife and other natural features across the region. Finally, given Yellowstone's prominence in the national park system, the policies adopted in the GYE to address these intertwined wildlife-recreation-tourism-jurisdictional issues will set the standard for other national parks, making it vitally important to resolve the matter correctly here. And that will require acute sensitivity to the parks' central role in the GYE and a shared commitment to coordination among the responsible federal agencies as well as the states, local governments, and the private sector.

B. Wildlife: The Relevance of Conventional Boundaries

Wildlife concerns are regularly invoked to define the scope of the GYE, highlighting the irrelevance of conventional boundaries and the need for integrated management across jurisdictions. During the past thirty years, major battles have been waged over the GYE's "charismatic megafauna"—grizzly bears, wolves, bison, and elk—and these skirmishes continue. Where federal law, namely the Endangered Species Act (ESA), has primarily defined responsibility for the region's grizzly bears and wolves, state law has now assumed greater importance following removal (or delisting) of the wolf from the federal endangered species registry and ongoing efforts to do the same for the grizzly bear. Although federal law protects the region's bison and elk when inside the national parks and wildlife refuges, state law controls their fate once they exit these sanctuaries. Jurisdictional boundaries may mean little to these charismatic species as they roam about the GYE, but these lines dictate their legal status and related management responsibilities, underscoring the critical role the three GYE states play in maintaining the region's ecological integrity and the need for collaborative management. This section will examine these wildlife controversies, focusing on their legal-jurisdictional dimensions.

1. Grizzly Bears: A Defining and Still Controversial Symbol

No animal defines the GYE like the wide-ranging grizzly bear. Indeed, the bear is synonymous with the ecosystem itself and is directly related to regional ecosystem management concepts. Grizzly bear habitat was originally employed to define GYE boundaries,[184] and the federal grizzly bear recovery effort has embraced fundamental ecosystem management strategies. Though protected under the ESA in 1975, the Yellowstone bear population was still slipping toward extinction during the 1980s, triggering an all-out effort to nurse the bears back to health. Since then, the bear's status as an endangered species has reshaped federal resource management practices and brought federal and state officials together in the recovery effort. A defining symbol of the GYE's wildness, the bear also serves today either as the poster child for how the ESA is meant to work or, alternatively, as the imminent victim of a political system unduly dismissive of science and subservient to state and local interests.

a. Early Recovery Efforts

Much feared as a predator, grizzlies were omnipresent across the western landscape when Lewis and Clark first traversed the region. Once Euro-American settlement was underway, the new settlers, with federal assistance, set about eradicating the bear to protect their livestock. They eventually relegated the bear to a few remote mountain strongholds. One of those strongholds was Yellowstone National Park, where the Park Service initially sought to eliminate grizzlies to safeguard visitors and other more valued animals. By the 1950s, however, the Park's bears were not only tolerated but were actually fed at garbage dumps, where visitors gleefully observed them from nearby bleachers. But following the Leopold Report in the mid-1960s,[185] the Park Service abruptly closed the garbage dumps in an effort to return the bears to their natural state and break their habituation to people. Yet as predicted by knowledgeable biologists, the bears still sought out human foods, creating

184. FRANK C. CRAIGHEAD, JR., TRACK OF THE GRIZZLY 5, 239 (1979); Patten, *supra* note 6, at 21–23.

185. *Leopold Report*, *supra* note 141 and accompanying text.

unwelcome conflict with park visitors, which often led to the death of the bear. The Park's grizzly bear population—isolated from other bear populations further north—crashed, dropping to an estimated 136–312 bears and prompting its placement on the federal endangered species list in 1975.[186] By then an Interagency Grizzly Bear Study Team had been formed to gather scientific information about bear numbers, mortality trends, habitat needs, and existing threats.[187]

Yet listing under the ESA and establishment of a task force did not stop the grizzly population decline. In 1985, spurred by the newly created Greater Yellowstone Coalition,[188] Congress undertook an inquiry into how the GYE federal agencies were managing the area, with a focus on the shrinking bear population. The ensuing Congressional Research Service report concluded that "the Federal grizzly bear management program in the [GYE] is flawed,"[189] noting both the presence of "black holes" where bears were dying at alarming rates and an excessive number of access roads that had fragmented bear habitat across the region. The report recommended that the agencies improve coordination efforts, establish uniform data collection standards, develop a comprehensive road management plan, and address ongoing grizzly bear mortality concerns. In response, the Interagency Grizzly Bear Committee (IGBC) and the Yellowstone Ecosystem Subcommittee—both consisting of upper-level managers from the Park Service, Forest Service, FWS, and the affected states—took steps to address the threats confronting bears. These threats included timber harvesting, energy development, livestock grazing, and other activities occurring on the national forests surrounding Yellowstone National Park. In 1986, the IGBC modified the Management Guidelines for grizzlies in the Greater Yellowstone Area, imposing more rigorous resource management requirements governing extractive activities and new road construction, plus

186. 50 C.F.R. § 17.11 (2019).

187. For a brief history of the grizzly bear in the Yellowstone region, see SELLARS, *supra* note 141, at 249–53; ALICE WONDRAK BIEL, DO (NOT) FEED THE BEARS: THE FITFUL HISTORY OF WILDLIFE AND TOURISTS IN YELLOWSTONE 111–12 (2006); *see also* JOHN J. CRAIGHEAD ET AL., THE GRIZZLY BEARS OF YELLOWSTONE: THEIR ECOLOGY IN THE YELLOWSTONE ECOSYSTEM 13–47 (1995).

188. Robert Pahre, *Showdown at Yellowstone: Victims and Survivors of Ecosystem Management*, 50 J. WEST 66, 66 (2011).

189. CONG. RESEARCH SERV., LIBRARY OF CONG., 99TH CONG., GREATER YELLOWSTONE ECOSYSTEM: AN ANALYSIS OF DATA SUBMITTED BY FEDERAL AND STATE AGENCIES 15 (Comm. Print 1986) [hereinafter CRS ECOSYSTEM REPORT].

adopting a "Management Situation" zoning scheme to better identify and protect prime bear habitat.[190] Fearing possible congressional intervention, the agencies were noticeably increasing their cooperative efforts to better manage the bear and the area as a whole.

In 1993, the FWS issued the Grizzly Bear Recovery Plan,[191] a document intended as a roadmap to removing the bear from the endangered species list.[192] The Recovery Plan set specific population targets, defined in terms of the number and distribution of females with cubs-of-the-year over a six-year period, and set annual human-caused mortality limits for each ecosystem. Yet conservation groups sued to revise the plan, alleging that it ignored the bear's habitat needs, a critical concern in the Yellowstone region where extractive resource development activities in the surrounding national forests impinged on much suitable habitat. In *Fund for Animals v. Babbitt,*[193] a federal court agreed, ruling that the FWS had violated the ESA's requirement that delisting must be based on "objective, measurable criteria," which necessarily included standards to measure effective grizzly bear habitat. But the court did not order the FWS to designate critical habitat for the bear, accepting the agency's explanation that local social-tolerance concerns argued against such designation.[194] At the same time, conservation groups were mounting successful

190. U.S. FISH & WILDLIFE SERV. ET AL., INTERAGENCY GRIZZLY BEAR GUIDELINES (1986). The guidelines outlined five management situation (or habitat) areas of declining importance to grizzly bear recovery and subject to increasingly less stringent management requirements. For example, in Management Situation 1 habitat, described as high quality or prime grizzly habitat, the bear was given priority and incompatible activities must either be mitigated or excluded, whereas in Management Situation 2 habitat, described as lacking high population centers of bears, bear habitat "is an important, but not the primary, use of the area." *Id.* at 3–4.

191. U.S. FISH & WILDLIFE SERV., GRIZZLY BEAR RECOVERY PLAN (1993) [hereinafter 1993 RECOVERY PLAN].

192. *Id.* at ii. The Recovery Plan explained that there were five distinct grizzly bear populations in the continental United States: Yellowstone, Northern Continental Divide, Cabinet Mountains, Selkirk Mountains, and North Cascades. Of the five populations, only the Yellowstone and Northern Continental Divide populations boasted sufficient numbers to even consider eventual delisting under the ESA; the other three populations were quite small and isolated. *Id.* at 13–18.

193. 903 F. Supp. 96, 111–13 (D.D.C. 1995).

194. *Id.* at 115–17*; see* 50 C.F.R. 424.12(a)(1)(i) (2019) (empowering the FWS to decline to designate critical habitat when "not prudent," because "[t]he species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species").

challenges to national forest plans and timber harvesting decisions, arguing that access roads and logging activities threatened the bear.[195] Their goal was to ensure that habitat maintenance criteria were incorporated into any eventual delisting proposal so that the Yellowstone bears would have sufficient secure habitat over the long term.[196]

b. Initial Delisting Effort

As bear numbers continued to increase, reaching an estimated five hundred bears in the early 2000s, the FWS prepared to remove (delist) the Yellowstone grizzly bear population from the federal endangered species list. The consequences of delisting would be enormous; the bear would no longer enjoy federal legal protection, which gave the FWS effective veto power over logging, mining, and other activities on the region's national forest lands.[197] Rather, the bear would be subject to state management, opening the door for sport hunting and potentially reducing habitat protections. In 2007, the responsible agencies adopted recovery criteria and management standards in a Conservation Strategy document.[198] It established a 9,210 square mile Primary Conservation Area (largely on the region's federal lands) where bears were essentially given priority; set guidelines for managing bear habitat, bear population, and mortality standards; and laid out protocols for monitoring bear numbers upon delisting.[199] Under the Conservation Strategy, the Forest Service proceeded to amend the region's forest plans to better safeguard bear habitat within the Primary Conservation Area, using the year 1998 as a benchmark for measuring the amount of secure habitat. The plan amendments obligated the Forest Service to maintain secure habitat at 1998 levels, reduce the number of developed sites, constrain motorized ac-

195. *See infra* notes 397–405 and accompanying text.

196. Interview with Doug Honnold, former Managing Attorney, Earthjustice (by telephone, 2019), the attorney who handled the case.

197. 16 U.S.C. § 1536(b)(2) (2018); *see* Bennett v. Spear, 520 U.S. 154, 169–70 (1997); Thomas v. Peterson, 753 F.2d 754 (9th Cir. 1985).

198. INTERAGENCY CONSERVATION STRATEGY TEAM, FINAL CONSERVATION STRATEGY FOR THE GRIZZLY BEAR IN THE GREATER YELLOWSTONE AREA (2007) [hereinafter 2007 GRIZZLY BEAR CONSERVATION STRATEGY].

199. *Id.* at 5–9, 17. In addition to monitoring bears within the core Primary Conservation Area (PCA), the Conservation Strategy provided that the bears would also be monitored in all areas where they reside, which represented a change from the prior recovery strategy. *Id.* at 25.

cess, and limit commercial livestock grazing allotments while phasing out existing sheep allotments.[200] These plan commitments, in the form of standards and guidelines, were designed to serve as "adequate regulatory mechanisms" to help sustain delisted bear numbers.[201] At the same time, Idaho, Montana, and Wyoming each developed bear management plans to guide state management of bears outside the designated Primary Conservation Areas.[202]

In 2007, the FWS concluded that the Yellowstone grizzly bear population was recovered and proceeded to remove it from the federal endangered species list,[203] a move heralded in some quarters as proof that the ESA worked. The FWS rested its conclusion on the overall Yellowstone bear population (estimated at more than six hundred bears) and improved habitat protections, as reflected in the revised forest plans. The FWS also relied upon the Conservation Strategy document and the state bear management plans to conclude that "[w]e are confident that these mechanisms provide an adequate regulatory framework within which the Yellowstone grizzly bear population will continue to experience population stability and be appropriately distributed throughout significant portions of the range for the foreseeable future."[204]

Conservation groups were unconvinced, however, and went to court to block the delisting decision. They argued that the FWS was ignoring both the impact that disease and climate change were having on the bear's all-important whitebark pine seed food source and the absence of "adequate regulatory mechanisms" to maintain the bear population. In *Greater Yellowstone Coalition v. Servheen*,[205] a Montana federal court

200. U.S. DEP'T OF AGRIC., FOREST SERV., FOREST PLAN AMENDMENT FOR GRIZZLY BEAR HABITAT CONSERVATION FOR THE GREATER YELLOWSTONE AREA NATIONAL FORESTS RECORD OF DECISION (2006).

201. 2007 GRIZZLY BEAR CONSERVATION STRATEGY, *supra* note 198, at 68, 76–78.

202. *Id.* at 79; *see also* WYO. GAME & FISH DEPT., WYOMING GRIZZLY BEAR MANAGEMENT PLAN (2005).

203. Endangered and Threatened Wildlife and Plants; Final Rule Designating the Greater Yellowstone Area Population of Grizzly Bears as a Distinct Population Segment; Removing the Yellowstone Distinct Population Segment of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife; 90-Day Finding on a Petition To List as Endangered the Yellowstone Distinct Population Segment of Grizzly Bears, 72 Fed. Reg. 14,866 (Mar. 29, 2007) (to be codified at 50 C.F.R. pt. 17).

204. *Id.* at 14,926.

205. 672 F. Supp. 2d 1105, 1115, 1120 (D. Mont. 2009).

agreed with both arguments. The Ninth Circuit, however, was only persuaded that the FWS had not provided a rational explanation for why it believed the declining whitebark pine food source would not compromise bear numbers in light of climate change projections.[206] Over a vigorous dissent questioning the enforceability of the Conservation Strategy,[207] the Ninth Circuit held that existing forest plans and Park Service regulations offered enough legal protection for the bear upon delisting, noting that such protection was not expected to be as rigorous as the bear enjoyed under the ESA. Although finding the FWS's delisting proposal scientifically inadequate, the court otherwise regarded the grizzly bear recovery effort as "a tribute to the comprehensive multi-jurisdictional cooperative effort between federal and state agencies, as well as private interest groups," which constituted a "substantial wildlife conservation planning achievement."[208]

c. The 2017 Delisting Decision

It was only a matter of time before delisting surfaced again.[209] Responding to the Ninth Circuit decision, the FWS commissioned additional scientific studies to assess the impact that climate change and the loss of the whitebark pine food source might have on the GYE bears. In short order, these studies determined that the omnivorous grizzly bear would have little trouble finding substitute food sources, would not regularly come into conflict with people in its search for food, and that many bears were not even dependent on the whitebark pine as

206. Greater Yellowstone Coalition v. Servheen, 665 F.3d 1015, 1024–30 (9th Cir. 2011), *reversing in part*, 672 F. Supp. 2d 1105 (D. Mont. 2009). *See* Emily Gardner, *Adaptive Management in the Face of Climate Change and Endangered Species Protection*, 40 ECOLOGY L. Q. 229, 253 (2013).

207. 665 F.3d at 1032–36 (Thomas, J., dissenting in part) (arguing that "there is not a single federal or state law or regulation that provides a means for enforcing the Strategy's mortality limits").

208. *Id.* at 1032.

209. In the meantime, a conservation organization filed a petition under the ESA with the FWS to list the whitebark pine as an endangered species, arguing that disease, wildfire, and climate change had significantly reduced tree numbers and threatened its habitat. The FWS, however, denied the petition, finding that listing was warranted but precluded by higher priority pending listing petitions. The courts sustained the FWS's conclusion, concluding that the ESA granted the agency flexibility in prioritizing species for listing and that the agency provided an adequate explanation for its decision. Wild West Institute v. Kurth, 855 F.3d 995, 1007–08 (9th Cir. 2017).

a food source.[210] Meanwhile, the other federal agencies had reservations about the state bear management plans, originally prompting them to take a firm position against delisting until the states met certain conditions, including a meaningful seat at the table when the states determined hunting numbers upon delisting.[211] Following the 2016 election, however, the federal agencies promptly abandoned this position, believing the imminent delisting proposal represented "the best deal possible" when faced with the incoming Trump Administration.[212] Yellowstone's former superintendent put it this way in his interview: "It was amazing how the election changed the delisting issue, but the world didn't change for the bear."[213]

In June 2017, the FWS again announced that it was removing the Yellowstone grizzly bear population from the endangered species list.[214] The FWS concluded that this "distinct population segment" of bears, estimated at 600–750 animals, met demographic recovery targets, had adequate secure habitat, and actually verged on filling up the available habitat. This determination reflected the view that more bears would mean more conflicts with humans and among the bears themselves. Again noting that "adequate regulatory mechanisms" existed to protect the recovered bears, the FWS explained that a newly constituted Yellowstone Grizzly Bear Coordinating Committee (YGBCC)—consisting of the same federal, state, and tribal members (minus the FWS) currently involved with the recovery effort—would oversee future bear management, research activities, and financial needs.[215] Under the ESA, the FWS would be responsible for monitoring

210. *See, e.g.*, Cecily M. Costello et al., *Influence of Whitebark Pine Decline on Fall Habitat Use and Movements of Grizzly Bears in the Greater Yellowstone Ecosystem*, 4 ECOLOGY & EVOLUTION 2004 (2014); Charles C. Schwartz et al., *Body and Diet Composition of Sympatric Black and Grizzly Bears in the Greater Yellowstone Ecosystem*, 78 J. WILDLIFE MGMT. 68 (2014); Kerry A. Gunther et al., *Dietary Breadth of Grizzly Bears in the Greater Yellowstone Ecosystem*, 25 URSUS 60 (2014); Jennifer K. Fortin et al., *Temporal Niche Switching by Grizzly Bears but Not American Black Bears in Yellowstone National Park*, 94 J. MAMMALOGY 833 (2013).

211. Interview with Dan Wenk, *supra* note 161.

212. *Id.*

213. *Id.*

214. Endangered and Threatened Wildlife and Plants; Removing the Greater Yellowstone Ecosystem Population of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife, 82 Fed. Reg. 30,502 (June 30, 2017) (to be codified at 50 C.F.R. pt. 17).

215. *Id.* at 30,508, 30,596–618.

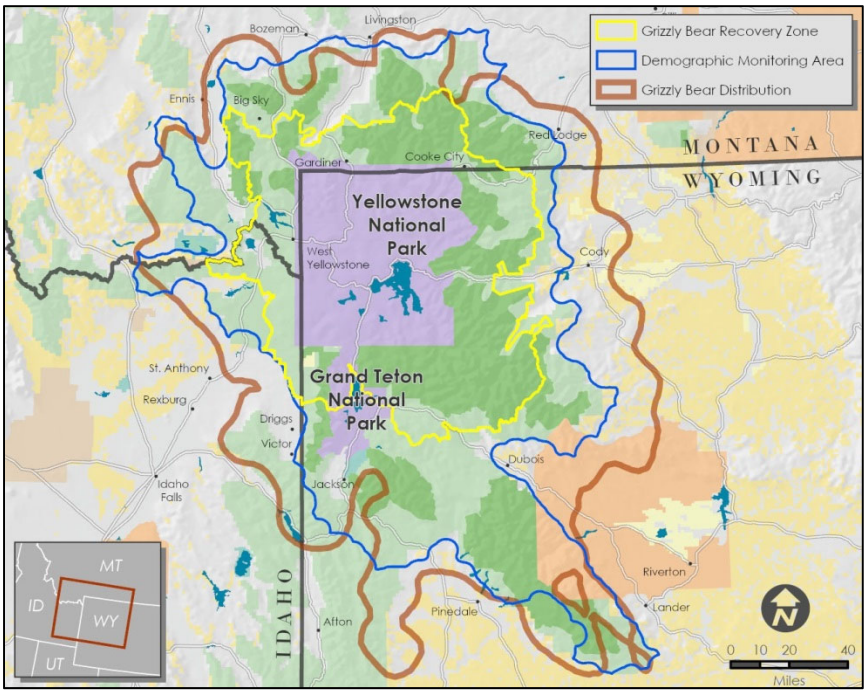

FIGURE 2. Yellowstone Grizzly Bear Range. The Yellowstone grizzly bear population is presently protected under the Endangered Species Act, though the U.S. Fish & Wildlife Service is seeking to remove—"delist"—the bear from federal management. The map illustrates the expanded scope of grizzly bear range in comparison to the original grizzly bear recovery zone and the designated demographic monitoring area under the current "delisting" proposal. © University of Utah Department of Geography DIGIT Lab

population, mortality, and habitat trends for at least five years and would have the authority to relist the bear if these trends proved negative.[216] Accordingly, the states assumed management of the bears, opening the door for hunting. The

216. 16 U.S.C. § 1534(g) (2018); 82 Fed. Reg., *supra* note 214, at 30,628. In addition, the FWS revised its demographic recovery criteria in 2017 and established a Demographic Monitoring Area that surrounds the PCA, in which grizzly bears numbers would be monitored to assess population numbers and trends, recognizing that the bears were notably expanding beyond the PCA. U.S. FISH & WILDLIFE SERVICE, GRIZZLY BEAR RECOVERY OFFICE, GRIZZLY BEAR RECOVERY PLAN SUPPLEMENT: REVISED DEMOGRAPHIC RECOVERY CRITERIA FOR THE YELLOWSTONE ECOSYSTEM (2017).

prospect of hunting was quite troublesome for several conservation groups, tribes, and the Park Service, particularly once Wyoming announced it would allow twenty-four bears to be taken during the upcoming hunting season.[217]

To no one's surprise, the FWS's delisting decision again prompted lawsuits challenging the action. Drawing upon a recent D.C. Circuit decision that defined delisting requirements for a "discrete population segment" of wolves in the Midwest,[218] a Montana federal district court ruled in September 2018 in *Crow Indian Tribe v. United States of America* that the FWS illegally "balkaniz[ed]" the Yellowstone grizzly bear population by delisting it without assessing the impact of delisting the Yellowstone bears on the grizzly bear population as a whole.[219] Citing the ESA's ecosystem-conservation purpose statement and the embedded statutory policy of "institutionalized caution,"[220] the court ruled: "The Service does not have unbridled discretion to draw boundaries around every potentially healthy population of a listed species without considering how that boundary will affect the members of the species on either side of it."[221] Noting that genetic interchange between the various grizzly

217. Matthew Brown, *States Divvy Up Yellowstone-Area Grizzly Hunt*, BILLINGS GAZETTE, Jan. 4, 2016; Karin Brulliard, *Grizzly Bear Trophy Hunt in Yellowstone Area Approved by Wyoming*, WASH. POST, May 23, 2018; Mike Koshmrl, *Chamber: Griz Hunt May Be Tourism Killer*, JACKSON HOLE NEWS & GUIDE, June 8, 2016. Although Wyoming imposed a no-hunting zone immediately east of Grand Teton National Park, critics complained that it was too small, and also noted the absence of a similar no-hunting zone adjacent to Yellowstone National Park. Interview with Doug McWhorter, Biologist, Wyoming Fish & Game Dept., in Jackson, WY (2019); interview with Tricia O'Connor, *supra* note 61; interview with Mary Gibson Scott, *supra* note 36; interview with Dan Wenk, *supra* note 161; interview with Michael Whitfield, *supra* note 39; interview with Louisa Willcox, *supra* note 45. Notably, Montana decided not to allow a grizzly hunt for the 2018 season, while Idaho approved killing one bear.

218. Humane Society v. Zinke, 865 F.3d 585, 590 (D.C. Cir. 2017). Following the D.C. Circuit's *Humane Society* decision, the FWS conducted a Regulatory Review of its proposed Yellowstone grizzly bear delisting rule to address the impact of the decision on its discrete population segment treatment of the Yellowstone bear population, concluding that it could legally proceed with the delisting. Endangered and Threatened Wildlife and Plants; Review of the 2017 Final Rule, Greater Yellowstone Ecosystem Grizzly Bears, 83 Fed. Reg. 18,737 (Apr. 30, 2018) (to be codified at 50 C.F.R. pt. 17).

219. 343 F. Supp. 3d 999, 1008 (D. Mont. 2018).

220. *Id.* at 1013 (citing Tennessee Valley Authority v. Hill, 437 U.S. 153, 194 (1978)*; see also* 16 U.S.C. § 1531(b) (2018) (stating that "the purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.").

221. *Crow Indian Tribe*, 343 F. Supp. 3d at 1013.

populations was important for the bear population's long-term welfare, the court explained that "the Service must consider how the delisting affects other members of the listed entity, the lower-48 grizzly bear, because decreased protections in the [GYE] necessarily translate to decreased chances for interbreeding."[222] The court plainly interpreted the statute in ecosystem terms by noting the irrelevance of boundaries and compelling the agency to take a landscape-scale approach to species recovery.[223]

The court did not stop there, however, finding two additional ESA violations with the delisting decision. First, the court ruled that failure to include a population recalibration commitment in the final rule violated the ESA's "adequate regulatory mechanisms" requirement,[224] calling into question the states' commitment to a robust bear population. The court noted that the FWS, rather than insisting on recalibration in the event a new grizzly population estimation standard was adopted, dropped this provision "not on the basis of the best available science, as demanded by the ESA, but rather as a concession to the states in order to reach a [delisting] deal."[225] Second, the court found that the FWS irrationally concluded that the Yellowstone bear population was not threatened by its isolation from other bear populations, observing that the agency was no longer contemplating translocation of bears from elsewhere to maintain current genetic diversity levels in the Yellowstone population. The court explained that the impending delisting of the Northern Continental Divide grizzly bear population would make it more difficult for the two discrete bear populations to connect through natural movements.[226] This was especially true given that the state of Montana did not have regulatory mechanisms in place to control mortality when the bears ventured into new territory where they might connect with

222. *Id.* at 1014.

223. In fact, the court supported its conclusions by noting that the ESA required the Secretary to "make listing and delisting determinations . . . 'solely on the basis of the best scientific and commercial data available.'" *Id.* at 1014 (quoting 16 U.S.C. § 1533(b)(1)(a) (2018)).

224. *Id.* at 1016 (quoting Greater Yellowstone, 665 F.3d at 1032).

225. *Id.* at 1015.

226. *Id.* at 1012–13 (citing Endangered and Threatened Wildlife and Plants; Removing the Greater Yellowstone Ecosystem Population of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife, 82 Fed. Reg. at 30,552) ("The [Northern Continental Divide] grizzly bear population is likely biologically recovered . . . .").

each other. Simply put, the ESA's science focus—informed by conservation biology principles governing "island populations"—served to safeguard the Yellowstone grizzly bears by emphasizing the need to manage the region as an ecosystem within an even larger landscape.

The states, predictably, objected to the *Crow Indian Tribe* decision, asserting that the bears were not only recovered, but were overflowing the ecosystem and pressing the limits of social tolerance within local communities. The state wildlife agencies, having been fully engaged in the recovery effort, reiterated their commitment to managing the bears in accordance with the Conservation Strategy, which permitted hunting,[227] long a key aspect of state wildlife policy under the North American Model of wildlife management.[228] The states believed that hunting was necessary to control burgeoning bear numbers and to condition bears to avoid people.[229] Animal rights groups and conservation organizations saw the matter differently and objected on moral as well as scientific grounds to trophy bear hunting.[230] Yellowstone park superintendent Dan Wenk also objected to the delisting, noting that the states had made no effort to consult with the Park over hunting policies, including the possibility of a no-hunting zone immediately adjacent to Park boundaries.[231]

Wenk's complaint raised a significant concern about future federal-state relations over grizzly bear management at the

227. 2007 GRIZZLY BEAR CONSERVATION STRATEGY, *supra* note 198, at 9, 83–85.

228. For a description of the North American Model of wildlife management, see *supra* note 111 and accompanying text.

229. WYOMING GRIZZLY BEAR MANAGEMENT PLAN, *supra* note 202, at 15–16.

230. *See, e.g.*, Todd Wilkinson, *Jane Goodall Joins Wyoming Protestors in Buying Up Grizzly Hunt Tickets*, NAT'L GEOGRAPHIC (July 16, 2018), https://www.nationalgeographic.com/environment/2018/07/jane-goodall-joins-wyoming-grizzly-bear-hunt-protest-lottery/ [https://perma.cc/C2NV-PERC]; Humane Society, *Wyoming Has Put Its Iconic Grizzlies in the Crosshairs of Trophy Hunters* (May 30, 2018), https://blog.humanesociety.org/2018/05/wyoming-put-iconic-grizzlies-crosshairs-trophy-hunters.html [https://perma.cc/N7SS-M55F].

231. Wendy Keefover, *Don't Let States Manage Grizzly Bears to Extinction*, HIGH COUNTRY NEWS (Apr. 24, 2018), https://www.hcn.org/articles/opinion-dont-let-states-manage-grizzly-bears-to-extinction [https://perma.cc/5KU5-298V]. Among Wenk's concerns was the fear that grizzly hunting immediately outside the parks would limit opportunities for visitors to see bears that would become even more wary around people. Interview with Bart Melton, Northern Rockies Regional Director, National Parks Conservation Association, in Bozeman, MT (2017); interview with Angus Thuermer, Jr., *supra* note 30; interview with Dan Wenk, *supra* note 161. *See also* TODD WILKINSON, GRIZZLY: THE BEARS OF GREATER YELLOWSTONE (2015) (describing the importance of particular bears in the national park visitor experience).

ecosystem level, given the importance of intergovernmental coordination in the ongoing bear-management effort. True to Wenk's concerns, the Wyoming legislature has authorized grizzly bear hunting despite their federally protected status.[232] Meanwhile, to address the state concerns, Wyoming congressional representative Liz Cheney has filed legislation to overturn the *Crow Indian Tribe* ruling and preclude any further judicial review of the Yellowstone grizzly bear delisting decision.[233] And the Justice Department has filed a notice of appeal from the 2018 Montana district court decision prohibiting delisting and restoring grizzly protections.[234]

d. Grizzly Bear Recovery in Perspective

By almost any measure, the grizzly bear delisting controversy represents a monumental clash between fundamental political values, scientific verities, and legal standards with genuine ramifications for ecosystem management in the GYE. Political considerations plainly motivated the 2017 delisting decision, despite the Yellowstone superintendent's serious concerns about future bear-counting methods and bear-hunting plans.[235] Nonetheless, the science-driven ESA, interpreted by the courts to preclude the bear's removal from federal protection, has thus far carried the day. It has forced federal and state officials to view the bear in terms of the larger landscape, including opportunities to connect presently distant bear populations. And there is evidence that the two bear populations are getting closer to connecting with one another.[236] For the immediate future, the grizzly bear

232. *See supra* note 217.

233. Grizzly Bear Management Act of 2018, H.R. 6877, 115th Cong. (2018).

234. Timothy Cama, *Trump Appeals Court Ruling That Restored Grizzly Bear Protections*, THE HILL (Dec. 21, 2018), https://thehill.com/policy/energy-environment/422497-trump-appeals-court-ruling-that-restored-grizzly-bear-protections [https://perma.cc/NH3C-SXWB]; Endangered and Threatened Wildlife and Plants; Reinstatement of ESA Listing for the Grizzly Bear in the Greater Yellowstone Ecosystem in Compliance with Court Order, 84 Fed. Reg. 37,144 (July 31, 2019).

235. Interview with Dan Wenk *supra* note 161.

236. Jim Robbins, *Yellowstone Grizzlies May Soon Commingle with Northern Cousins*, N.Y. TIMES (Nov. 3, 2017), https://www.nytimes.com/2017/11/03/science/grizzly-bears-yellowstone-genes.html [https://perma.cc/6GLE-EZ2S]; Karin Bruillard, *The Grizzlies are Coming*, WASH. POST (Nov. 27, 2017), https://www.washingtonpost.com/graphics/2017/national/environment/grizzly-bear-population-spreads/?noredirect=on&utm_term=.653e421f7775 [https://perma.cc/KLJ2-DYPG].

remains a powerful legal (and vital) presence on the GYE landscape, because the ESA gives the FWS regulatory control over federal agency management decisions and an oversight role on private lands to ensure the bear's recovery.

From the states' perspective, however, the failure of the latest delisting proposal, given current bear numbers and its expanded range, demonstrates that the ESA is not working as intended—it has not returned management control of a recovered species to the states. For most conservation groups and others, the prospect of state management and trophy bear hunting is not only morally problematic but would fragment management across the ecosystem, undermining the inter-agency coordination effect that the grizzly bear recovery program has inspired. Conservationists also fear that, without the compulsion of the ESA, the national forests would have more freedom to cut trees, build roads, and approve mines,[237] while the parks' bears would be at heightened risk from both hunting and habitat loss when they venture outside the boundary line.

In sum, the Yellowstone grizzly bear delisting controversy reverberates beyond the immediate region and issue. Given the FWS's 2017 delisting deal making, bear advocates fear politics will again enter the fray. With two failed efforts to delist the Yellowstone grizzly bears, the prospect of congressional intervention, as requested by Wyoming, now looms over the bear, the region, and the ESA itself. Opponents of the Act point to the Yellowstone bear delisting controversy as proof that the ESA simply does not work and must be radically revised. Any such revision to the ESA would eliminate a key legal underpinning of the movement toward ecosystem management in the GYE and elsewhere, calling into question the long-term fate of this important new natural resource policy.

2. Wolves: A Controversial Ecological Restoration Achievement

Thirty years ago, wolves were absent from Yellowstone National Park, but plans were afoot to restore them despite

237. Israel D. Parker & Andrea M. Feldpausch-Parker, *Yellowstone Grizzly Delisting Rhetoric: An Analysis of the Online Debate*, 37 WILDLIFE SOC. BULL. 248, 254 (2013) (explaining that "the fundamental disagreement in the grizzly debate was less about grizzly management, and more about western U.S. land management policies of which the grizzly is only a part").

vigorous opposition from the adjacent states, ranchers, and others. By the early 1990s, with congressional opposition to wolf restoration in retreat, the Park Service and the FWS reintroduced wolves back into the GYE landscape, where they have thrived following an initial legal challenge to the federal restoration effort. As predicted, the restored wolves have had manifold ecological and economic impacts while exacerbating federal-state tensions over management policies. As wolf numbers increased and passions flared, the FWS sought but failed to return management responsibility to the states, stymied by court challenges from the conservation community, which deeply distrusted the states' intentions. Although that distrust—rooted in the belief that the states are driven more by political rather than ecological concerns—has not abated, the states are now responsible for the GYE wolves outside the national parks. And there is a notable lack of coordination over wolf-management policy among the states and with the Park Service.

a. Bringing Wolves Back

Historically, wolves were present across the GYE. By the 1930s, however, an aggressive predator control campaign, abetted by the Park Service, had eliminated the creatures from the landscape to protect livestock and the Park's elk, deer, and other "good animals" from depredation.[238] Soon, though, scientists began to see wolves differently, as the biological role of predator-prey relationships became better understood. Convinced that wolves did not present a serious threat to big game populations, Aldo Leopold first suggested restoring them to Yellowstone in the mid-1940s.[239] Yet it was another twenty years before ecological principles affirming the importance of predators were incorporated into national park policy.[240]

With passage of the ESA in 1973,[241] the recovery of extir-

238. HANK FISCHER, WOLF WARS: THE REMARKABLE INSIDE STORY OF THE RESTORATION OF WOLVES TO YELLOWSTONE 10–23 (1995); KEITER, KEEPING FAITH, *supra* note 4, at 129.

239. Aldo Leopold, *Review of the Wolves of North America by S.P. Young and E.A. Goldman*, 43 J. FORESTRY 929 (1944).

240. SELLARS, *supra* note 141, at 243–53; KEITER, TO CONSERVE UNIMPAIRED, *supra* note 143, at 179–80.

241. Endangered Species Act, Pub. L. No. 93-205, 87 Stat. 884 (1973) (codified as amended at 16 U.S.C. §§ 1531–4344 (2018)).

pated wildlife species became official federal policy. In 1982, Congress added an amendment—known as section 10(j)—that gives the FWS a flexible legal tool for restoring controversial populations, such as wolves, to at least portions of their original range.[242] The three GYE states, through their congressional delegations, managed to stall wolf restoration proposals for another decade. But their tactics failed in 1991 when Congress approved funding for a wolf reintroduction EIS for the Yellowstone region and central Idaho wilderness areas.[243] Invoking section 10(j), the FWS proposed to reintroduce an "experimental population" of wolves into Yellowstone National Park and central Idaho, which would be protected from harm unless caught in the act of depredating domestic livestock.[244] A lawsuit filed by the Wyoming Farm Bureau temporarily jolted the Yellowstone reintroduction effort when a federal judge, citing isolated wolf sightings in Yellowstone and central Idaho, concluded that the reintroduced wolves were not "outside the current range of such species" as required by section 10(j).[245] The Tenth Circuit disagreed, however, finding no evidence of a naturally occurring population of wolves in the region.[246] Thus, the appellate court's decision put a legal stamp of approval on the reintroduction, which ultimately involved the release of thirty-one wolves into the Park during a two-year period.

Since then, GYE wolf numbers have grown rapidly, reaching more than five hundred wolves by 2015, and producing myriad ecological, economic, and other impacts. The restored wolves, through use of radio collars, have given scientists an unparalleled opportunity to study the animal and its ecological impacts. Scientists are generally convinced that the presence of the previously missing wolf has restored the ecosystem to health, reestablishing vital predator-prey relationships with important cascading ecological effects. For example, in the Park's northern riparian areas, aspen trees, cottonwoods, and

242. *Id.* § 1539(j).

243. H.R. Rep. No. 102-256, at 16 (1991).

244. U.S. FISH & WILDLIFE SERVICE, THE REINTRODUCTION OF GRAY WOLVES TO YELLOWSTONE NATIONAL PARK AND CENTRAL IDAHO FINAL ENVIRONMENTAL IMPACT STATEMENT (1994); *see also* Steven H. Fritts et al., *Planning and Implementing Reintroduction of Wolves to Yellowstone National Park and Central Idaho*, 5 RESTORATION ECOLOGY 7–27 (1997).

245. Wyoming Farm Bureau Fed. v. Babbitt, 987 F. Supp. 1349 (D. Wyo. 1997).

246. Wyoming Farm Bureau Fed. v. Babbitt, 199 F.3d 1224 (10th Cir. 2000); *see also* United States v. McKittrick, 142 F.3d 1170 (9th Cir. 1998) (similarly interpreting the § 10(j) "outside of the current range" language).

willows are coming back, probably because elk are no longer endlessly feeding on them for fear of becoming an easy target for wolves.[247] Drawn to this regenerating vegetation, beavers have reappeared and are remaking stream courses, and songbirds have returned along the streams. Wolves have reduced the Park's coyote population, giving antelope and other coyote prey a respite, while wolf-killed carcasses help sustain other species.[248] Moreover, the presence of wolves has fueled visitation, adding an estimated $7 to $10 million annually to the local economy.[249] And for many people, the successful restoration is viewed as a form of moral redemption, reflecting the positive side of human nature and our ability to atone for the sins of extermination.

Wolf opponents have viewed the restoration effort from a quite different perspective, however, citing a litany of negative ecological, economic, and political effects that have imperiled livelihoods and enhanced federal authority across the region. Local ranchers feared the wolves would prey on their livestock, creating additional economic and management costs—a concern not allayed by private and state compensation programs.[250] Big game hunters and outfitters worried that wolves would reduce elk numbers—a concern that has been validated as Yellowstone's northern herd population has declined from nearly 20,000 elk in the mid-1990s to 5,000 elk today.[251] State and local officials along with ranchers and other residents dreaded the federal regulatory constraints accompanying the

247. Luke E. Painter et al., *Aspen Recruitment in the Yellowstone Region Linked to Reduced Herbivory After Large Carnivore Restoration*, 8 ECOSPHERE 9 (2018); William Ripple & Robert Beschta, *Restoring Yellowstone's Willows with Wolves*, 138 BIOLOGICAL CONSERVATION 514 (2007); Robert L. Beschta, *Cottonwood, Elk, and Wolves in the Lamar Valley of Yellowstone National Park*, 13 ECO. APPL. 1295 (2003).

248. Kim Murray Burger & Mary M. Conner, *Recolonizing Wolves and Mesopredator Suppression of Coyotes: Impacts on Pronghorn Population Dynamics*, 18(3) ECO. APPL. 599 (2008); Jim Robbins, *In 2 Years, Wolves Have Reshaped Yellowstone*, N.Y. TIMES (Dec. 30, 1997), https://www.nytimes.com/1997/12/30/science/in-2-years-wolves-reshaped-yellowstone.html [https://perma.cc/456P-NHEC].

249. Staff, *More Money to Economy: Yellowstone Wolf Watching or Elk Hunting?*, YELLOWSTONE PARK (June 21, 2011), https://www.yellowstonepark .com/things-to-do/yellowstone-wolves-bring-estimated-7-10-million-in-annual-tourism-revenue [https://perma.cc/79NZ-UQ25].

250. FISCHER, *supra* note 238, at 50-1; FARRELL, *supra* note 53, at 177.

251. *See infra* notes 326–337 and accompanying text for more detailed discussion of the Yellowstone Northern Range elk herd.

reintroduction that prohibited shooting wolves that posed potential threats to livestock and pets. They also objected to the substantial sums spent to facilitate reintroduction and management of the wolves. Drawing upon longstanding stereotypes, myths, and fears, reintroduction opponents tended to reject scientific arguments supporting the reintroduction, viewing the effort as another governmental intrusion—abetted by outside environmental groups—into the domain of state sovereignty and private property rights. By one scholar's account, opponents saw the wolf as "a symbol of the new-west changing of the guard, devaluing a heritage that values lived experiences and practical knowledge . . . [that] define[d] their place in the world."[252]

b. Wolf Delisting and the Courts

These conflicting perspectives have driven the controversy over efforts to remove the GYE wolves from the federal endangered species list and instead vest management responsibility with the states. The FWS's 1987 Northern Rockies wolf recovery plan established a goal of ten breeding pairs of wolves in each of three separate zones.[253] The agency modified the plan in 1994, however, to require a meta-population of three hundred wolves for three consecutive years with genetic exchange between subpopulations, at which point the species would be deemed recovered and no longer require federal oversight.[254] By 2000, the northern Rockies wolf population exceeded three hundred wolves and thirty breeding pairs spread across the region, but the genetic interchange goal had yet to be achieved. The three states, supported by livestock operators, hunting organizations, and most rural communities across the region, were anxious to assume responsibility for the animal and end the federal role. After reviewing the state wolf management plans and initially finding the Wyoming plan to be inadequate, the FWS proceeded to designate the northern Rocky Mountain wolves a "distinct population segment" and to delist them from

252. FARRELL, *supra* note 53, at 195.

253. U.S. FISH & WILDLIFE SERVICE, NORTHERN ROCKY MOUNTAINS WOLF RECOVERY PLAN (1987).

254. U.S. FISH & WILDLIFE SERVICE, RECORD OF DECISION, THE REINTRODUCTION OF GRAY WOLVES TO YELLOWSTONE NATIONAL PARK AND CENTRAL IDAHO (1994).

federal protection.[255]

An array of conservation groups then sued to block the agency's decision. In *Defenders of Wildlife v. Hall*,[256] they argued successfully that the FWS had not demonstrated genetic connectivity between the Greater Yellowstone wolf population and the other wolves in central Idaho as well as northern Montana and that Wyoming's 2007 management plan was deficient because it treated wolves as predators in much of the state.[257] In response, the FWS proceeded to delist just the Montana and Idaho wolf populations while maintaining ESA protection for Wyoming's wolves.[258] This prompted another legal challenge. In *Defenders of Wildlife v. Salazar*,[259] a Montana federal district court found that the agency violated the ESA's "distinct population segment" requirements by subdividing the northern Rocky Mountain wolf population by state after having originally listed the species as an endangered "distinct population segment" across "a significant portion of its range." Although the court observed that the FWS's subdivision approach was a "pragmatic" response to Wyoming's inadequate wolf management plan, the court ultimately concluded that it was "at its heart a political solution that does not comply with

255. Endangered and Threatened Wildlife and Plants; Final Rule Designating the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and Removing This Distinct Population Segment from the Federal List of Endangered and Threatened Wildlife, 73 Fed. Reg. 10,514 (Feb. 27, 2008) (to be codified at 50 C.F.R. pt. 17). Between the initial proposed delisting and publication of the final rule, Wyoming revised its statutes and modified its wolf management plan, thus satisfying the FWS's requirement that adequate regulatory mechanisms were in place to safeguard the state's wolf population.

256. 565 F. Supp. 2d 1160 (D. Mont. 2008).

257. The court was troubled because Wyoming not only treated the wolves as "predators" in much of the state, but it also lowered the number of wolves required to sustain a recovered wolf population across the state. *Id.* at 1172–73.

258. Endangered and Threatened Wildlife and Plants; Final Rule Designating the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and Removing This Distinct Population Segment and To Revise the List of Endangered and Threatened Wildlife, 74 Fed. Reg. 15,123 (Apr. 2, 2009) (to be codified at 50 C.F.R. pt. 17). This 2009 FWS delisting decision allowed hunting to proceed in Montana and Idaho. During 2009, four wolves living mostly in Yellowstone National Park were killed by hunters just north of the Park in Montana, prompting negative media coverage nationwide. The lost wolves included the pack's breeding pair and two wolves fitted with radio collars, not only prompting the dispersal of the pack, but also terminating the research opportunity to study these wolves. Douglas W. Smith, et al., *Managing Wolves in the Yellowstone Area: Balancing Goals Across Jurisdictional Boundaries*, 40 WILDLIFE SOC. BULL. 436, 440 (2016).

259. 729 F. Supp. 2d 1207 (D. Mont. 2010).

the ESA."[260] In short, scientific and legal arguments carried the day, giving the reintroduced wolves continued federal protection against state plans that would have sanctioned wolf hunting and allowed ranchers greater leeway to shoot wolves lurking near their livestock.

c. Congressional Intervention

The states, stymied by the courts in their efforts to gain control over the wolves and under pressure from ranchers and hunters, turned to Congress for assistance. Fearing a problematic congressional fix, several conservation groups negotiated a proposed settlement agreement with federal officials to allow a partial delisting to proceed, but their effort never secured complete buy-in and was ultimately rejected in court.[261] Congress soon obliged the states by adding section 1713 to the Defense Continuing Appropriations Act for 2011, which instructed the FWS to reissue its wolf delisting rule and provided that "such reissuance shall not be subject to judicial review."[262] Pro-wolf groups challenged this rider on separation of powers grounds, arguing that Congress had intruded on the judicial domain in pending litigation. But the courts rejected the claim, finding that Congress had properly amended the underlying law as was its prerogative.[263] Montana federal district judge Donald Molloy, who had overseen all of the wolf delisting cases, had a less charitable view of Congress's actions: "Section 1713 sacrifices the spirit of the ESA to appease a vocal political faction."[264] Nonetheless, the Montana and Idaho wolves were delisted, and hunting resumed in both states.

Meanwhile, Wyoming continued its delisting effort, intent on securing management authority over wolves in the state.

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260. *Id.* at 1228.

261. Of the fourteen original plaintiff organizations in the delisting litigation, only ten signed on to the proposed settlement agreement; the remaining four organizations were Humane Society of the United States, Friends of the Clearwater, Alliance for the Wild Rockies, and Western Watersheds Project. Noting the lack of agreement among the plaintiff groups, the court was convinced that the settlement agreement would not resolve the delisting litigation.
Defenders of Wildlife v. Salazar, 776 F. Supp. 2d 1178, 1183 (D. Mont. 2011).

262. Pub. L. 112-10 § 1713, 125 Stat. 38 (2011).

263. Alliance for the Wild Rockies v. Salazar, 672 F.3d 1170, 1175 (9th Cir. 2012), *aff'g*, 800 F. Supp. 2d 1123 (D. Mont. 2011).

264. *Id.*; Alliance for the Wild Rockies v. Salazar, 800 F. Supp. 2d 1123, 1126 (D. Mont. 2011).

Having been rebuffed in the Montana litigation and by Congress, Wyoming filed suit in the Wyoming federal court. In *Wyoming v. U.S. Dept. of the Interior*,[265] the court ruled that the FWS could not require that the entire state be designated a trophy game area, a ruling that endorsed the state's plan to treat the wolf as a predator across 85 percent of the state. The state legislature then revised its law to make permanent the northwestern Wyoming trophy hunting area (which covered 15 percent of the state) and to ensure a wolf population of one hundred animals and ten breeding pairs.[266]

The FWS then again delisted the Wyoming wolves,[267] triggering yet another lawsuit by wolf proponents, this time in a Washington, D.C. federal court. Although the district court ruled, in *Defenders of Wildlife v. Jewell*,[268] that Wyoming's wolf population target was not buttressed by sufficient legal commitments to ensure the state would continue to meet the FWS-mandated standards, the D.C. Circuit disagreed. It found that the FWS had reasonably concluded that the state was committed to managing for more than the minimum 10/100 wolf population target and had obvious incentives to do so.[269] Both courts agreed with the FWS that the Wyoming wolf plan adequately provided for genetic connectivity between the GYE wolves and the wolves in central Idaho and northern Montana,[270] rejecting concerns about genetic drift in the Yellowstone area population over time and setting the stage to finally delist Wyoming wolves.

d. State Wolf Management

The wolf is now delisted across the entire GYE,[271] and the three states are managing them under the North American

265. 2010 WL 4814950, at *6 (D. Wyo. Nov. 18, 2010).

266. WYO. STAT. ANN. § 23-1-304(a) (2012).

267. Removal of the Gray Wolf in Wyoming From the Federal List of Endangered and Threatened Wildlife, and Removal of the Wyoming Wolf Population's Status as an Experimental Population, 77 Fed. Reg. 55,530 (Sept. 10, 2012) (to be codified at 50 C.F.R. pt. 17).

268. 68 F. Supp. 3d 193 (D.D.C. 2014), a*ff'd in part, rev'd in part,* Defenders of Wildlife v. Zinke, 849 F.3d 1077 (D.C. Cir. 2017).

269. Defenders of Wildlife v. Zinke, 849 F.3d 1077 (D.C. Cir. 2017).

270. 849 F.3d at 1088–92; 68 F. Supp. 3d at 210–12.

271. Endangered and Threatened Wildlife and Plants; Reinstatement of Removal of Federal Protections for Gray Wolves in Wyoming, 82 Fed. Reg. 20,284 (May 1, 2017) (to be codified at 50 C.F.R. pt. 17).

Model for wildlife management. Outside of Yellowstone and Grand Teton national parks, the states are setting yearly wolf-hunting quotas in the GYE, constrained only by their commitment to maintain minimum population numbers in each state. Not surprisingly, wolf hunting continues to roil emotions among wolf supporters, and biologists are particularly concerned about state-sanctioned wolf hunting on lands adjacent to the parks. Several radio-collared wolves have been shot outside Yellowstone, disrupting ongoing scientific research, reducing wolf-viewing opportunities, and generating negative media attention and public anger.[272] Montana's Fish and Wildlife Commission responded to these concerns by reducing the hunting quota from fifteen to three wolves north of the Park, but the other two states have not followed suit. In an effort to better coordinate wolf management between the parks and the surrounding states and to reduce the level of prevailing hostility, scientists have proposed creating wolf sanctuary areas adjacent to the parks where hunting would be restricted to safeguard national park wolves that stray across the boundary line.[273] Not only would this help allay public anger over individual wolf shootings but it would support ongoing scientific research that could help improve wolf management practices while minimally impinging on state wolf-control goals.

The GYE wolf reintroduction and subsequent delisting controversy contain important lessons spanning the realms of ecosystem science, law, and politics. The ESA initially enabled the wolf restoration effort, then essentially insulated it from efforts to return management responsibility to the states. The

272. Smith et al., *supra* note 258, at 440–41. In 2012, for example, twelve Yellowstone wolves were killed outside the Park, constituting 12 percent of the ninety-eight wolves living primarily in the Park. *Id.* at 440. *See also* NATE BLAKESLEE, AMERICAN WOLF: A TRUE STORY OF SURVIVAL AND OBSESSION IN THE AMERICAN WEST (2017); Jim Robbins, *A Famous Alpha Wolf's Daughter, Spitfire, Is Killed by a Hunter*, N.Y. TIMES (Nov. 30, 2018), https://www.nytimes.com/2018/11/30/science/wolf-spitfire-killed.html [https://perma.cc/D3VJ-QZED]; Nate Schweber, *Famous Wolf Is Killed Outside Yellowstone National Park*, N.Y. TIMES (Dec. 8, 2012), https://www.nytimes.com/2012/12/09/science/earth/famous-wolf-is-killed-outside-yellowstone.html [https://perma.cc/E2BH-KTXX]. In fact, Yellowstone's opposition to wolf hunting just outside Park boundaries is based in large part on visitor enjoyment concerns, because fewer wolves will be available to be viewed by visitors. Interview with Dan Wenk, *supra* note 161.

273. Smith et al., *supra* note 258, at 442–43 (arguing that sanctuary zones would conserve wolves for public viewing as well as maintain naturalness and wolf social structure, while not significantly affecting hunting opportunities, control over livestock depredation, or statewide management of wolf population numbers).

ESA, however, was finally sidelined by powerful political forces that succeeded in securing congressional approval for the Montana and Idaho management plans. Throughout the controversy, the courts have played a major role enforcing the ESA's science-based provisions. The judicial rulings, by refusing to separate the three states for delisting purposes, effectively endorsed the ecological importance of the restoration and its ecosystem-wide dimensions. But Congress, plainly sensitive to the political dimensions of the controversy, had the final word on delisting, which the courts were forced to acknowledge following adoption of the section 1713 rider.

Rather than resolving GYE wolf management concerns, however, the delisting has highlighted the lack of coordination among the states and between the states and the national parks. The Wyoming plan, with its separate trophy and predator zones, stands in stark contrast to the Montana and Idaho plans, though each state must continue to meet explicit wolf population targets. Among the three states, only Montana has shown sensitivity to its Yellowstone neighbor by adjusting some hunting quotas outside the Park boundary; the other two states have been notably unresponsive to similar park concerns. In fact, with Wyoming's assumption of jurisdiction over private lands within Grand Teton National Park, wolves can be killed in the Park without sanction.[274] Further, the wolf restoration effort, with its regional genetic connectivity requirement, has legitimized the concept of landscape conservation, which is needed to link the GYE to other, more northern, wolf-populated lands. All of which supports the need for meaningful and ongoing state-federal coordination to sustain the GYE wolf population following the highly successful restoration effort that remains dogged by powerful competing constituencies.

3. Bison: Still Seeking Acceptance

a. Bison and Brucellosis

Yellowstone's bison, another iconic symbol of the frontier West, have generated intense controversy during the past thirty

274. Ben Goldfarb, *Who Should Manage Grand Teton's Private Inholdings?*, HIGH COUNTRY NEWS (Apr. 2, 2015), https://www.hcn.org/articles/wolves-grand-teton-national-park [https://perma.cc/LTQ5-ZUH3]; *see also supra* notes 180–183 and accompanying text.

years because their winter migration patterns outside the Park are perceived as a threat to domestic livestock. Although Yellowstone's widely heralded bison restoration achievement saved the animals from almost certain extinction at the beginning of the twentieth century,[275] the Park's genetically pure bison are now regularly vilified as a disease vector for the brucellosis bacteria. Brucellosis is a domestic livestock disease that can trigger spontaneous abortion in cattle, not only costing ranchers a yearly calf but also, under federal law, putting at risk a state's ability to sell its livestock on the interstate market.[276] The brucellosis bacterium spreads through the ingestion of birthing materials, particularly when animals commingle. In the Yellowstone region, brucellosis likely passed from cattle to bison early in the last century and is also prevalent in area elk herds.[277]

Since the 1930s, the federal Animal and Plant Health Inspection Services (APHIS) has pursued an expensive nation-wide campaign to eradicate brucellosis from domestic livestock herds. As that eradication campaign neared completion in the 1980s, APHIS identified Yellowstone's bison and elk as a troublesome remaining reservoir of the bacteria. This prompted the state of Montana, in 1991, to adopt legislation labeling the Park's bison as a "species in need of special management."[278] Since then, bison management in the GYE has been entangled in jurisdictional complexities that have pitted an array of federal and state agencies against one another, precipitating an

275. H. DUANE HAMPTON, HOW THE U.S. CAVALRY SAVED OUR NATIONAL PARKS 165–67 (1971).

276. U.S. GOV'T ACCT. OFFICE, YELLOWSTONE BISON: INTERAGENCY PLAN AND AGENCIES MANAGEMENT NEED TO IMPROVE TO BETTER ADDRESS BISON-CATTLE BRUCELLOSIS CONTROVERSY (GAO-08-291, 2008); Robert B. Keiter & Peter H. Froelicher, *Bison*, *Brucellosis and Law in the Greater Yellowstone Ecosystem*, 28 LAND & WATER L. REV. 1, 21–27 (1993).

277. NAT'L ACADEMY OF SCIENCES, REVISITING BRUCELLOSIS IN THE GREATER YELLOWSTONE AREA 10 (2017). Roughly 60 percent of the GYE's 5,500 bison test seropositive for brucellosis, while 10 to 40 percent of elk wintering on Wyoming's twenty-two supplemental winter feedgrounds test seropositive. *Id*. Historically, elk seroprevalence was drastically lower in areas outside supplemental feedgrounds, but recent studies show that the gap is closing rapidly. *Id.* at 52. *See infra* notes 326–390 and accompanying text for further discussion of elk management in the GYE.

278. MONT. CODE ANN. § 87-1-215(3) (1991). In 2003, the Montana legislature repealed this statute and replaced it with MONT. CODE ANN. § 87-1-216, which designates "publicly owned wild buffalo or bison originating from Yellowstone national park as a species requiring disease control." *See infra* note 283 and accompanying text.

avalanche of litigation and acrimonious political protests as well as a now-outdated bison management plan.

The problem is a matter of legal authority, science, and politics. Yellowstone's bison, following their seasonal instincts, show little regard for the boundaries that separate the Park from surrounding lands. Once bison leave the Park, they become subject to state management, even when they venture onto national forest or other federal lands.[279] Following its "natural regulation" policy, the Park Service's approach to bison management since the late 1960s has allowed the animals to roam freely, relying upon nature to regulate the herd size, which has fluctuated from three thousand to five thousand animals during the past thirty years.[280] When the bison exit the Park in wintertime seeking sustenance at lower elevations, they can come into contact with domestic livestock, creating a risk that they will transmit the brucellosis bacteria to the cattle. Under APHIS regulations in effect during the 1990s, a brucellosis outbreak threatened a state's brucellosis-free status—and hence its entire ranching economy—by potentially blocking any further export of cattle from the entire state and requiring the infected cattle herd to be embargoed, tested, and slaughtered.[281]

Faced with these severe sanctions, Montana instituted a bison hunt—considered a slaughter by many—whenever the lumbering animals left the Park. This sparked a powerful public backlash, prompting the state to cancel the hunt. At the same time, the state adopted legislation that split jurisdictional responsibility for bison between its wildlife agency and its livestock agency,[282] giving the latter authority over bison that "pose a threat to persons or livestock in Montana through the transmission of contagious disease."[283] The result was a zero-

279. Yellowstone's recently retired superintendent recounted to me his conversations with Montana's governor over bison management, explaining that the governor consistently characterized all bison as the "Park's bison" whether inside or outside the Park, while asserting that any bears or wolves outside the Park were the "state's animals." Interview with Dan Wenk, *supra* note 161.

280. NAT'L ACADEMY OF SCIENCES, *supra* note 277, at 33–36.

281. 9 C.F.R. § 78.1 *et seq*. (1991); *see* Keiter & Froelicher, *supra* note 276, at 21–23 (describing the governing federal law and then-existing APHIS regulations).

282. MONT. CODE ANN. § 87-1-215(2) (1991) (repealed); *see* Keiter & Froelicher, *supra* note 276, at 46–47 (describing the now-repealed statute).

283. *Id.* The original statute was repealed in 1995, but the revised statute continues to split jurisdictional authority between the Department of Fish, Wildlife, and Parks and the Department of Livestock, authorizing the latter "to regulate publicly owned wild buffalo or bison in this state that pose a threat to persons or

tolerance policy where any bison exiting Yellowstone was shot by state officials, which predictably did little to reduce the level of conflict.

In 1990, the responsible agencies—namely the Park Service; Forest Service; APHIS; Montana Department of Fish, Wildlife, and Parks; and Montana Department of Livestock—formally met as an interagency group to develop a long-term bison management plan. That effort spawned a series of interim plans and related litigation.[284] One lawsuit, filed by the state of Montana against the federal government, alleged that APHIS was arbitrarily threatening to downgrade the state's brucellosis-free status and that the Park Service was legally obligated to manage bison to eliminate the risk of brucellosis transmission.[285] The parties responded by negotiating another interim bison management plan, with the Park Service agreeing to intensive bison management practices that included the capture, testing, and slaughter of bison inside Yellowstone to reduce the risk of disease transmission. Another lawsuit by conservation groups ensued, challenging the Park Service's authority under its Organic Act to kill the animals it was charged with conserving.[286] In *Intertribal Bison Cooperative v. Babbitt*,[287] however, the courts sustained the Park Service's actions, ruling that neither the Organic Act nor the Yellowstone

livestock in Montana through the transmission of contagious disease." MONT. CODE ANN. § 87-1-216 (2019). Under this authority, the Montana Department of Livestock has adopted regulations that require brucellosis-exposed wild bison that enter the state to be either physically removed or destroyed. Mont. Admin. R. 32.3.224A (2017). Under the revised statute, the Department of Fish, Wildlife and Parks is responsible for managing wild bison that "have not been exposed to or infected with a dangerous or contagious disease," and it must coordinate with the Department of Livestock for managing wild bison "from a herd that is infected with a dangerous disease." *Id.* § 87-1-216(2)(a), (c).

284. *See* Fund for Animals, Inc. v. Lujan, 794 F. Supp. 1015 (D. Mont. 1991) (finding that Montana, under its police power, could protect the health and safety of its citizens by removing possibly infected federal bison trespassing into the state from Yellowstone National Park), *aff'd*, 962 F.2d 1391 (9th Cir. 1992) (sustaining the district's court's denial of a preliminary injunction). *See also* Fund for Animals, Inc. v. Hodel, CV 85-250-BU (D. Mont. 1985) (upholding the Park Service's environmental assessment that allowed bison to migrate out of the Park).

285. State of Montana v. United States, No. CV-95-6-H-CCL (D. Mont. 1995) (Complaint and Settlement Agreement). For further description of this litigation, see Robert B. Keiter, *Greater Yellowstone's Bison: Unraveling of an Early American Wildlife Conservation Achievement*, 61 J. WILDLIFE MGMT. 1, 8 (1997).

286. Greater Yellowstone Coal. v. Babbitt, 952 F. Supp. 1435 (D. Mont. 1996), *aff'd*, 108 F.3d 1385 (9th Cir. 1997).

287. Intertribal Bison Co-op. v. Babbitt, 25 F. Supp. 2d 1135 (D. Mont. 1998), *aff'd*, Greater Yellowstone Coal. v. Babbitt, 175 F.3d 1149 (9th Cir. 1999).

Act prohibited the agency from removing individual bison from the herd to control its size and prevent the animals from leaving the Park.

b. The Interagency Bison Management Plan

In 2000, federal and state officials finally reached agreement on an Interagency Bison Management Plan (IBMP) based on risk management principles but with a long-term goal of eradicating brucellosis from GYE wildlife populations.[288] The IBMP established a bison-herd target size of three thousand animals, significantly limited when and where bison would be tolerated outside the Park, continued the controversial test-and-slaughter program inside the Park, endorsed an experimental bison vaccination program,[289] and included adaptive management principles.[290] The plan employed a spatial and temporal zoning system designed to keep bison separate from cattle. This meant some bison were allowed to exit the Park so long as they were back inside before cattle were turned out for the spring grazing season. It also meant some were hazed back into the Park.

The IBMP—though disappointing to conservation groups due to its herd size limit, emphasis on controlling bison movement, and reliance on lethal control means—nonetheless represented a collaborative federal-state effort that recognized the transboundary nature of the problem. Although it reflected little sensitivity to the Park Service's wildlife conservation obligations, the plan's adaptive management strategies provided a means to make changes over time as the situation evolved. It did not address the issue of brucellosis in the region's elk herds, nor were Native Americans part of the process, despite their deep cultural and spiritual connections to bison. Further, little

288. U.S. DEP'T OF THE INTERIOR, NAT'L PARK SERV. ET AL., FINAL ENVIRONMENTAL IMPACT STATEMENT AND BISON MANAGEMENT PLAN FOR THE STATE OF MONTANA AND YELLOWSTONE NATIONAL PARK (2000) [hereinafter INTERAGENCY BISON MGMT. PLAN].

289. In 2014, after investigating the efficacy of vaccinating Park bison against brucellosis, Yellowstone officials concluded that the vaccine was unproven and that it would be impossible to vaccinate bison in the Park's rugged terrain. NAT'L PARK SERV., U.S. DEP'T OF THE INTERIOR, RECORD OF DECISION, REMOTE VACCINATION PROGRAM TO REDUCE THE PREVALENCE OF BRUCELLOSIS IN YELLOWSTONE BISON (2014); *see also* NAT'L ACADEMY OF SCIENCES, *supra* note 277, at 120 (endorsing development of an oral vaccine).

290. INTERAGENCY BISON MGMT. PLAN, *supra* note 288, at 20.

effort was made to alter local livestock grazing practices,[291] a much easier task than managing wild bison intent on following their natural instincts on the expansive GYE landscape.

After more than fifteen years, changes on the ground and related adaptive management modifications have left the IBMP outdated. Several livestock grazing allotments have been either retired or acquired, essentially eliminating the risk of disease transmission in those areas and, thus, making these lands available seasonally for bison.[292] As a result, the IBMP agencies gradually have granted bison more freedom outside the Park. In 2008, recognizing the risk of transmission from male animals was quite low, bull bison were allowed on lands north and west of the Park;[293] and in 2011, both male and female bison were granted access to lands as far north as Yankee Jim Canyon.[294] In 2003, the Montana legislature reinstated public bison hunting,[295] while several Native American tribes have asserted their treaty hunting rights on public lands outside the Park. Along the way, APHIS revised its brucellosis regulations to permit officials to subdivide states in the event of a disease outbreak.[296] This regulatory change eliminated the threat an

291. The plan did require that cattle be vaccinated against brucellosis at federal expense, but the vaccine is not entirely effective at preventing transmission of the disease. INTERAGENCY BISON MGMT. PLAN, *supra* note 288, at 47.

292. *See, e.g.*, MONTANA FISH, WILDLIFE, & PARKS, ROYAL TETON RANCH GRAZING RESTRICTION ENVIRONMENTAL ASSESSMENT DECISION NOTICE (2008), http://www.ibmp.info/Library/RTR/EADecisionNotice.pdf [https://perma.cc/GBP2-Z8DR] (prohibiting cattle grazing on the Royal Teton Ranch for thirty years and establishing a bison transit zone to enable Yellowstone bison to access habitat north of the ranch).

293. INTERAGENCY BISON MGMT. PLAN GROUP, ADAPTIVE ADJUSTMENTS TO INTERAGENCY BISON MANAGEMENT PLAN MEMO (Dec. 17, 2008), http://www.ibmp.info/Library/AdaptiveMgmt/2008%20IBMP%20Adaptive%20Management%20Plan.pdf [https://perma.cc/JE37-JR2N].

294. INTERAGENCY BISON MGMT. PLAN GROUP, ADAPTIVE ADJUSTMENTS TO INTERAGENCY BISON MANAGEMENT PLAN MEMO. (Sept. 11, 2011), http://www.ibmp.info/Library/20130509/2011_IBMP_MgmtPlan_wMay2013Change.pdf [https://perma.cc/5VPX-FVW9].

295. MONT. CODE ANN. § 87-2-730 (2019). The state requires ethical, fair-chase hunting practices in an effort to avoid the public backlash that stymied the earlier hunt. MONT. CODE ANN. § 87-2-730(3)(d) (2019). This could help to open the door for hunting to become a management tool for controlling bison numbers. NAT'L PARKS CONSERVATION ASS'N, THE FUTURE OF YELLOWSTONE BISON MANAGEMENT: POLICY REPORT 22 (2016). However, the National Academies report views hunting as a tool with "significant limitations" for disease reduction purposes. NAT'L ACADEMY FOR SCIENCES, *supra* note 277, at 114.

296. 9 C.F.R. § 78.40 (2019); Brucellosis Class Free States and Certified Brucellosis-Free Herds; Revisions to Testing and Certification Requirements, 75

outbreak posed to the state's brucellosis-free status and its entire ranching economy, reducing the political pressure to eradicate brucellosis in the GYE. The three states have responded by establishing designated surveillance areas that are intended to confine the impact of a brucellosis outbreak to the immediate area, not the entire state.[297]

No confirmed cases of brucellosis transmission from bison to cattle have been recorded in the GYE, though several cases implicating elk as the transmission vector have been established.[298] In 2009, three Native American groups—the Confederated Salish and Kootenai Tribes, the Nez Perce tribe, and the Intertribal Bison Council—were added to the IBMP group, recognizing the growing Native American interest in restoring the bison to reservation lands.[299] In 2015, with local cattle grazing at an end outside the Park's western border, Montana's governor endorsed a Citizen Working Group proposal and opened three hundred thousand acres to bison year-round, creating additional space for the creatures outside the Park.[300] These changes in agency practices under the IBMP have gradually increased tolerance of bison outside the Park while avoiding any bison-caused disease transmission.

However, the most controversial dimensions of the IBMP remain unchanged, namely the target population number, the plan's capture and slaughter policies, and related hazing practices, all driven by the fear of disease transmission. The IBMP target population number of three thousand bison, according to recent studies, appears lower than what the available habitat can support.[301] In heavy snow years, the Park

Fed. Reg. 81,090 (Dec. 27, 2010) (to be codified at 9 C.F.R. pt. 78). *See also* U.S. DEP'T OF AGRIC., ET AL., NATIONAL BRUCELLOSIS SURVEILLANCE STRATEGY (2010).

297. *See, e.g.*, MONT. ADMIN. R. § 32.2.433 (2017); 051-0001-2 Wyo. Code R. § 1 (LexisNexis 2019).

298. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 2, 10–11, 48–51.

299. SCOTT TURNER, CAULDRON OF DEMOCRACY: AMERICAN PLURALISM AND THE FIGHT OVER YELLOWSTONE BISON 1–4 (2016), http://sciencecases.lib.buffalo.edu/cs/files/yellowstone_bison.pdf [https://perma.cc/SA2P-ZVZM].

300. OFFICE OF THE GOVERNOR OF THE STATE OF MONT., DECISION NOTICE ON YEAR-ROUND HABITAT FOR YELLOWSTONE BISON (Dec. 22, 2015), https://tribalnations.mt.gov/Portals/34/2015-12-22%20Bison%20Year-round%20Habitat%20Decision%20Release.pdf [https://perma.cc/K6QT-AGXH]. In addition, the Governor permitted bull bison additional room to roam northward in the Paradise Valley.

301. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 36 (citing studies concluding that 4,700–6,000 bison could be supported with few removals necessary at the Park border).

Service is still rounding up and liquidating large numbers of bison through practices more appropriate for domestic livestock than for native wildlife. During the 2016–17 winter, more than twelve hundred bison were killed, either through the test-and-slaughter protocol or hunting, while others were injured while being hazed back into the Park.[302] Since the plan's inception, more than ten thousand Yellowstone bison have been killed.[303] Conservation and animal rights groups, vehemently opposed to these practices as unnecessary and inhumane, have mounted three separate challenges in federal court to halt these practices but were rebuffed in each instance.[304] Although hunting has helped to relieve population pressures, it cannot bring the numbers down to the three thousand target-population level,[305] and it still often resembles a firing line slaughter scene when the bison leave the Park.[306] In yet another effort to protect Yellowstone's bison, several groups petitioned to list the bison under the federal ESA,[307] which would relieve the state of any control over the animal. But the FWS rejected the petition,[308]

302. Michael Wright, *Bison Cull in Yellowstone Nearing 1000 on the Year*, BOZEMAN CHRON., Mar. 1, 2017; CHRIS GEREMIA ET AL., STATUS REPORT ON THE YELLOWSTONE BISON POPULATION (2017), http://www.ibmp.info/Library/OpsPlans/2017_StatusYellowstoneBisonPopulation_Sep2017_Final.pdf [https://perma.cc/HM44-LJXW].

303. CHRIS GEREMIA ET AL., STATUS REPORT ON THE YELLOWSTONE BISON POPULATION (2018), http://www.ibmp.info/Library/OpsPlans/2018_ StatusYellowstoneBisonPopulation_Sep2018_Final.pdf [https://perma.cc/N4DY-DRLC]; Rob Hotakainen, *"The Killing Fields": Bison Come to Roam. Then They Die*, E&E NEWS (Oct. 1, 2018), https://www.eenews.net/stories/1060100069 [https://perma.cc/V2RU-LZCF]; interview with Scott Christensen, *supra* note 57.

304. Cold Mountain v. Garber, 375 F.3d 884 (9th Cir. 2004); W. Watersheds Project v. Salazar, 766 F. Supp. 2d 1095 (D. Mont. 2011), *aff'd* 494 Fed. Appx 740 (9th Cir. 2012); All. for the Wild Rockies v. U.S. Dep't of Agric., 938 F. Supp. 2d 1034 (D. Mont. 2013), *aff'd*, 772 F.3d 592 (9th Cir. 2014).

305. NAT'L PARKS CONSERVATION ASS'N, *supra* note 295, at 31–33.

306. To ensure a more acceptable fair-chase hunt will require providing the bison with an opportunity to disperse more broadly across the landscape outside the Park, which will also entail moving hunting areas away from the Park boundary. Kurt Repanshek, *Yellowstone Bison, America's National Mammal, Stigmatized in Montana*, NAT'L PARKS TRAVELER (Sept. 21, 2017), https://www.nationalparkstraveler.org/2017/09/bison-west-yellowstone-national-parks-brucellosis-stigma [https://perma.cc/946F-BUF].

307. 16 U.S.C. §1533 (2018); W. WATERSHEDS PROJECT & BUFFALO FIELD CAMPAIGN, PETITION TO LIST THE YELLOWSTONE BISON AS THREATENED OR ENDANGERED UNDER THE ENDANGERED SPECIES ACT (Nov. 13, 2014), http://www.buffalofieldcampaign.org/images/about-buffalo/problems-buffalo-face/extinction/Buffalo-Field-Campaign-ESA-Petition-11-13-2014.pdf [https://perma.cc/PYY8-7EUH].

308. Endangered and Threatened Wildlife and Plants: 90-Day Findings on 17

and the matter is now in federal court.[309]

c. Bison Translocation and Native Americans

One promising option to reduce the Park's bison population pressures is to translocate disease-free bison from the GYE, which is beginning to occur. In 2010, eighty-seven brucellosis-free bison were transferred from federal quarantine facilities to billionaire Ted Turner's nearby ranch, the first time the state of Montana had allowed any Yellowstone bison to be transported outside the Park.[310] In 2012, sixty-one quarantined, disease-free bison were transferred to the Fort Peck Indian Reservation, and the following year another thirty-four disease-free bison were transported to the Fort Belknap Indian Reservation.[311] Although ranching interests challenged these transfers, the Montana Supreme Court ruled that the state had adequate statutory authority to transfer Yellowstone bison to the Indian reservations,[312] seemingly paving the way for additional transfers as a tool to relieve population pressures in the GYE.

In fact, the Park Service has completed an Environmental Assessment recommending that the Park's bison be allowed to be transported outside the area to the Fort Peck reservation quarantine facility for disease surveillance and then made available to restore bison on tribal and federal lands.[313] This

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Petitions, 81 Fed. Reg. 1368 (Jan. 12, 2016) (to be codified at 50 C.F.R. pt. 17); *see also* Endangered and Threatened Wildlife and Plants: 90-Day Finding on Petition to List the Wild Plains Bison or Each of Four Distinct Population Segments as Threatened, 76 Fed. Reg. 10,299 (Feb. 24, 2011) (to be codified at 50 C.F.R. pt. 17) (rejecting earlier endangered species listing petition for Yellowstone bison).

309. Matt Volz, *Advocates Say Hunts, Slaughter Threaten Yellowstone Bison*, DESERET NEWS (Sept. 27, 2016), https://www.deseretnews.com/article/765689664/Advocates-say-hunts-slaughter-threaten-Yellowstone-bison.html [https://perma.cc/Y3WD-U5C7].

310. MONT. FISH, WILDLIFE, AND PARKS, BISON TRANSLOCATION, BISON QUARANTINE PHASE IV ENVIRONMENTAL ASSESSMENT DECISION NOTICE (2010), http://www.ibmp.info/Library/BQFS/Bison%20Quarantine%20Translocation%20Decision%20Notice.pdf [https://perma.cc/LV2D-3VDT].

311. Cally Carswell, *Latest: Bison Transferred to Fort Peck Indian Reservation*, HIGH COUNTRY NEWS (Nov. 24, 2014), https://www.hcn.org/issues/46.20/latest-bison-transferred-to-fort-peck-indian-reservation [https://perma.cc/D2EP-2SDX].

312. Citizens for Balanced Use v. Maurier, 303 P.3d 794 (Mont. 2013); *see also* Park Cty. Stockgrowers Ass'n v. Mont. Dep't of Livestock, 320 P.3d 467 (Mont. 2014) (dismissing on procedural grounds).

313. NAT'L PARK SERV., THE USE OF QUARANTINE TO IDENTIFY BRUCELLOSIS-FREE YELLOWSTONE BISON FOR RELOCATION ELSEWHERE, ENVIRONMENTAL ASSESSMENT (Jan. 14, 2016). Moreover, the Interior Department has consulted

recommendation squares with the recent National Academy of Sciences report, which concludes that quarantined bison testing negative for brucellosis can be safely relocated outside the region.[314] The Montana legislature, however, has blocked this option, killing a bill to allow the transport of Yellowstone bison to the Fort Peck quarantine facility before being determined to be disease-free.[315]

Meanwhile, the IBMP revision process is underway,[316] but it may already be stalled as the responsible federal and state officials flex their legal as well as political muscles, reluctant to fully acknowledge the underlying scientific, ecological, and cultural realities.[317] The nation's largest, genetically pure, free-ranging bison herd is still being treated more like livestock than wild animals. The artificial boundaries defining jurisdictional authority in the GYE continue to drive the problem, pitting federal and state agencies—each with their own legal mandates—against one another without an adequate region-wide coordination effort.[318] The available science plainly supports further revision to bison management practices in the GYE, and federal law does not impose any obvious hurdles. Moreover, as bison have gained more ground outside the Park, the local populace has shown greater social tolerance for living with them.

Indeed, the opportunity exists to restore the Park's bison to wildlife status and to grant them additional freedom to roam. The risk of disease transmission from bison to cattle has been proven to be quite low, and cattle are now largely absent from federal and private lands outside Yellowstone Park.[319] With

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with tribal organizations to assess their interest in receiving brucellosis-free Yellowstone bison on reservation lands and in assisting to reestablish bison herds on other suitable federal lands. U.S. DEP'T OF THE INTERIOR, NAT'L PARK SERV., DOI BISON REPORT: LOOKING FORWARD (2014).

314. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 4.

315. Michael Wright, *Bill to Allow Moving Yellowstone Bison to Fort Peck Tabled*, BOZEMAN DAILY CHRON., Feb. 23, 2017.

316. Environmental Impact Statement for a Management Plan for Yellowstone-Area Bison, 80 Fed. Reg. 13,603 (Mar. 16, 2015).

317. Ironically, Congress designated the bison as America's national mammal in 2016. National Bison Legacy Act, Pub. L. 114-152, 130 Stat. 373 (2016).

318. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 8. Indeed, the National Academies report concludes that failure to adequately coordinate the brucellosis management effort across federal, state, and tribal jurisdictions in the GYE could allow the disease to spread beyond the region, creating even greater difficulties. *Id.*

319. *See infra* notes 610–618 and accompanying text (describing efforts to secure cattle-free space on nearby private lands for Yellowstone's bison when they leave

Native American tribes currently engaged in various bison restoration efforts,[320] including on the Wind River Reservation in Wyoming,[321] the GYE bison population pressures could be significantly lowered through the controlled transfer of disease-free animals,[322] which would also reduce the need for the often-inhumane capture-and-slaughter process.

Tellingly, a recent National Academies report concludes that "additional aggressive control measures in bison seem unwarranted" until the elk brucellosis problem is addressed.[323] But Montana livestock interests have continued to block bison transport efforts, and the state has yet to meaningfully address the disease risk posed by the region's elk population, which enjoys a much more powerful local constituency than the Park's bison. In short, although wild bison are a critical component of the GYE, and despite some progress through interagency negotiations in expanding the bison's range in the GYE, the state of Montana is still largely dictating the scope of the animal's habitat and, thus, its fate.

4. Migratory Ungulates: Redefining Ecosystem Boundaries

The renowned GYE elk herds and other migratory fauna are

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the Park).

320. Jeremy Hance, *How Native American Tribes Are Bringing Back the Bison from Brink of Extinction*, THE GUARDIAN (Dec. 12, 2018), https://www.theguardian.com/environment/2018/dec/12/how-native-american-tribes-are-bringing-back-the-bison-from-brink-of-extinction [https://perma.cc/QLX2-7BWX]; Indian Country Today, *Bringing Back the Bison: Tribes and First Nations Sign Historic Treaty*, INDIAN COUNTRY TODAY (Sept. 25, 2014), https://newsmaven.io/indiancountrytoday/archive/bringing-back-the-bison-tribes-and-first-nations-sign-historic-treaty-eStUli69w0iERVPo8wcDqg/ [https://perma.cc/TK9T-AZPA]; *Restoring Bison to Tribal Lands*, NAT'L WILDLIFE FED'N, https://www.nwf.org/Our-Work/Wildlife-Conservation/Bison/Tribal-Lands (last visited Feb. 20, 2019) [https://perma.cc/B4DV-LM2R].

321. Matthew Trott, *Bison Return to Wind River Reservation*, WILDLIFE SOC'Y (June 19, 2017), https://wildlife.org/bison-return-to-wind-river-reservation/ [https://perma.cc/M6AY-SXGL]; Alexis Bonogofsky, *Through the Lens: Bison Return to Wind River*, WYOFILE (Oct. 31, 2017), https://www.wyofile.com/lens-bison-return-wind-river/ [https://perma.cc/69AJ-X9DK].

322. The transfer process can be controlled either at the front end through Yellowstone quarantine and test facilities or at the back end through the Fort Peck quarantine facilities. *See supra* note 313 and accompanying text.

323. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 5. At the same time, the report recognizes the need for continued separation between bison and cattle outside the Park. *Id.*

redefining the ecosystem while presenting complex new wildlife management challenges. Elk, deer, pronghorn, and other ungulates have long inspired park visitors while also serving as a consumptive recreational resource for residents who prize hunting them. Although under federal management while inside Yellowstone and Grand Teton national parks, these hoofed mammals are subject to state law once they cross outside park boundaries,[324] usually during their seasonal migration to lower-elevation lands. Yellowstone's prominent Northern Range elk herd has long stirred intense controversy, which has taken new directions in the aftermath of wolf reintroduction. To the south, management of the Jackson elk herd at the National Elk Refuge and on Wyoming's winter feedgrounds is likewise enmeshed in controversy, entangling area ranchers, hunters, and conservationists with troublesome disease transmission concerns.

Meanwhile, new research has revealed extraordinary, previously little-understood migration patterns for the region's elk, pronghorn, and mule deer herds, effectively expanding how the GYE should be conceived for ecosystem management purposes. The highly touted "Path of the Pronghorn" migration route,[325] now designated as the nation's first official federal wildlife migration corridor, illustrates how a science-driven, collaborative, multi-jurisdictional effort might be structured to sustain ecosystem components and processes. It also confirms that the fate of GYE's migratory ungulates rests as much in the hands of the states and local landowners as in the hands of the region's federal land managers.

a. Yellowstone's Northern Range Elk Herd

Thirty years ago, a contentious debate raged over whether Yellowstone's abundant Northern Range elk herd was being mismanaged to the point that it imperiled the Park's ecological

324. Actually, the Park Service coordinates with the state of Wyoming on elk hunting within Grand Teton National Park, a compromise included in the Park's amended enabling legislation that allows hunting within the Park. 16 U.S.C. § 673c (2018). Similar coordinated management concerns prevail on the National Elk Refuge. *Id.* § 673; U.S. DEP'T OF THE INTERIOR, U.S. FISH & WILDLIFE SERV. & NAT'L PARK SERV., RECORD OF DECISION, NATIONAL ELK REFUGE, GRAND TETON NATIONAL PARK, FINAL BISON AND ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT 1–3 (2007).

325. *See infra* notes 389–390 and accompanying text (describing the Path of the Pronghorn migration corridor).

systems.[326] Until the early 1970s, the Park Service intensively managed and regularly culled the herd, largely emulating livestock management practices, to meet the range's presumed carrying capacity and maintain available habitat.[327] But following the 1963 Leopold Report, which was triggered by public outrage over the Park's culling practices,[328] the agency ceased shooting elk and adopted a "let nature take its course" management approach. Without a major predator, the Northern Range elk herd soon increased from roughly five thousand animals to a high of nearly twenty thousand animals, offering visitors ready wildlife-viewing opportunities in the wide-open Lamar Valley. Montana hunters also enjoyed plentiful opportunities to bag an elk during the northward migration out of the Park in the late fall. With the proliferating elk population controlled only by winter weather conditions and hunting pressures, some scientists were convinced that the animals were consuming all the forage available on the Northern Range.[329] In their view, the elk were essentially destroying the Northern Range ecosystem by suppressing aspen and willow growth, which displaced beaver and other dependent species.

Enter the wolf, which was reintroduced to the Park in 1994.[330] Because biologists predicted the wolves would predate mainly on elk, it was not surprising when a new wolf-elk debate ignited over the impact wolves were having on the Northern Range elk herd. As before, the conflict focused on population numbers, ecological impacts, and hunting opportunities. Since wolves reappeared, the Northern Range elk herd has declined to

326. *See, e.g.*, ALSTON CHASE, PLAYING GOD IN YELLOWSTONE: THE DESTRUCTION OF AMERICA'S FIRST NATIONAL PARK 14–91 (1986); FREDERIC H. WAGNER ET AL., WILDLIFE POLICIES IN THE U.S. NATIONAL PARKS 48–55 (1995). *See generally* FREDERIC H. WAGNER, YELLOWSTONE'S DESTABILIZED ECOSYSTEM: ELK EFFECTS, SCIENCE, AND POLICY CONFLICT (2006) (chronicling and analyzing the Yellowstone Northern Range controversy).

327. DOUGLAS HOUSTON, THE NORTHERN YELLOWSTONE ELK: ECOLOGY AND MANAGEMENT 18 (1982); WAGNER ET AL., *supra* note 326, at 48–50.

328. In fact, the Leopold Report can be directly traced to public outcry over Yellowstone's elk management program that resulted in prime-time television images of park rangers shooting more than 4,500 elk during the winter of 1962. SELLARS, *supra* note 141, at 200. For more on the Leopold Report; *see supra* notes 141–143 and accompanying text.

329. WAGNER ET AL., *supra* note 326, at 53–54; Steve W. Chadde & Charles E. Kay, *Tall-Willow Communities on Yellowstone's Northern Range: A Test of the "Natural Regulation" Paradigm, in* THE GREATER YELLOWSTONE ECOSYSTEM, *supra* note 1, at 231–62.

330. *See supra* notes 238–249 and accompanying text.

around five thousand elk today, a dramatic drop that some scientists attributed mostly to the Park's wolves. As elk numbers have declined and as the remaining elk have dispersed away from open spaces and riparian areas to escape wolf predation, scientists have observed that the Northern Range is undergoing an ecological transformation, reflected in aspen and willow regeneration, returned beavers, and more songbirds.[331] Other scientists, however, believe the decrease in elk numbers and resulting ecological changes are only partly attributable to wolves, citing hunter harvest levels, other predators, and the weather as important contributing factors.[332]

Regardless, the drop in elk numbers means fewer elk are available to hunt when they migrate outside the Park, prompting the state of Montana to begin limiting elk hunting adjacent to the Park.[333] These new limits have angered Montana's outfitters, guides, and hunters who have long enjoyed nearly unlimited access to area elk hunting tags and successful hunting experiences. Their concerns—in tandem with local ranchers' anger over the returned wolves—convinced the state's congressional delegation to pursue legislation removing the wolves from federal protection and turning their management over to the state.[334] Although Montana has limited wolf hunting near the Park's boundaries, it is widely believed that more aggressive wolf quotas are necessary to replenish elk numbers and restore hunting opportunities—a decision largely in the hands of the state.[335] Meanwhile, the state also confronts

331. Painter et al., *supra* note 247; William J. Ripple & Robert L. Beschta, *Restoring Yellowstone's Aspen with Wolves*, 138 BIOLOGICAL CONSERVATION 514 (2007); Daniel Fortin et al., *Wolves Influence Elk Movements: Behavior Shapes a Trophic Cascade in Yellowstone National Park*, 86 ECOLOGY 1320 (2005); Robert Beschta, *Cottonwoods, Elk, and Wolves in the Lamar Valley of Yellowstone National Park*, 13 ECO. APPL. 1295 (2003).

332. P.J. White & Robert A. Garrott, *Predation: Wolf Restoration and the Transition of Yellowstone Elk*, *in* YELLOWSTONE'S WILDLIFE IN TRANSITION 69 (P.J. White et al. eds., 2013); N. Thompson Hobbs & David J. Cooper, *Have Wolves Restored Riparian Willows in Northern Yellowstone*, *in* YELLOWSTONE'S WILDLIFE, *supra*, at 179.

333. White & Garrott, *supra* note 332, at 79–80 (noting that Montana reduced hunting permits for antler-less northern Yellowstone elk by 95 percent between 2005 and 2006, and then granted zero permits in 2010 due to decreases in the elk population).

334. *See supra* notes 261–264 and accompanying text.

335. Although Montana is now managing wolves within the state, the USFWS retains an oversight monitoring role for five years following the wolf delisting. 16 U.S.C. § 1533(g) (2018); *see also supra* notes 271–273 and accompanying text.

troubling wildlife disease concerns, namely the fact that elk—not bison—have been deemed responsible for several local brucellosis outbreaks,[336] as well as the threat chronic wasting disease poses to the state's elk herds themselves.[337] Solving these problems will require yet unrealized cross-jurisdictional cooperation, not only with federal land managers but also among the three GYE states.

b. The National Elk Refuge

In the GYE's southern reaches, the Wyoming elk herds have long been subjected to more active management. During the early twentieth century, settlement of the Jackson Hole area blocked historic elk migration routes, often diverting the region's elk to local ranchers' winter hay supplies intended for their own livestock. Unable to access traditional winter habitat, large numbers of elk faced starvation in the harsh winter months, prompting public outrage that convinced Congress to establish the National Elk Refuge north of Jackson in 1912.[338] Since then, the FWS has seasonally fed overwintering elk, which now amounts to roughly 7,500 animals each year. In 1939, confronted with ongoing rancher-elk conflicts over haystacks across the western part of the state, the state of Wyoming responded by adopting a wildlife damage law to compensate affected ranchers.[339] Faced with paying potential damage claims and with ongoing habitat loss concerns, the Wyoming Game and Fish Department followed the Jackson Hole model and began establishing winter feedgrounds.[340] The state now oversees twenty-two feedgrounds on a mix of public and private land, where it feeds roughly thirteen thousand elk annually.[341] The feedgrounds have reduced elk-cattle conflicts and served to maintain high elk population numbers, which satisfies the state's large, vocal, and politically powerful hunting community.

336. NAT'L ACADEMIES OF SCIENCES, *supra* note 277, at 8.

337. *See infra* notes 360–377 and accompanying text for a further discussion of the GYE's impending chronic wasting disease problem.

338. 16 U.S.C. § 673 (2018). For a history of the National Elk Refuge, *see generally* BRUCE L. SMITH ET AL., IMPERFECT PASTURE: A CENTURY OF CHANGE AT THE NATIONAL ELK REFUGE IN JACKSON HOLE, WYOMING (2004).

339. WYO STAT. ANN. § 23-1-901 (2017).

340. RON DEAN ET AL., WYO. GAME & FISH DEP'T, ELK FEEDGROUNDS IN WYOMING 2–3 (2004), https://wgfd.wyo.gov/WGFD/media/content/PDF/Wildlife/WY_ELKFEEDGROUNDS.pdf [https://perma.cc/M6GF-TNCQ].

341. *Id.* at 4.

The National Elk Refuge and the state feedgrounds—magnets for large numbers of elk during the winter months—also serve as a disease incubator. While the National Elk Refuge attracts wintertime tourists to observe the congregated elk, the Refuge's crowded conditions enable brucellosis as well as other diseases to persist and spread among the elk and bison feeding there.[342] Even more dense crowding conditions prevail on the much smaller state feedgrounds, heightening the risk of disease transmission. Although Wyoming argues that the feedgrounds interrupt migration and thus prevent diseases from spreading to wild elk,[343] several cases involving brucellosis transmission to cattle have been traced to the state feedgrounds.[344] It is widely feared that the crowded feedgrounds would also enable chronic wasting disease—which is steadily moving westward across the state—to spread at an alarming rate throughout the region's elk herds.[345]

These unnatural elk feedground conditions have prompted rancorous controversy during the past thirty years that is intensifying in the face of the potentially devastating chronic wasting disease. In fact, lawsuits involving the federal agencies, the state of Wyoming, conservation groups, and others disturbed by wildlife management policies enabling elk and bison to concentrate on winter feedgrounds have proliferated. In a 1992 federal tort claim action initiated by a rancher whose cattle herd was destroyed after testing positive for brucellosis, a Wyoming federal judge chastised the FWS and the National Park Service for negligently managing diseased elk and bison, admonishing the agencies to take more aggressive steps to curb the disease.[346]

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342. Kelly M. Profitt et al., *Effects of Elk Density on Elk Aggregation Patterns and Exposure to Brucellosis*, 79 J. WILDLIFE MGMT. 373 (2015); Brant A. Schumaker et al., *Brucellosis in the Greater Yellowstone Area: Disease Management at the Wildlife-Livestock Interface*, 6 HUMAN-WILDLIFE INTERACTIONS 48 (2012).

343. Western Watersheds Project v. Christiansen, 384 F. Supp. 3d 1204, 1212 (D. Wyo. 2018); *see also* MARKUS J. PETERSON, DEP'T OF WILDLIFE & FISHERIES SCIENCES, INFECTIOUS AGENTS OF CONCERN FOR THE JACKSON HOLE ELK AND BISON HERDS: AN ECOLOGICAL PERSPECTIVE 22 (2003) (outlining the apparent decrease in brucellosis sero-prevalence in "wild" elk since the 1930's).

344. *See, e.g.*, Jack C. Rhyan et al., *Transmission of Brucellosis from Elk to Cattle and Bison, Greater Yellowstone Area, USA, 2002-2012*, 19 EMERGING INFECTIOUS DISEASES 1992, 1993 (2013).

345. *See infra* notes 359–377 and accompanying text for more on chronic wasting disease.

346. Parker Land & Cattle Co. v. United States, 796 F. Supp. 477, 486 (D. Wyo. 1992). The court rejected the federal government's argument that the Federal Tort Claims Act's discretionary function exception applied to wildlife disease

In 1998, the Fund for Animals successfully sued the FWS, National Park Service, and US Forest Service to block a bison management plan establishing an annual hunt to control the Jackson Hole bison population, finding a NEPA violation because the agencies did not also assess the impact of supplemental winter feeding on the National Elk Refuge.[347] At the same time, alarmed over the prevalence of brucellosis among wildlife on the Refuge,[348] the state of Wyoming sued the FWS for not allowing it to vaccinate the Refuge elk against brucellosis, asserting that the state had final authority over wildlife within its borders. Although the federal courts rejected the state's argument claiming jurisdiction over Refuge wildlife, the Tenth Circuit scolded the federal agencies for "threaten[ing] the wellbeing of a neighboring sovereign's livestock or game industry" by taking so long to review the efficacy of the state's proposed vaccine.[349]

Faced with these court rulings, the federal agencies jointly proceeded to finalize a Bison and Elk Management Plan for the Refuge and adjacent national park.[350] Rejecting the conservation community's preferred alternative, which included a five-year phase out for supplemental feeding, the plan acknowledged the disease and ecological risks associated with the concentrated feeding program as well as the need to transition away from supplemental feeding—but left that decision for the future. Instead, citing the need to collaborate with state wildlife managers and local economic concerns, the plan endorsed additional hunting and habitat enhancements to gradually reduce herd sizes in the Refuge consistent with the

management policies, finding a duty to warn ranchers of the disease transmission risk but concluding that causation had not been established in this instance. *Id.* at 487–88. *See also* Parker Land and Cattle Co. v. Wyo. Game & Fish Comm'n, 845 P.2d 1040 (Wyo. 1993) (rejecting a state wildlife damage claim arising from the same incident).

347. Fund for Animals v. Clark, 27 F. Supp. 2d 8 (D.D.C. 1998).

348. The zero-prevalence rate of brucellosis infection for elk on the National Elk Refuge has reached as high as 32 percent, due to close congregation on the feedlines and proximity to infected bison which facilitate transmission of the disease. PETERSON, *supra* note 343, at 22; Matthew J. Ferrari, *Bison and Elk: Brucellosis Seroprevalence on a Shared Winter Range*, 66 J. WILDLIFE MGMT. 1246, 1246–47, 1251 (2002).

349. Wyoming v. United States, 279 F.3d 1214 (10th Cir. 2002).

350. U.S. DEP'T OF INTERIOR ET AL., FINAL BISON AND ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT (2007), https://www.fws.gov/bisonandelkplan/Final%20Bison%20and%20Elk%20Management%20Plan%20and%20Environmental%20Impact%20Statement.htm [https://perma.cc/ZX6N-BW85].

state's regional herd management objectives.[351] Conservation groups sued, arguing that, by rejecting the five-year phase-out alternative, the FWS violated its obligations under the National Wildlife Refuge System Improvement Act to "conserve" wildlife and to "ensure that the biological integrity, diversity, and environmental health of the [system] are maintained."[352] While rejecting this argument, the D.C. Circuit pointedly observed that "the agencies are committed to ending supplemental feeding" and noted "the Secretary's duty to end a practice that is concededly at odds with the long-term health of the elk and bison in the Refuge."[353]

Supplemental winter feeding therefore continues at the Refuge, while elk and bison hunts remain annual rituals in the area.[354] Wyoming has stopped vaccinating elk on the Refuge and its feedgrounds, due in part to its ineffectiveness at curbing brucellosis. Instead, the Refuge and the state are more widely dispersing wintertime feed to lessen elk density on the feedlines and stopping supplemental feeding earlier in an effort to reduce the risk of disease transmission among the animals.[355] Some studies suggest that the controversial practice of supplemental feeding does not serve to increase wintertime elk survival and hence population numbers.[356] Other studies have concluded that the expenses associated with supplemental feeding, vaccination, and test-and-slaughter management strategies are not cost effective.[357] Paradoxically, the warmer temperatures expected

351. NER/GTNP BISON & ELK MGMT. PLAN RECORD OF DECISION, *supra* note 324, at 14.

352. 16 U.S.C. §§ 668dd(a)(4)(A), (B) (2018).

353. Defenders of Wildlife v. Salazar, 651 F.3d 112, 117–18 (D.C. Cir. 2011). In March 2019, conservation groups again sued the FWS to halt supplemental winter feeding at the National Elk Refuge, citing the agency's promises in the earlier litigation to stop the feeding. Todd Wilkinson, *Conservationists Sue to Halt Artificial Feeding at National Elk Refuge*, MOUNTAIN J. (Mar. 18, 2019), https://mountainjournal.org/conservationists-sue-to-stop-elk-feeding-and-avoid-chronic-wasting-disease-disaster [https://perma.cc/B887-VB7G].

354. *See* Mayo v. Reynolds, 875 F.3d 11 (D.C. Cir. 2017) (challenging ongoing hunting practices in Grand Teton National Park and rejecting NEPA claims related to FWS's failure to reduce winter feeding at the NER).

355. Mike Koshmrl, *Elk Feeding Tweaked to Battle Brucellosis*, JACKSON HOLE NEWS & GUIDE (Mar. 23, 2016), https://www.jhnewsandguide.com/news/environmental/article_a82ddc30-dc11-5c31-be73-e99015402558.html [https://perma.cc/63YT-QHB4].

356. Aaron M. Foley et al., *Influences of Supplemental Feeding on Winter Elk Calf-Cow Ratios in the Southern Greater Yellowstone Ecosystem*, 79 J. WILDLIFE MGMT. 887 (2015).

357. Kari Boroff et al., *Risk Assessment and Management of Brucellosis in the*

as a result of climate change could help with the feedground disease problem by shortening the winter feeding season and thus reducing the time that elk and bison congregate when the risk of transmission is greatest.[358] Still, the departing animals could also more readily come in contact with nearby cattle. In late 2018, with the debate over Refuge management continuing, brucellosis was detected in a Teton County cattle herd for the first time since 2004.[359]

c. Wyoming Elk Feedgrounds and Chronic Wasting Disease

Of course, even if the National Elk Refuge were to eliminate supplemental feeding, the state's twenty-two feedgrounds would still exist. As many as thirteen thousand elk congregate during the winter on these feedgrounds, where they are more likely to transmit brucellosis among themselves, though hopefully not to nearby cattle. Although the state recognizes the disease problems, it persists in maintaining the feedgrounds in order to appease ranchers and sustain an artificially high elk population for hunters. In 2007, conservation organizations turned to federal court in an effort to force the agencies to confront the disease transmission implications of the state's feedgrounds, at least with respect to those located on Forest Service or BLM lands.[360] They argued that both federal agencies, as hosts for the state's feedgrounds, had not completed an adequate environmental analysis required by NEPA before permitting the feeding sites. They contended that such an analysis was required given the transmission risks associated with brucellosis and chronic wasting disease for wildlife residing on these federal lands. The courts, however, rejected the argument, finding that the federal agencies either had no such obligation through the permitting process or had sufficiently met their

Southern Greater Yellowstone Area (II): Cost-benefit Analysis of Reducing Elk Brucellosis Prevalence, 134 PREVENTIVE VETERINARY MEDICINE 39 (2016).

358. Paul C. Cross et al., *Effects of Management and Climate on Elk Brucellosis in the Greater Yellowstone Ecosystem*, 17 ECOLOGICAL APPLICATIONS 957 (2007).

359. Tom Hallberg, *Brucellosis Discovered in Teton County Herd*, JACKSON HOLE NEWS & GUIDE (Nov. 14, 2018), https://www.jhnewsandguide.com/news/environmental/article_8d806ea8-2b21-576b-a8cf-a943cc9cec71.html [https://perma.cc/5LN3-EM2V].

360. Greater Yellowstone Coalition v. Kimball, No. 06–CV–37, 2007 WL 9709798 (D. Wyo. Aug. 24, 2007).

obligation.[361] Without alternative legal avenues available under state law, the ruling suggested that the judiciary would not involve itself in Wyoming's feedground policy, leaving the matter to the state political processes.

That changed in late 2018, when a Wyoming federal judge ruled that the managers of Bridger-Teton National Forest violated NEPA when they issued the state a ten-year permit for the Alkali Creek feedground.[362] According to the court, the Forest Service—in its Environmental Impact Statement—failed to consider a reasonable range of alternatives, including one to phase out supplemental feeding in the Forest due to the impending arrival of chronic wasting disease, and failed to take a "hard look" at the potential environmental consequences.[363] The court was quite candid about the grave risks associated with chronic wasting disease:

> There is no question that Alkali Creek Feedground could become a reservoir of CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat.[364]

The court also found that the agency, which only examined the effect of supplemental feeding at Alkali Creek on nearby state feedgrounds, had failed "to consider cumulative impacts

361. Greater Yellowstone Coalition v. Tidwell, 572 F.3d 1115, 1128 (10th Cir. 2009).

362. Western Watersheds Project v. Christiansen, 348 F. Supp. 3d 1204 (D. Wyo. 2018).

363. *Id.* at 1216–20. In arriving at this conclusion, the court rejected the Forest Service's argument that it need not consider the phase-out alternative because it had no jurisdiction over the state's elk management policies. The court asserted that "the issue concern[ed] WGFD's use of NFS land," not jurisdiction over the state's wildlife or feedground policy. *Id.* Moreover, the court noted that the Bridger-Teton forest plan called for reestablishing historic elk migration routes, a goal that was being stymied by the feedgrounds, which disrupted seasonal migration patterns. *Id.* at 1217. And it noted that the National Elk Refuge was committed to phasing out supplemental feeding in the near future, at least before the state's ten-year feedground permit would expire. *Id.* at 1221 n.18.

364. *Id.* at 1219–20.

from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission, and mitigation."[365] Besides forcing the Forest Service back to the EIS drawing board, the court's message was plain: given the serious risks associated with supplemental feeding and chronic wasting disease, the federal and state agencies must cooperate to confront the risk at the regional scale and give serious consideration to phasing out the feedgrounds.

Indeed, scientists are acutely concerned about the threat chronic wasting disease poses to the GYE elk herds with the unnatural intermingling that occurs on the National Elk Refuge and Wyoming's feedgrounds.[366] Chronic wasting disease is widely prevalent in Wyoming deer and elk herds in the eastern portion of the state, and diseased animals have now appeared in western Wyoming, including in Grand Teton National Park and elsewhere near the state's feedgrounds.[367] With no effective treatment, chronic wasting disease is always fatal, triggering brain degeneration, weight loss, abnormal behavior, and eventually death. It is believed to be caused by prions that can be transmitted between animals and through contaminated soil, plants, and animal feed.[368] Generally in denial that chronic wasting disease threatens its prized elk herds,[369] Wyoming has responded to its presence by monitoring deer and elk herds for the infection, undertaking additional research, and increasing hunter harvest levels. But the state has steadfastly ignored any

365. *Id.* at 1221.

366. For sobering accounts of the chronic wasting disease problem in Wyoming, see BRUCE L. SMITH, WHERE ELK ROAM: CONSERVATION AND BIOPOLITICS OF OUR NATIONAL ELK HERD 102–115 (2012); Todd Wilkinson, *The Coming Plague: Chronic Wasting Disease, Cousin to Mad Cow, Is Bearing Down on Yellowstone National Park and America's Most Famous Elk Herd*, MOUNTAIN J. (Jan. 25, 2017), https://exposingthebiggame.wordpress.com/2017/01/31/the-coming-plague-chronic-wasting-disease-cousin-to-mad-cow-is-bearing-down-on-yellowstone-national-park-and-americas-most-famous-elk-herd/ [https://perma.cc/ZW5S-J58S].

367. Todd Wilkinson, *Chronic Wasting Disease Hits Mule Deer in Grand Teton National Park*, MOUNTAIN J. (Nov. 21, 2018), https://mountainjournal.org/dreaded-wildlife-disease—arrives-in-grand-teton-national-park [https://perma.cc/33UG-UGCD].

368. Elizabeth S. Williams et al., *Chronic Wasting Disease of Deer and Elk: A Review with Recommendations for Management*, 66 J. WILDLIFE MGMT. 551, 553–54 (2002).

369. Scientists have noted that the incubation time for chronic wasting disease to manifest itself can be years, and the prions can exist in the soil for even longer. Ian H. Plummer et al., *Temporal Patterns of Chronic Wasting Disease Prion Excretion in Three Cervid Species*, 98 J. GEN. VIROLOGY 1932, 1937–38 (2017).

suggestion of closing its feedgrounds.[370] Even the state's biologists, however, acknowledge that it is only a matter of time before the disease infects feedground elk.[371]

By most accounts, the viable options for addressing the disease are limited to reducing elk herd sizes, removing sick animals, or promoting spatial distribution across the landscape, which essentially means closing the feedgrounds.[372] Predators like the wolf and scavengers could help by dispersing the elk and promptly cleaning up diseased carcasses,[373] but these animals are despised in the state. Over the long term, however, inaction could imperil the state's world-class elk herds, negatively affect the region's lucrative tourist industry, usher the disease into Yellowstone as well as adjacent states, and perhaps even threaten human health.[374]

Montana wildlife officials, responding to the first reports of the disease in their own state, have already requested that Wyoming close its feedgrounds,[375] even though no cases are yet reported on the feedgrounds. The pressure is plainly mounting to address the Wyoming feedground problem, if not at the state level then at the federal level, either building upon the recent Wyoming federal court ruling or perhaps even through congressional intervention.[376] The solution seems inescapable:

370. WYO. GAME AND FISH DEP'T, CHRONIC WASTING DISEASE MANAGEMENT PLAN (2016), https://wgfd.wyo.gov/WGFD/media/content/Wildlife/Disease/CWD-Plan-April-2016-signed.pdf [https://perma.cc/RC56-WK5Z].

371. Wilkinson, *The Coming Plague*, *supra* note 366 (quoting Dr. Mary Wood, Wyoming Game and Fish Dept. chief wildlife veterinarian).

372. SMITH, WHERE ELK ROAM, *supra* note 366, at 112–13.

373. *Id.* at 113; Eric J. Maichak et al., *Effects of Management, Behavior, and Scavenging on Risk of Brucellosis Transmission in Elk of Western Wyoming*, 45 J. WILDLIFE DISEASES 398 (2009); *but see* WildEarth Guardians v. National Park Service, 703 F.3d 1178 (10th Cir. 2013) (upholding, against a NEPA challenge, Rocky Mountain National Park's decision not to include a wolf reintroduction alternative in its analysis of how to address the Park's elk abundance problem).

374. On the potential human health concern, see Wilkinson, *The Coming Plague*, *supra* note 366 (quoting the Center for Disease Control on the potential for transmission from infected animals or soil to humans).

375. Maxine Speier, *Montana Wildlife Officials Ask Wyoming to Stop Feeding Elk*, MONT. PUB. RADIO (Dec. 14, 2017), http://www.mtpr.org/post/montana-wildlife-officials-ask-wyoming-stop-feeding-elk [https://perma.cc/KWJ9-RMPN].

376. In fact, U.S. Senator Jon Tester from Montana has introduced legislation named the "Chronic Wasting Disease Management Act" to provide $3.5 million in federal funding for research and federal-state cooperative efforts to address this wildlife disease threat. S. 689, 116th Cong. (2019); H.R. 1550, 116th Cong. (2019). One observer believes the legislation could promote better cooperation among the three GYE states confronting the problem. Interview with Caroline Byrd, *supra* note 30.

phase out the unnatural, historically anomalous Wyoming feedgrounds, which belie the region's ecological integrity. Nonetheless, a newly constituted Wyoming chronic wasting disease working group has announced that it will not consider closing the state's feedgrounds.[377]

d. Protecting Migration Routes

Notwithstanding winter feedground options, the GYE's abundant ungulates still migrate in large numbers. Recent research utilizing advanced GPS technology has revealed breathtaking new information about ungulate migration patterns in the GYE, helping to coalesce public interest in the annual migration ritual and corresponding efforts to protect migration corridors.[378] Migration is a critical learned behavior—one passed between generations over the centuries—that promotes animal health as herds seasonally follow the forage, moving into the lush high mountain country in the summer months and then descending to lower elevations to endure the difficult winters. In Yellowstone, scientists have documented migratory routes for nine separate elk herds that take the animals out of the Park and across various jurisdictional boundaries, where they can encounter numerous barriers in the form of roads, subdivisions, energy fields, fencing, and even feedgrounds disrupting their learned pathways.[379] In the southern GYE, scientists have documented a three-hundred-mile round trip mule deer migration from the Hoback area south of Jackson to the Red Desert and a two-hundred-mile round trip pronghorn migration from Grand Teton National Park to the Upper Green River Basin sagebrush country.[380] These documented migration patterns have not only prompted a rethinking of the GYE boundaries but have also called additional attention to the challenges of managing across the region's jurisdictional boundaries.

Ongoing research has revealed the importance of these annual migration rituals and is helping to coalesce support for

377. Angus M. Thuermer, Jr., *From Wyofile: CWD Panel Won't Consider Closing Feedgrounds*, GILLETTE NEWS RECORD (Jun. 11, 2019), https://www .wyofile.com/cwd-panel-wont-consider-closing-elk-feedgrounds/ [https://perma.cc/5U8U-DGW7].

378. MATTHEW J. KAUFFMAN ET AL., WILD MIGRATIONS: ATLAS OF WYOMING'S UNGULATES 60–63, 119, 126–33, 138–45 (2018).

379. *Id.* at 126–27.

380. *Id.* at 136–43.

the conservation measures necessary to safeguard the routes. Elk habitat in the GYE has declined noticeably since the 1970s,[381] with estimates that 75 percent of elk and other ungulate migration routes in the GYE have been lost.[382] According to one respected biologist who has extensively studied GYE migration patterns, the "flow of elk in and out of Yellowstone sustains the entire ecosystem."[383] To help disseminate the new scientific data broadly, the Wyoming Migration Initiative—which involves an array of credentialed wildlife biologists, writers, and others—has produced an atlas portraying and explaining the migratory processes playing out across the state, with a particular focus on the GYE region.[384] It is designed to capture the public's attention and to secure greater cooperation for corridor conservation.

As early as 2007, the Western Governors' Association adopted a groundbreaking resolution to protect wildlife corridors and has since supported related research and conservation efforts.[385] In 2017, the Trump Administration went on record endorsing migratory corridor protection when Secretary of the Interior Zinke directed the federal land management agencies to collaborate with the states to "enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands."[386] The Zinke order complements the Forest Service's NFMA rules that instruct forest managers to address habitat connectivity in the forest planning process.[387] Moreover,

381. Andrew J. Hansen & Linda Phillips, *Trends in Vital Signs for Greater Yellowstone: Application of a Wildland Health Index*, 9 ECOSPHERE 1, 17 (2018).

382. Joel Berger, *The Last Mile: How to Sustain Long-Distance Migration in Mammals*, 18 CONSERVATION BIOLOGY 320, 320 (2004).

383. Arthur Middleton, *Elk in the Greater Yellowstone Ecosystem*, *in* KAUFFMAN ET AL., *supra* note 378, at 127.

384. KAUFFMAN ET AL., *supra* note 378.

385. WESTERN GOVERNORS' ASSOCIATION, POLICY RESOLUTION 07-01, PROTECTING WILDLIFE MIGRATION CORRIDORS AND CRUCIAL WILDLIFE HABITAT IN THE WEST (Feb. 27, 2007), www.western%20governors%20on%20climate% 20and% 20corridors%20(4).pdf [https://perma.cc/6RD9-ME6J]. The governors were prompted to action amidst mounting concern over the impact of escalating oil and gas development on migratory patterns in western Wyoming and elsewhere.

386. SECRETARY OF THE INTERIOR, ORDER NO. 3362 (Feb. 9, 2018). Significantly, the Zinke order instructs federal land managers to "avoid[] development in the most crucial winter range or migration corridors during sensitive seasons" and to "minimiz[e] development that would fragment winter range and primary migration corridors."

387. 36 C.F.R. § 219.9(a)(1) (2018) ("connectivity" as a component of "ecosystem integrity"); 36 C.F.R. § 219.10(a)(1) (2018) ("habitat and habitat connectivity" as components of "multiple use").

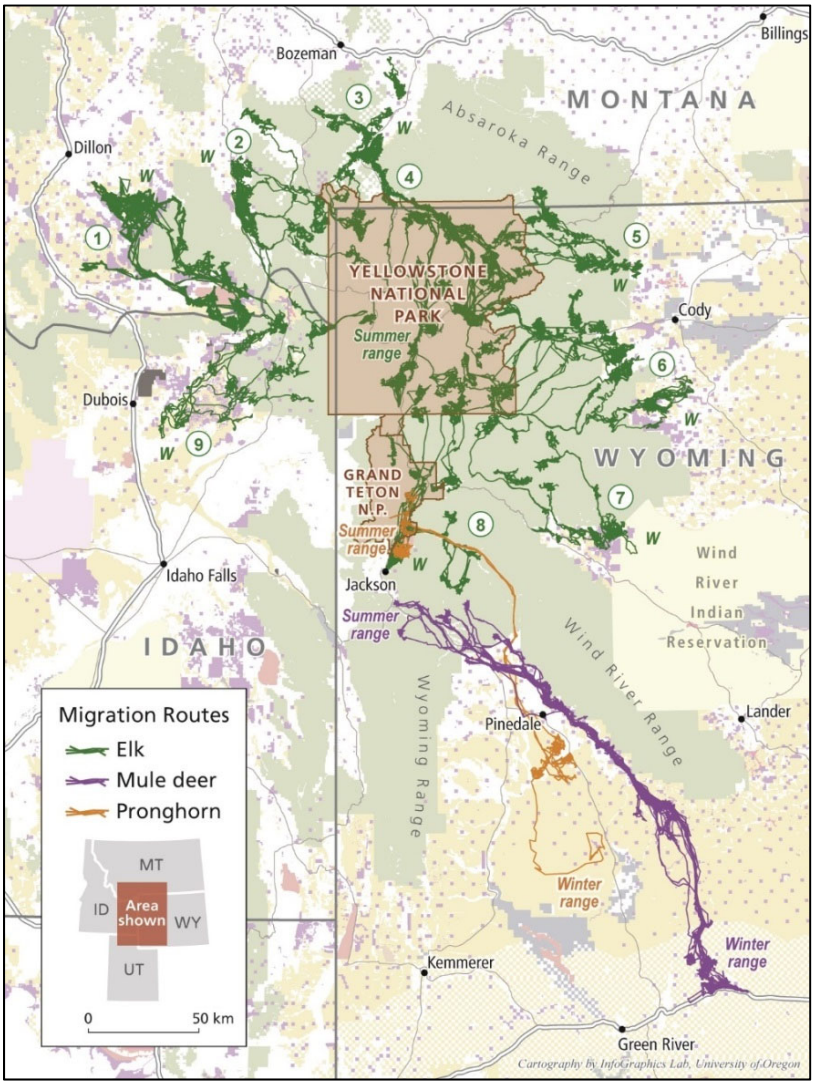

FIGURE 3. Wildlife Migration Routes in the Greater Yellowstone Ecosystem. Seasonal migration is a regular occurrence for the Greater Yellowstone Ecosystem's ungulate populations. The map, based on new scientific information, shows the extensive scope of these seasonal migrations, which effectively expand the GYE concept to a much broader landscape scale for wildlife management purposes. Courtesy of Arthur Middleton (University of California, Berkeley), Hall Sawyer (WEST Inc.), J. Swanson and Alethea Steingisser (University of Oregon Infographics Lab).

the Wildlife Corridors Conservation Act was introduced into Congress in both 2016 and 2018.[388] Though the bill has languished, the idea of legal corridor protection is plainly gaining some traction as the realities of migration become better known and as workable conservation strategies emerge.

In the GYE, an unlikely federal, state, and private landowner coalition came together in the early 2000s to establish the first formal migratory corridor, called the Path of the Pronghorn. Driven by concern over extensive oil and gas development in the Upper Green River Basin, and the related fear that drilling activities would disrupt a historic antelope migration route, the federal agencies each took steps to safeguard their portion of the route.[389] Grand Teton National Park acquired a critical state school trust land section at the corridor's northern terminus, the Bridger-Teton National Forest amended its forest plan to formally designate a wildlife corridor across forest lands, and the BLM established Areas of Critical Environmental Concern at the southern end to preclude industrial activity on critical winter range. To avoid potential problems on private ranch lands that intersect the route, conservation groups collaborated with government officials to acquire conservation easements to prevent further residential development, while they simultaneously worked to remove and repair problematic fencing that blocked the corridor. The Wyoming Highway Department joined too, using federal and state funds to construct highway overpasses at the Trapper's Point choke point west of Pinedale, enabling the migrating pronghorn to complete their journey. A similar collaborative effort is underway to safeguard the recently documented, 150-mile mule deer migration corridor that stretches from Hoback to the Red Desert; the group has secured a conservation easement at a bottleneck point and is removing problematic fencing.[390]

388. H.R. 6448, 114th Cong. (2016); *see also* Jeffrey B. Hyman et al., *Statutory Reform to Protect Migrations as Phenomena of Abundance*, 41 ENVTL. L. 407 (2011).

389. David N. Cherney, *Securing the Free Movement of Wildlife: Lessons from the American West's Longest Land Mammal Migration*, 41 ENVTL. L. 599, 607–10 (2011).

390. KAUFFMAN ET AL., *supra* note 378, at 142–43. At the same time, however, the BLM is leasing parcels within the mule deer migration corridor for oil and gas development, prompting litigation to protect the corridor and nearby sage grouse habitat. Heather Richards, *Report Says Oil and Gas Leasing Spreading into Protected Areas*, GILLETTE NEWS RECORD (April 22, 2019), https://www.gillettenewsrecord.com/news/wyoming/article_220aa6fe-ca63-5af1-a45e-3bc3a532e2d9.html [https://perma.cc/ZR2V-KF7J]; Ryan Richards et al., *Trump*

These multi-actor efforts reflect the gathering and expanding level of support that exists to work across boundaries to protect the GYE's important wildlife migrations.

In sum, ungulate management in the GYE is as fragmented as the habitat. The states are in control outside the national parks and refuges, but they are pursuing very different management policies from their federal counterparts—as well as among themselves—to sustain high elk numbers for the benefit of their hunting constituencies. Montana is intent on preserving hunting opportunities by controlling wolves, while the Park Service is committed to wolf restoration. Wyoming remains intent on maintaining its feedgrounds, seeing them as a way to reduce disease transmission, while Montana and Idaho are quite concerned about the disease infection risks emanating from Wyoming. For conservation groups, the goal is to eliminate the feedgrounds and restore a more natural setting, including historic migration routes.

As ungulate migration stretches the outer boundaries of the GYE, the precedent-setting Path of the Pronghorn migration corridor offers an inspiring model for federal-state-private collaboration—complete with workable legal tools—to sustain and restore this vital ecological process across the region. The recent federal court ruling on the Forest Service's Alkali Creek feedground permit could provide the agencies with the political cover to revisit GYE feedground, disease, and migration concerns with a renewed commitment to ecological restoration opportunities. If so, then this matter would serve as another instance where the federal judiciary has played a catalytic role in promoting ecological management principles within the GYE region.

C. The Multiple-Use Lands: New Priorities and Lingering Conflicts

Unlike the Park Service's preservationist mandate, the Forest Service operates under a multiple-use mandate that has often put the two agencies at odds. Indeed, thirty years ago, conflict rather than cooperation seemed to characterize their

Administration Is Selling Western Wildlife Corridors to Oil and Gas Industry, CTR. FOR AMERICAN PROGRESS (Feb. 14, 2019), https://www.americanprogress.org/issues/green/news/2019/02/14/466218/trump-administration-selling-western-wildlife-corridors-oil-gas-industry/ [https://perma.cc/8D22-APBN].

relationship. As reflected in the first-generation GYE forest plans, the Forest Service was generally intent on promoting timber production, oil and gas exploration, livestock grazing, and other developmental activities on its lands, even those adjacent to Yellowstone and Grand Teton national parks.[391] By the late-1980s, the Targhee National Forest had clear-cut extensively on Yellowstone's western border and left the area a wasteland for bears and elk; the Bridger-Teton was proceeding with oil and gas leases in the shadow of the two parks; the Gallatin was about to receive a massive gold mine project proposal on lands just upstream from Yellowstone; and none of the GYE forests featured any major new wilderness designations even though several large roadless areas remained relatively pristine. Although environmental groups appealed most of the first-generation GYE forest plans, arguing that they did not properly factor nature conservation concerns into the multiple-use balance,[392] the appeals did not immediately alter the overall commitment to commodity production. Much has changed since then, however, and the Forest Service is a different agency today with different priorities and challenges.[393] Conventional development activities have been mostly curtailed in the GYE national forests, while an array of new issues concerning wildlife habitat, migration corridors, recreation, wildfire, and climate change have come to the fore.

1. Timber: Putting the Timber Wars to Rest

In the aftermath of World War II, timber production assumed a priority position in the national forests,[394] but that has changed during the past thirty years. Nationally, timber harvesting on public lands has dropped by about 75 percent since 1973. This change was prompted by the Pacific Northwest spotted owl controversy, emergent ecological and aesthetic concerns, related environmental litigation, and the availability of quality lumber from both Canada and private lands in the

391. Keiter, *Taking Account*, *supra* note 1, at 967–83.
392. *Id.* at 970–74.
393. *See supra* notes 78–86, 95–97 and accompanying text.
394. Char Miller, *supra* note 95, at 43–44; *see generally* PAUL W. HIRT, A CONSPIRACY OF OPTIMISM: MANAGEMENT OF NATIONAL FORESTS SINCE WORLD WAR TWO (1994) (detailing national forest timber policy during the last half of the 20th century).

southeast.[395] In the GYE, large, clear-cut logging projects, once a primary source of conflict, have mostly disappeared from the region's forests in deference to wildlife and recreational concerns, particularly the grizzly bear recovery effort. Along the way, forest plan appeals, litigation against logging projects, and strategic land exchanges helped curb timber sales. Most of the region's lumber mills have shut down, unable to rely upon the national forests for a steady supply of commercial timber. Instead, the GYE national forests are focused on forest health and restoration goals to address mounting wildfire concerns while disallowing new roads and closing old ones. Logging in the GYE is a "shadow of its former self," and the region's timber wars are history.[396]

The Targhee National Forest is a prime example of this evolution. It maintained the region's largest timber harvest levels—the result of a massive timber sale during the 1960s to address a pine beetle outbreak—and also brought new employment opportunities to southeastern Idaho's rural communities in the form of several large lumber mills.[397] Once underway, clear-cut harvesting remained at unsustainable levels into the 1990s while consistently costing more than the revenues generated.[398] Despite growing opposition, the Targhee's 1985 forest plan provided for a harvest level (or allowable sale quantity) of 860 million board feet (MMBF) per decade, mostly as salvage sales to address the ongoing pine beetle epidemic.[399]

By the mid-1990s, the results of overcutting were evident nearly everywhere. The state of Idaho was forced to significantly

395. U.S. FOREST SERVICE, NUMBER OF SALES, VOLUME, VALUE & PRICE PER MBF OF CONVERTIBLE TIMBER CUT & SOLD FOREST SERVICE WIDE, https://www.fs.fed.us/forestmanagement/documents/sold-harvest/documents/1905-2012_Natl_Summary_Graph.pdf (last visited Feb. 19, 2019) [https://perma.cc/8NRL-3T9B]; Mitch Tobin, *Timber Harvest Falls in National Forests*, ECOWEST (May 28, 2013), http://ecowest.org/2013/05/28/timber-harvest-falls-in-national-forests/ [https://perma.cc/Y5HT-BAWQ].

396. Interview with Peter Aengst, *supra* note 95; interview with Scott Christensen, *supra* note 57; interview with Tim Preso, *supra* note 44.

397. RICK REESE, GREATER YELLOWSTONE: THE NATIONAL PARK & ADJACENT WILDLAND 77 (1984); CRS ECOSYSTEM REPORT *supra* note 189, at 71.

398. CRS ECOSYSTEM REPORT, *supra* note 189, at 74–75.

399. DEP'T OF AGRIC., U.S. FOREST SERVICE, TARGHEE NATIONAL FOREST LAND MANAGEMENT PLAN 328 (1985); *see also* GREATER YELLOWSTONE COALITION, AN ENVIRONMENTAL PROFILE OF THE GREATER YELLOWSTONE ECOSYSTEM 115 (1991) [hereinafter "AN ENVIRONMENTAL PROFILE"] (showing the Targhee's 1989 harvest level at 91.6 MMBF, with the total harvest level on the other six GYE national forests at 82.6 MMBF).

curtail elk hunting in portions of the Forest due to the lack of cover for the animals, and grizzly bears were absent from most of the Forest's bear management units, stalling the GYE bear recovery effort.[400] A distinct straight edge, defined by a massive clear-cut on the forest's border with Yellowstone National Park, was evident from satellite photos, while unsightly large clear-cut patches were plainly visible from the main highways running through the Forest. Even agency officials recognized that this sale level was unsustainable over the long term, while below-cost timber sales were increasingly controversial across the region.

Responding to these concerns, the Greater Yellowstone Coalition relentlessly challenged the Targhee's 1985 forest plan and individual timber sales, arguing that the cutting violated the Endangered Species Act, the National Forest Management Act, and NEPA.[401] The Forest Service, confronted with unrefuted scientific evidence that clear-cut logging and the accompanying roads were anathema to grizzly bears and other wildlife[402] as well as court decisions from elsewhere in Montana limiting new road construction in grizzly bear habitat,[403] began retreating on proposed sales and ultimately revised the plan in 1997. The Targhee's new forest plan "emphasize[d] wildlife habitat management and provide[d] more core areas for grizzly bears."[404] Accordingly, it reduced timber harvest levels by almost 90 percent (to eighty MMBF per decade), road density by 20 percent (closing 408 miles of roads), and motorized trails by

400. AN ENVIRONMENTAL PROFILE, *supra* note 399, at 115.

401. Interview with Peter Aengst, *supra* note 95; interview with Scott Christensen, *supra* note 57; interview with Doug Honnold, *supra* note 196; interview with Ed Lewis, *supra* note 30; interview with Louisa Willcox, *supra* note 45.

402. *See, e.g.*, RICHARD J. KNIGHT ET AL., MOVEMENT AND HABITAT USE OF THE YELLOWSTONE GRIZZLY BEAR, INTERAGENCY GRIZZLY BEAR STUDY TEAM REPORT (1984); David J. Mattson et al., *The Effects of Developments and Primary Roads on Grizzly Bear Habitat Use in Yellowstone National Park, Wyoming*, 7 INTL. CONF. BEAR RES. & MGMt. 259 (1987); David J. Mattson, *Human Impacts on Bear Habitat Use*, 8 INTL. CONF. BEAR RES. & MGMT. 33 (1990); David J. Mattson & Matthew M. Reid, *Conservation of the Yellowstone Grizzly Bear*, 5(3) CONSERVATION BIOLOGY CONSERVATION BIOLOGY 364 (1991).

403. Resources Limited v. Robertson, 35 F.3d 1300, 1304–05 (9th Cir. 1994); Swan View Coalition, Inc. v. Turner, 824 F. Supp. 923, 936–40 (D. Mont. 1992).

404. U.S. DEP'T OF AGRIC., FOREST SERVICE, RECORD OF DECISION FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS) FOR THE REVISED FOREST PLAN, TARGHEE NATIONAL FOREST 10 (1997) [hereinafter REVISED TARGHEE FOREST PLAN ROD].

30 percent (closing 233 miles of these trails).[405] But even before the new plan was completed, the large mills in St. Anthony and Rexburg had closed, signaling the end of unrestrained logging in the Forest.

The Gallatin National Forest, also a traditional timber-producing forest, has seen its harvest levels drop during the past thirty years in those areas closest to Yellowstone National Park. The Gallatin's 1987 Forest Plan forecast an annual harvest level of twenty-one MMBF (roughly 2,100 acres annually), partly to address a massive bark beetle infestation dating from 1969 and still evident across large portions of the Forest.[406] The plan was not appealed by environmental groups, who were more concerned about the checkerboard railroad lands sprawled across the Gallatin Range being actively harvested for their timber. Their concerns focused on the wildlife impacts, particularly grizzly bear habitat and elk migration routes, from the cutting and road construction, as well as the likelihood that the owners—Louisiana Pacific Corporation and Big Sky Lumber—would subdivide these lands and further fragment the landscape.

To address these concerns, the Greater Yellowstone Coalition and other conservation organizations worked with the Forest Service and the state of Montana to engineer two large, congressionally endorsed land exchanges.[407] The exchanges enabled the Forest Service to acquire 83,000 checkerboard acres in exchange for 54,030 acres of federal land elsewhere plus additional cash.[408] The exchanges effectively protected critical wildlife habitat north of the Park and south of the burgeoning Big Sky ski resort, though not without controversy—particularly

405. *Id.* at 9–11.

406. U.S. DEP'T OF AGRIC., FOREST SERVICE, GALLATIN NATIONAL FOREST PLAN (1987).

407. Gallatin Range Consolidation and Protection Act of 1993, Pub. L. 103-91, 107 Stat. 987; Gallatin Land Consolidation Act of 1998, Pub. L. 105-267, 111 Stat. 2371. In addition, the exchange enabled the Forest Service to acquire the rights-of-way across national forest land that Big Sky Lumber had acquired through earlier litigation. The court in that case interpreted 16 U.S.C. § 1130(a), a right of way provision included in the Alaska National Interest Lands Conservation Act, to apply to the national forests of the lower forty-eight states. Alaska National Interest Lands Conservation Act, Pub. L. 96-487 § 4(d), 94 Stat. 2371, 2379 (1980). *See* Montana Wilderness Ass'n v. U.S. Forest Service, 655 F.2d 951, 954 (9th Cir. 1981).

408. George Draffan & Janine Blaeloch, *The Gallatin Land Exchanges*, *in* COMMONS OR COMMODITY: THE DILEMMA OF FEDERAL LAND EXCHANGES (2000), http://www.landgrant.org/gallatin-lx.html [https://perma.cc/2Q94-EC45].

a provision to divert future Forest Service timber sale revenues from elsewhere to Big Sky Lumber.[409] The legislation also included a restoration provision designed to bring already heavily logged watersheds into compliance with Forest Service standards.[410] It also mandated compliance with NEPA, as well as other environmental laws, for future timber sales.[411] Besides protecting critical habitat and migration corridors, the exchanges stopped the southward drift of subdivision development on the former railroad lands.[412] Although timber sales elsewhere on the Gallatin have continued to spark controversy,[413] the overall volume of timber sold remains at a low level. Moreover, the Gallatin Range is in federal ownership, where it is managed primarily for wildlife and recreational purposes—a fact reflected in the Forest's recent draft plan.[414]

The major recent timber-management dispute on GYE national forests sprang from proposed congressional legislation involving the 3.36-million-acre Beaverhead-Deerlodge National Forest.[415] Historically, both the Beaverhead and Deerlodge national forests maintained a high-volume harvest and supplied several local mills with logs. In 2009, the combined Beaverhead-Deerlodge National Forest adopted its revised forest plan, classifying 299,000 acres as suitable for timber production and allowing timber cutting on another 1.6 million acres to address hazardous fuel, forest restoration, and aquatic system

409. Alaska National Interest Lands Conservation Act § 4(c).

410. *Id.* § 6(f).

411. *Id.* § 4(c).

412. For additional information on land ownership, land exchanges, and public access concerns on the Custer-Gallatin National Forest, see KATHY NASH, ASSESSMENT FOREST PLAN REVISION: FINAL LAND STATUS AND OWNERSHIP, LAND USES, AND ACCESS PATTERNS REPORT (Feb. 16, 2017).

413. *See, e.g.*, Native Ecosystems Council v. Dombeck, 304 F.3d 886 (9th Cir. 2002); *see also* Scott McMillion, *Price of Conservation: Land Swap Incomplete without Purchase of Taylor Fork Area*, BOZEMAN DAILY CHRON., May 12, 2001, at C1.

414. One major Gallatin Range drainage is in private hands and has been extensively developed, namely the Big Sky ski resort complex, which is situated roughly halfway between West Yellowstone and Bozeman in Gallatin Canyon. *See infra* notes 598–601 and accompanying text.

415. In 1996, the two forests were administratively combined into one national forest, now known as the Beaverhead-Deerlodge National Forest. Previously, the forests were managed separately. The Beaverhead National Forest adopted its forest plan in 1986, while the Deerlodge National Forest adopted its plan in 1987. *Beaverhead-Deerlodge National Forest*, *History*, FOREST SERVICE, https://www.fs.usda.gov/main/bdnf/about-forest (last visited Aug. 27, 2019) [https://perma.cc/8YY7-FX3K].

concerns.[416] The plan also identified 1.8 million inventoried, roadless acres that were potentially eligible for wilderness designation.[417]

Presented with consensus recommendations from a local collaborative group that included longtime adversaries from the timber industry and environmental organizations,[418] Montana U.S. Senator John Tester first introduced the Forest Jobs and Recreation Act in 2009 and continued to pursue the bill in subsequent congressional sessions.[419] The bill proposed several new additions to the wilderness system covering roughly 640,000 acres,[420] new special management and recreation designations covering another 310,000 acres,[421] and commercial timber sales. To address forest health and wildfire concerns, and to stabilize the local timber industry and protect forest jobs, the bill instructed the Forest Service to sell a minimum of 5,000 acres annually for harvesting with a total goal of selling 70,000 acres of timber with commercial value.[422]

The bill, however, drew heavy opposition from several environmental groups. Although the bill targeted the wildland-urban interface and already-roaded lands for the logging projects, opponents objected to the guaranteed timber sale provisions and to the release of roadless lands to multiple-use management.[423] After reintroducing the bill in several sessions, Senator Tester ultimately conceded defeat in 2014, leaving

416. DEP'T OF AGRIC., U.S. FOREST SERV., BEAVERHEAD-DEERLODGE NATIONAL FOREST PLAN 6 (2009).

417. *Id.* at 5. This represented a 12 percent increase in roadless acreage between 1986 and 2005, attributable to the additions in Lost Creek, the Madison Range, and Garfield Mountain, as well as increased GIS capabilities. *Id.* at 8.

418. For a description and analysis of the Beaverhead-Deerlodge Partnership, see Ted Fellman, *Collaboration and the Beaverhead-Deerlodge Partnership: The Good, the Bad, and the Ugly*, 30 PUB. L. & RES. L. REV. 79 (2009).

419. Forest Jobs and Recreation Act of 2009, S. 1470, 111th Cong. (2009); Forest Jobs and Recreation Act of 2011, S. 268, 112th Cong. (2011); Forest Jobs and Recreation Act of 2013, S. 37, 113th Cong. (2013); *see* MARY LANDRIEU, FOREST JOBS AND RECREATION, S. Rep. No. 113-165, at 15 (2014).

420. The bill designated approximately 577,000 acres as new wilderness additions to the national forest and another 66,000 acres as new BLM designated wilderness. S. 137, 113th Cong. § 203 (2013). However, the bill also released two large national forest wilderness study areas and several BLM wilderness study areas for either multiple use or special management, thus effectively eliminating the wilderness option for those areas. *Id.* §§ 205, 206.

421. *Id.* § 207.

422. *Id.* §§ 101–106. The bill specifically provided that prescribed burning could not be used to meet the timber-cutting acreage target. *Id.* § 103(b)(4).

423. Fellman, *supra* note 418, at 95–98.

future timber management on the Forest to be dictated by the revised forest plan. The episode revealed serious fissures within the environmental community over forest management policy and the disputed role of collaborative processes to establish forest policy—concerns that transcended the opportunity to bring more than 640,000 acres into the national wilderness system.

In Wyoming, timber harvesting on the Shoshone and Bridger-Teton national forests has generated little controversy during the past thirty years following closure of the large mill in Dubois.[424] In fact, timber production has declined dramatically across Wyoming during the past forty years. Between 1976 and 2010, the number of sawmills operating in the state dwindled from fifty to just twelve active mills.[425] In its 2015 forest plan, the 2.4-million-acre Shoshone National Forest identified only 127,000 acres as suitable for timber production, representing a decrease of 17,000 acres from the suitable acreage identified in its 1986 plan.[426] Similarly, the Bridger-Teton's 1990 forest plan identified only 279,000 acres as suitable for timber harvesting in this 3.3-million-acre forest.[427] In both forests, substantial wilderness acreage is off-limits to cutting, while grizzly bear and other wildlife management constraints have precluded new road construction—as has the Forest Service's roadless area rule since its issuance in 2000.[428] Additionally, recreational values have attained greater importance within each forest. Although a few small mills still operate in the Wyoming portions of the

424. Keiter, *Taking Accoun*t, *supra* note 1, at 973–74.

425. CHELSEA P. MCIVER ET AL., U.S. FOREST SERVICE, WYOMING'S FOREST PRODUCTS INDUSTRY AND TIMBER HARVEST 13 (2010); UNIV. WYO. RUCKELHAUS INST., GOVERNOR'S TASK FORCE OF FORESTS, FINAL REPORT 2 (2015).

426. U.S. FOREST SERVICE, DEP'T OF AGRIC., SHOSHONE NATIONAL FOREST LAND MANAGEMENT PLAN 117 (2015); U.S. FOREST SERVICE, DEP'T OF AGRIC., SHOSHONE NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN App. D, D-2 (1986) (identifying 144,682 acres as tentatively suitable for timber production).

427. U.S. FOREST SERVICE, U.S. DEP'T OF AGRIC., BRIDGER-TETON NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN 434 (2015).

428. U.S. FOREST SERVICE, U.S. DEP'T OF AGRIC., SHOSHONE NATIONAL FOREST LAND MANAGEMENT PLAN 12–13, 123 (2015), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3842886.pdf [https://perma.cc/XJ3T-FCBE]; U.S. FOREST SERVICE, U.S. DEP'T OF AGRIC., BRIDGER-TETON NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN 29–31 (2015), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3840286.pdf [https://perma.cc/3S6Y-G9HP]; *see also* DAVID T. TAYLOR ET AL., AN ECONOMIC PROFILE OF THE BRIDGER-TETON NATIONAL FOREST 5–11 (2008).

GYE,[429] little commercial logging is occurring, with scant likelihood of a major resurgence in the foreseeable future. Both forests, however, have experienced extensive tree mortality attributed to the bark beetle epidemic and warming temperatures, creating a wildfire hazard that is prompting forest health restoration efforts.

Indeed, the Forest Service is broadly concerned about the mounting fire danger across the GYE and its ever-growing wildland-urban interface zone.[430] In recent years, several devastating fires have raged within the GYE, including the 2001 Green Knoll fire just outside Jackson (which threatened hundreds of high-end homes),[431] and the 2018 Roosevelt fire near Bondurant, Wyoming (which destroyed more than fifty homes).[432] Timber management policy in recent GYE national forest plans has emphasized forest restoration, wildlife habitat maintenance, and wildfire management as at least co-equal goals with commercial timber production.[433] The 2015 Shoshone National Forest revised forest plan, for example, envisions: "[f]orested ecosystems are managed to maintain healthy, diverse stands that are resilient to endemic insects, wildfire, and changes in climate, while providing for viable populations of all native and desired nonnative vertebrate species."[434] The plan also acknowledges that "wildland fire plays a role in maintaining

429. MCIVER ET AL., *supra* note 425, at 13; TAYLOR ET AL., *supra* note 428, at 6–7.

430. In December 2018, citing the need to protect local communities from catastrophic wildfires on public lands while supporting local economic activity, President Trump issued an executive order directing the Agriculture and Interior secretaries to undertake active forest management in order to reduce hazardous fuel loads and mitigate wildfire risks. Exec. Order No. 11,855, 84 Fed. Reg. 7714 (Mar. 4, 2019).

431. Julie Cart, *Hundreds Flee, Homes Threatened as Winds Intensify Wyoming Blaze*, L.A. TIMES (July 26, 2001, 12:00 AM), https://www.latimes.com/archives/la-xpm-2001-jul-26-mn-26690-story.html [https://perma.cc/GT4J-QZYA].

432. Star Tribune Staff, *A Fire Burning in Western Wyoming Has Now Destroyed 55 Homes*, CASPER STAR TRIBUNE (Sept. 27, 2018), https://trib.com/news/state-and-regional/a-fire-burning-in-western-wyoming-has-now-destroyed-homes/article_e7d0d587-69a3-5874-a3fb-58229f4a2a75.html [https://perma.cc/73GE-35B9].

433. Following the closure of several GYE lumber mills, the Forest Service can find it difficult to attract buyers for the small-diameter trees typically offered in its ecological restoration project sales unless some commercial timber is also included. Interview with Mary Erickson, *supra* note 61.

434. SHOSHONE NATIONAL FOREST PLAN (2015), *supra* note 428, at 13. See also REVISED TARGHEE FOREST PLAN ROD, *supra* note 404, at 10 (emphasizing wildlife habitat, reducing commercial logging, and addressing wildfire concerns).

healthy, resilient ecosystems."[435] Nonetheless, the agency is also committed to removing hazardous fuels in order to reduce the risk of catastrophic wildfires.

To address the mounting GYE wildfire danger, the Forest Service is pursuing ecosystem restoration projects involving thinning and, occasionally, prescribed burning proximate to at-risk communities.[436] In 2015, the Bridger-Teton National Forest proposed the Teton to Snake Fuels Management Project, designed to address wildfire risks through "mechanical thinning, prescribed fire, and snag removal in a wildland-urban interface just west of Jackson, Wyoming."[437] Opponents, however, objected to any tree cutting in the nearby Palisades Wilderness Study Area, questioning whether thinning could effectively stop a large-scale fire.[438] The Custer National Forest has proposed a similar forest restoration project "to reduce hazardous fuels in the wildland[-]urban interface near the City of Red Lodge . . . [and] to maintain/improve resiliency of forest vegetation and grasslands . . . [and] to enhance aspen habitat; and improve water quality."[439] Although these ecosystem restoration projects are often criticized for being ineffective, or for harvesting too much commercial-grade timber, they nonetheless demonstrate that timber cutting in the GYE is proceeding on a smaller scale and mostly for ecological and wildfire management purposes rather than for commercial reasons.

2. Oil and Gas: The Wyoming Challenge

Thirty years ago, oil and gas leasing and drilling proposals seemed ubiquitous across the GYE national forests, particularly in Wyoming where energy production drives the state's economy.

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435. *Id.* at 65.

436. In pursuing these types of projects, the Forest Service has frequently used the authority granted it under the Healthy Forests Restoration Act and the Collaborative Forest Restoration legislation. *See supra* notes 75–76 and accompanying text.

437. U.S. DEP'T OF AGRIC., FOREST SERVICE, DRAFT ENVIRONMENTAL IMPACT STATEMENT: TETON TO SNAKE FUELS MANAGEMENT PROJECT i (2015).

438. Angus M. Thuermer, Jr., *Wildfire Worries, Wilderness, Collide Above Wilson*, WYOFILE (Aug. 18, 2015), https://www.wyofile.com/wildfire-worries-wilderness-collide-above-wilson/ [https://perma.cc/9BF2-2W3Y].

439. U.S. DEP'T OF AGRIC., FOREST SERVICE, FINAL ENVIRONMENTAL IMPACT STATEMENT: GREATER RED LODGE AREA VEGETATION AND HABITAT MANAGEMENT PROJECT iii (2015).

At the time, a small oil field was already online at La Barge, Wyoming, in the southern reaches of the Bridger-Teton National Forest, and some exploration was underway in the Shoshone National Forest.[440] Industry was interested in leasing elsewhere in these two forests as well as in other GYE forests. But as new oil supplies came online and international energy prices slumped in the aftermath of the 1970s Middle East oil embargoes, corporate interest in the GYE waned. Not only had public opposition and court challenges succeeded in slowing the march toward industrialization in the region's national forests but also the infrastructure necessary to support large-scale energy production was lacking, and market conditions did not justify the substantial expenditures necessary to develop new oil fields.

As the twenty-first century began, however, the nation's quest for energy intensified, renewing conflict over oil and gas development across the Wyoming portions of the GYE. After the new Bush Administration took office in 2001, a growing international energy shortage prompted the President to create an Energy Task Force led by Vice President Dick Cheney, who previously represented Wyoming in Congress.[441] Once the Task Force identified the Wyoming Overthrust Belt as a principal energy basin, the Department of the Interior prioritized oil and gas development on the region's multiple-use public lands. Simultaneously, new exploration technologies, including horizontal drilling and fracking, were emerging, enabling oil companies to access and exploit promising new fields.[442] The boom was on once again in Wyoming, and the Bridger-Teton National Forest and nearby BLM lands were ground zero. This

440. Keiter, *Taking Account*, *supra* note 1, at 971 n.230.

441. NAT'L ENERGY TECH. LAB., RELIABLE, AFFORDABLE, AND ENVIRONMENTALLY SOUND ENERGY FOR AMERICA'S FUTURE: REPORT OF THE NATIONAL ENERGY POLICY DEVELOPMENT GROUP (May 2001), https://www.netl.doe.gov/publications/press/2001/nep/nep.html (last visited July 17, 2017) [https://perma.cc/382S-6PBE]. *See also* Cheney v. U.S. Dist. Court for D.C., 542 U.S. 367, 373 (2004) (describing the National Energy Policy Development Group).

442. Today, horizontal drilling (whereby vertical drilling is bent horizontally after reaching a certain depth) is commonly used in conjunction with hydraulic fracturing, or "fracking," (whereby water and proppants are pressure injected to produce and enlarge fractures in the bedrock) to exploit previously uneconomical and inaccessible oil and gas fields. *See* Troy Cook et al., *Hydraulically Fractured Horizontal Wells Account for Most New Oil and Natural Gas Wells*, U.S. ENERGY INFORMATION ADMINISTRATION (Jan. 30, 2018), https://www.eia.gov/todayinenergy/detail.php?id=34732 [https://perma.cc/9C6N-T7MM].

time conservation groups proved unable to block a massive new oil field on BLM lands in the southeastern corner of the GYE, though they did succeed in keeping new drilling away from sensitive Bridger-Teton National Forest lands and in limiting new drilling in the Shoshone National Forest.[443]

The legal framework governing oil and gas development on public lands was mostly established during the previous energy boom by a series of court rulings extending NEPA and the Endangered Species Act to leasing and drilling decisions. Under the Mineral Leasing Act of 1920,[444] as amended in 1987 by the Federal Onshore Oil and Gas Leasing Reform Act (FOOGLRA),[445] the Secretary of the Interior enjoys discretionary leasing authority,[446] while the Secretary of Agriculture can veto lease sales on national forest lands.[447] Absent a "no surface occupancy" (NSO) stipulation,[448] the Forest Service is obliged to conduct a NEPA environmental analysis—either an Environmental Assessment or an Environmental Impact Statement—before offering its lands for lease because the lease grants the right to explore and develop oil deposits.[449] The environmental analysis must take account of cumulative and foreseeable effects, including the possibility of full field development, and it can be prepared as a separate energy leasing decision or as part of the agency's forest planning process.[450] Under the Endangered Species Act, the Forest Service is required to consult with the U.S. Fish & Wildlife

443. *See infra* notes 457–493 and accompanying text.

444. Mineral Leasing Act, 30 U.S.C. §§ 181–241 (2018). The MLA grants the BLM authority to issue oil and gas leases on federal lands, including national forest lands.

445. Federal Onshore Oil and Gas Leasing Reform Act, Pub. L. 100-203, subtitle B, 101 Stat. 1330 (codified at 30 U.S.C. § 226 (g)–(h)) (1987). Under FOOGLRA, the Forest Service is granted authority to approve leases and drilling permits on national forest lands and to regulate surface-disturbing activities on forest lands.

446. United States ex rel. McLennan v. Wilbur, 283 U.S. 414 (1931); Ash Creek Mining Co. v. Lujan, 969 F.2d 868 (10th Cir. 1992).

447. Mineral Leasing Act, 30 U.S.C. § 226(h).

448. A no surface occupancy (NSO) stipulation attached to a mineral lease essentially prohibits the leaseholder from drilling a conventional vertical oil and gas well, requiring the operator to drill horizontally in order to access the underground resource. *See* BUREAU OF LAND MANAGEMENT, GLOSSARY OF COMMON BLM TERMS, NO SURFACE OCCUPANCY, https://eplanning.blm.gov/epl-front-office/projects/lup/22652/34861/36285/1.2_Glossary_of_Common_BLM_Terms.pdf (last visited Feb. 18, 2019) [https://perma.cc/NWN9-BLZ2].

449. Sierra Club v. Peterson, 717 F.3d 1409 (D.C. Cir. 1983); Conner v. Burford, 848 F.2d 1441 (9th Cir. 1988).

450. *Conner*, 848 F.2d at 1451.

Service if a listed endangered or threatened species is present,[451] which has been the case in the GYE where the grizzly bear and other at-risk species have long enjoyed federal protection. To determine whether the protected species might be in jeopardy, the ESA-required consultation must take account of the full cycle of oil and gas development possible under the proposed project.[452] By the late 1990s, the courts had also sustained an intrepid Forest Supervisor's decision not to open large swaths of a wildlife-rich forest in the northern Rockies to oil and gas leasing.[453] In 2004, the Tenth Circuit clarified that the federal land management agencies could not rely on dated resource management plans or old NEPA documents when new developments changed either the nature of the proposed exploratory activity or its scope.[454] But in 2005, Congress passed the Energy Policy Act,[455] seeking to expedite energy development on public lands by accelerating the drilling permit process and reducing NEPA compliance obligations when surface disturbance activity is limited.[456]

Against this legal backdrop, the BLM confronted an evolving series of development proposals for the Pinedale Anticline, which spreads out southwestward from Pinedale and the western slope of the Wind River Mountain range. The so-called Pinedale Anticline Project Area (PAPA) encompassed 198,000 acres mostly on federal BLM lands that were already leased. The sagebrush-covered and largely undeveloped terrain provided important lower elevation winter range for pronghorn,

451. Endangered Species Act, 16 U.S.C. § 1536(a)(2) (2018); Thomas v. Peterson, 753 F.2d 754 (9th Cir. 1985).

452. Thomas v. Peterson, 753 F.2d at 1452–53 (holding that the U.S. Fish & Wildlife Service cannot segment its biological review obligations under the Endangered Species Act, even though it may not know exactly where the drilling activity may occur at the time of leasing).

453. Rocky Mountain Oil & Gas Ass'n v. U.S. Forest Service, No. CV 98-22-H-CCL, slip op. (D. Mont. Mar. 7, 2000), *aff'd*, 12 Fed. App'x 498 (9th Cir. 2001), *cert. denied sub nom*. Indep. Petroleum Ass'n v. U.S. Forest Service, 534 U.S. 1018 (2001); *see infra* notes 472–475 and accompanying text.

454. Pennaco Energy v. U.S. Dep't of the Interior, 377 F.3d 1147 (10th Cir. 2004). The Pennaco litigation arose in Wyoming's Powder River Basin after coal bed methane was discovered in the coal seams, and oil companies sought to lease and develop this new resource using new drilling techniques that had not been contemplated when the BLM completed its original resource management plan. The court ruled that the BLM could not rely upon its now outdated plan or its incomplete NEPA analysis when issuing leases to explore for this new resource.

455. Energy Policy Act, Pub. L. 109-58, 119 Stat. 594 (codified at 42 U.S.C. § 15801 (2018)).

456. *Id.* § 365 (permit process), § 363 (NEPA compliance).

mule deer, and elk, as well as critical greater sage grouse habitat.[457] During the late 1990s, the oil companies realized they had a major discovery on hand—the project area represents the third largest natural gas field in the United States—a discovery that was now accessible by new horizontal drilling and fracking techniques. In 2000, the BLM approved seven hundred well pads and accompanying roads, processing facilities, and pipelines with a projected ten-to-fifteen-year development scenario, while also imposing seasonal no-drilling wildlife mitigation measures and extensive monitoring requirements to detect potential environmental damage.[458] Upon realizing the full scope of the gas play, the companies sought the BLM's permission to expedite and expand the project by constructing 4,399 additional wells (drilled from only six hundred well pads), lifting the seasonal drilling restrictions, and concentrating development in a core area.[459]

The BLM approved the revised PAPA project and lifted the seasonal drilling restrictions,[460] effectively turning this remote landscape into a large-scale industrial zone. The agency, however, imposed new wildlife mitigation measures, including phased development requirements in core areas and a $36 million monitoring and mitigation fund. As the project began to unfold, the BLM joined with the Forest Service, Park Service, Wyoming, and private landowners to establish the "Path of the Pronghorn" migration corridor—designed to ensure that this historical antelope migration route culminating in the new oil field would continue to accommodate the animals seasonally.[461]

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457. BUREAU OF LAND MGMT., RECORD OF DECISION FOR THE BUREAU OF LAND MGMT., FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PINEDALE ANTICLINE OIL AND GAS EXPLORATION AND DEVELOPMENT PROJECT 1 (2008).

458. BUREAU OF LAND MGMT., RECORD OF DECISION FOR THE PINEDALE ANTICLINE OIL AND GAS EXPLORATION AND DEVELOPMENT PROJECT ENVIRONMENTAL IMPACT STATEMENT 1, appendix A-6 (2000).

459. BUREAU OF LAND MGMT., FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PINEDALE ANTICLINE OIL AND GAS EXPLORATION AND DEVELOPMENT PROJECT vi (2008).

460. BUREAU OF LAND MGMT., RECORD OF DECISION FOR THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PINEDALE ANTICLINE OIL AND GAS EXPLORATION AND DEVELOPMENT PROJECT 17 (2008). In addition, the mitigation measures included the operators agreeing to voluntary suspension of leases on the PAPA flanks until comparable acreage under development in the core areas was returned to functional wildlife habitat.

461. For more detailed discussion of the Path of the Pronghorn migration corridor, see *supra* notes 389–390 and accompanying text.

With the increased number of operating oil wells, ozone levels mounted in the winter atmosphere, bringing serious air pollution problems to the small town of Pinedale as well as the nearby Wind River Range wilderness areas.

Alarmed by the scale of the revised Pinedale Anticline project and the accompanying wildlife habitat impacts, the Theodore Roosevelt Conservation Partnership sued in an effort to block or alter the proposed rapid build-out.[462] The lawsuit advanced NEPA and FLPMA claims, arguing that the BLM failed to consider a reasonable range of alternatives, did not take a "hard look" at hunting impacts, and violated FLPMA's "unnecessary or undue degradation" standard by approving inadequate wildlife mitigation measures.[463] The courts disagreed, however, finding no NEPA violations and rejecting the likelihood that the proposed mitigation measures would fail. Moreover, the court equated the FLPMA "unnecessary or undue degradation" standard with the multiple-use principle, which renders it a nearly toothless mandate.[464] As the build-out proceeded, Pinedale and other nearby towns turned into classic boomtowns with the usual attendant social problems.[465] In addition, new ozone air pollution problems prompted the EPA to establish the Pinedale ozone non-attainment area, which was an unexpected development for an area long regarded as having near-pristine air quality.[466] Subsequent monitoring in the area suggests declines in pronghorn and mule deer populations,[467]

462. Theodore Roosevelt Conservation P'ship v. Salazar, 661 F.3d 66 (D.C. Cir. 2011), *aff'g*, 744 F. Supp. 2d 151 (D.D.C. 2010).

463. *Id.* at 72.

464. *Id.* at 72–78.

465. *See* Alexandra Fuller, *Boomtown Blues: How Natural Gas Changed the Way of Life in Sublette County*, THE NEW YORKER, Feb. 5, 2007; *see also* JULIA HOBSON HAGGERTY & KEEGAN MCBRIDE, HEADWATER ECONOMICS, NAVIGATING BEYOND THE RESOURCE CURSE: DO LOCAL MONITORING PROGRAMS EMPOWER FRACKING HOST COMMUNITIES? (2014), https://headwaterseconomics.org/wp-content/uploads/Energy_Monitoring_SubletteCounty.pdf [https://perma.cc/D2LE-XTE2] (describing the impacts Pinedale, Wyoming, experienced during the natural gas field build-out).

466. Kirk Johnson, *In Pinedale, Wyo., Residents Adjust to Air Pollution*, N.Y. TIMES (March 9, 2011), https://www.nytimes.com/2011/03/10/us/10smog.html [https://perma.cc/58LZ-45RN].

467. *See, e.g.*, HALL SAWYER & RYAN NIELSEN., MULE DEER MONITORING IN THE PINEDALE ANTICLINE PROJECT AREA: 2015 ANNUAL REPORT UPDATE 8–10 (2015) (finding a significant decrease in mule deer populations; between 2001–2014, the Mesa herd unit declined by 40 percent, while the larger Sublette herd unit declined by twenty-three percent); CHAD W. LEBEAU ET AL. PRONGHORN MONITORING IN THE PINEDALE ANTICLINE PROJECT AREA: 2015 ANNUAL REPORT 21-22 (2015)

while the mitigation fund has supported numerous conservation projects intended to lessen the industrialization impacts.[468]

Meanwhile, in August 2018, the BLM approved a new Normally Pressured Lance (NPL) Natural Gas Development Project encompassing 141,000 acres of mostly public land southwest of Pinedale where another 3,500 clustered natural gas wells will be drilled with accompanying but mitigated wildlife impacts.[469] In early 2019, however, a federal district court enjoined drilling activities on recent Wyoming oil and gas leases, including several in the GYE.[470] The court found that the BLM violated NEPA by not adequately analyzing the effects of oil and gas leasing on greenhouse gas emissions.[471] The decision should ensure that climate change is taken seriously by the BLM in future GYE leasing and drilling decisions.

In 2003, as the Pinedale controversy was evolving, Bridger-Teton Forest Supervisor Kniffy Hamilton rendered more than 375,000 acres in the northern reaches of the Forest off-limits to oil and gas leasing,[472] mimicking the earlier actions of her counterpart in Montana's Lewis and Clark National Forest.[473] Her decision not only removed more than 10 percent of the Forest from potential energy development, but also effectively created a no-leasing buffer zone around Grand Teton National

(noting a decrease in pronghorn numbers between winter 2009–2010 and winter 2013–2014, but a notable increase in winter 2014–2015).

468. U.S. DEP'T OF THE INTERIOR, BUR. OF LAND MGMT., WYOMING: PINEDALE ANTICLINE PROJECT OFFICE, MONITORING AND MITIGATION PROJECT SUMMARY 4–28 (2018).

469. U.S. DEP'T OF THE INTERIOR, BUR. OF LAND MGMT., NORMALLY PRESSURIZED LANCE NATURAL GAS DEVELOPMENT PROJECT, RECORD OF DECISION (Aug. 2018), https://eplanning.blm.gov/epl-front-office/projects/nepa/57654/155638/190417/NPL_Record_of_Decision_2018_0827.pdf [https://perma.cc/TYB7-TAR3].

470. Wildearth Guardians v. Zinke, 383 F. Supp. 3d 41, 84–85 (D.D.C. 2019).

471. *Id.* at 67–68.

472. Jeff Gearino, *Bridger-Teton Areas Off-Limits for Oil and Gas*, CASPER STAR TRIBUNE (Mar. 8, 2003), https://trib.com/news/bridger-teton-areas-off-limits-for-oil-and-gas/article_d3c3dcfd-b3cd-5f0d-860b-19792424fce3.html [https://perma.cc/AC8W-YFTY]; U.S. DEP'T OF AGRIC., FOREST SERVICE, FINAL ENVIRONMENTAL IMPACT STATEMENT ON OIL AND GAS LEASING IN THE BRIDGER-TETON NATIONAL FOREST MANAGEMENT AREAS 21, 45, 71–72 (2003); *see* Ray Ring, *Protecting the Forests, and Maybe the Deserts, Too*, HIGH COUNTRY NEWS (Nov. 26, 2012), https://www.hcn.org/issues/44.20/protecting-the-forests-and-maybe-the-deserts-too [https://perma.cc/EKY6-TD33].

473. U.S. DEP'T OF AGRIC. & U.S. DEP'T OF INTERIOR, LEWIS AND CLARK NATIONAL FOREST OIL AND GAS LEASING: FINAL ENVIRONMENTAL IMPACT STATEMENT, RECORD OF DECISION (Sept. 1997). For an analysis of the Lewis and Clark National Forest leasing decision, see Sax & Keiter, *Realities of Regional Resource Management*, *supra* note 108, at 267–80.

Park that extended southward and eastward to nearby wilderness areas. While this action would have been quite controversial thirty years ago when this area was actively under consideration for energy development,[474] it met little resistance, thus revealing a shift in attitudes among the local populace and Wyoming's politicians toward industrializing forest lands proximate to the GYE's national parks. This same scenario soon played out in two other Wyoming settings.

Although the effort to curtail energy development on the BLM's Pinedale Anticline lands failed, the controversy awakened local citizens to the risks posed by energy exploration and development in the nearby Wyoming Range—situated just west of the Pinedale gas field in the southern Bridger-Teton National Forest. Portions of the Wyoming Range were already leased to energy companies that considered the area a good bet, given its proximity to the Pinedale Anticline gas field.[475] Exploratory drilling and subsequent development in this mountainous terrain posed a very real threat to the wildlife there, as well as to traditional hunting, fishing, and other prized recreational activities.

An unlikely assortment of allies, including environmental groups, ranchers, guides and outfitters, sportsmen, and local citizens, came together as "Citizens for the Wyoming Range" to mount a "Too Precious to Drill" campaign designed to halt further exploration in these locally popular mountains.[476] They were joined in their opposition by Wyoming's governor and, ultimately, the congressional delegation. In 2009, Congress responded by passing the Wyoming Range Legacy Act,[477] which facilitated a buyout of existing leases and withdrew these Forest lands from mineral leasing, subject to valid existing rights.[478] With the help of several foundations and wealthy Jackson Hole

474. *See* Keiter, *Taking Account*, *supra* note 1, at 978–82.

475. U.S. DEP'T OF AGRIC., FOREST SERVICE, OIL AND GAS LEASING IN PORTIONS OF THE WYOMING RANGE IN THE BRIDGER-TETON NATIONAL FOREST, FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT 69 (2016).

476. For a detailed account of the Wyoming Range campaign, see FLORENCE R. SHEPARD & SUSAN L. MARSH, SAVING WYOMING'S HOBACK: THE GRASSROOTS MOVEMENT THAT STOPPED NATURAL GAS DEVELOPMENT (2016).

477. Pub. L. No. 111-11, 123 Stat. 994 (2009). The Act was included in the Omnibus Public Land Management Act of 2009.

478. *Id.* The Act was modeled upon earlier legislation facilitating a buyout of oil and gas leases in the Badger-Two Medicine area, a part of the Rocky Mountain Front that abuts Glacier National Park in northwestern Montana. *See* Badger-Two Medicine Protection Act, S. 853, 103d Cong. (1993).

residents, the Wyoming Range citizens' group raised the $8.75 million needed to purchase the outstanding leases,[479] removing that threat to the mountains. It stands as an example of the role private philanthropy continues to play in safeguarding the region's wild lands.[480]

The Forest Service still faced an outstanding controversy over its earlier lease offer involving thirty-five parcels on 44,720 acres in the Wyoming Range.[481] In early 2017, the Undersecretary of Agriculture for Natural Resources and Environment resolved the matter by issuing a no-lease decision, explaining that public comments associated a strong "sense of place" with the Wyoming Range as well as "wildlands, recreation opportunities, wildlife, biodiversity[,] and watershed values" with its "large expanse of backcountry."[482] He continued, "[m]any stated that the cumulative negative effects on the historical culture, the recreational benefits, the lifestyle that draws people to live here, and the associated economic benefit stemming from these values, outweigh the economic benefit that would result from the oil and gas development associated with this project."[483] The decision noted that these sentiments persisted, even in the face of the recent downturn in the energy market and related local economic hardship.[484] Other concerns included the cumulative impact on the area's scenic beauty, diverse recreational opportunities, water resources, and wildlife populations, including migration routes. While these environmental and economic concerns factored into the Forest Service's no-lease decision, the decision speaks to the remarkable magnitude and diversity of local opposition to drilling in the Wyoming Range despite the role that oil and gas has played in the state and local economy. Though framed as a locally driven campaign to save a locally valued area, the outcome of the Wyoming Range controversy also speaks to an evolving commitment among citizens across the GYE to view the region

479. SHEPARD & MARSH, *supra* note 476, at 115.

480. Much earlier, of course, John D. Rockefeller Jr. used part of his fortune to purchase Jackson Hole ranch lands that were then donated to the federal government to become part of Grand Teton National Park. ROBERT W. RIGHTER, CRUCIBLE OF CONSERVATION: THE STRUGGLE FOR GRAND TETON NATIONAL PARK 43–65 (1982).

481. SHEPARD & MARSH, *supra* note 476, at 108–09.

482. U.S. DEP'T OF AGRIC., RECORD OF DECISION, OIL AND GAS LEASING ON PORTIONS OF THE WYOMING RANGE 3 (2017).

483. *Id.*

484. *Id.* at 4.

as a "special place," prized for its natural and recreational values rather than its development potential.

Controversy over energy development has also surfaced in Wyoming's Shoshone National Forest. Although some oil and gas activity has long occurred in the Shoshone, it has not attracted the same level of attention as the Bridger-Teton, due to its geology and steep, rugged character. More than half of the Forest is classified as wilderness, and federally protected grizzly bears roam freely across it, posing legal obstacles for most industrial development proposals. During the 1980s, litigation over a proposed drilling project in remote grizzly bear country addressed and helped to clarify the government's environmental analysis obligations.[485] Since then, the Forest Service has refined its pre-leasing responsibilities in detailed regulations,[486] which were tested in more recent Shoshone National Forest litigation over the timing for NEPA and ESA compliance. In 1995, after completing a forest-wide oil and gas leasing EIS,[487] the forest supervisor decided to open 950,000 acres to leasing, while making roughly half of this acreage subject to a "no surface occupancy" stipulation to protect wildlife habitat and other sensitive resources.[488] In the NEPA case, environmental plaintiffs sought to compel the agency to assess the site-specific implications of individual leasing decisions before offering the lease for sale.[489] The D.C. Circuit, however, ruled that the agency's regulations were properly interpreted to allow forest officials to delay their final NEPA compliance determination until after proposed leases had been sold but not yet issued.[490]

485. Park Cty. Res. Council v. U.S. Forest Serv., 817 F.2d 609, 620–21 (10th Cir. 1987).

486. 36 C.F.R. § 228 (2019).

487. U.S. DEP'T OF AGRIC., FOREST SERVICE, FINAL OIL AND GAS LEASING ENVIRONMENTAL IMPACT STATEMENT: SHOSHONE NATIONAL FOREST (1992), https://babel.hathitrust.org/cgi/pt?id=ien.35556030606446;view=1up;seq=7 [https://perma.cc/6FZD-TCQJ].

488. *See* U.S. DEP'T OF AGRIC., FOREST SERVICE, RECORD OF DECISION, PROPOSED OIL AND GAS LEASING, SHOSHONE NATIONAL FOREST 65 (1995), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5379225.pdf [https://perma.cc/3DRP-NPAX].

489. The environmental plaintiffs, consistent with the rationale underlying earlier oil and gas leasing litigation, feared that once the leases were sold, it would be too late to reverse the momentum toward development, notwithstanding the environmental effects that might be uncovered. Connor v. Burford, 848 F.2d 1441, 1450 (9th Cir. 1988).

490. Wyo. Outdoor Council v. U.S. Forest Serv., 165 F.3d 43, 49 (D.C. Cir. 1999), *aff'g*, 981 F. Supp. 17 (D.D.C. 1997). The court reasoned that an "irreversible and

Subsequent litigation involving leases in grizzly bear habitat similarly determined that the Forest Service could delay completing its ESA consultation obligations until the leases were issued.[491]

Although environmental advocates lost both cases, the Shoshone proceeded in 2015 to significantly curtail leasing in the area known as the Absaroka-Beartooth Front.[492] The "A-B Front" consists of lands transitioning from the Forest's high-elevation wilderness areas to its easternmost lower-elevation lands that provide critical grizzly bear and wildlife habitat. The Forest Service, citing support both from the public and Wyoming's governor, incorporated NSO and other protective stipulations into the Shoshone's revised forest plan to govern future oil and gas leasing in this sensitive area.[493] This noteworthy decision should further safeguard the eastern reaches of the GYE in northwestern Wyoming, providing additional safe haven for wildlife seeking winter habitat, as well as locally important recreational opportunities that could have been lost to industrial development.

Over the course of thirty years, the GYE oil and gas issue has reached a point of apparent quiescence, with most sensitive national forest lands off-limits for new leasing or exploration. Several factors have enabled the GYE proponents to reach this point. Most importantly, a diverse array of local citizens concluded that industrial development was not appropriate in those portions of the Bridger-Teton and Shoshone national forests that border the two national parks, contain manifold wildlife, and represent recreational values important both economically and culturally. Having witnessed the extraordinary build-out in the nearby Pinedale Anticline field, these citizens

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irretrievable commitment of resources" would only occur at this point in the multistage leasing process, because the agency could still withhold the lease from the buyer. *Id.* at 104–05.

491. Wyo. Outdoor Council v. Bosworth, 284 F. Supp. 2d 81, 82 (D.D.C. 2003); Wyo. Outdoor Council v. Dombeck, 148 F. Supp. 2d 1, 8–11 (D.D.C. 2001).

492. RECORD OF DECISION FOR THE LAND MANAGEMENT PLAN REVISION, SHOSHONE NATIONAL FOREST 11–12 (2015), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3837255.pdf [https://perma.cc/4NBS-EUSZ].

493. Environmental groups and others are also trying to convince the BLM to withhold leasing on some of its lands adjacent to Shoshone National Forest lands that are no longer available for leasing, arguing that these lower elevation BLM lands also provide important wildlife habitat and are connected by migratory patterns to the nearby forest lands. Interview with Caroline Byrd, *supra* note 30; interview with Scott Christensen, *supra* note 57.

convinced Wyoming's political leaders to support a no-leasing position and even secured federal legislation to safeguard the Wyoming Range. Litigation pursued by conservation groups clarified the Forest Service's environmental assessment obligations, ensuring that the public was alerted to the various environmental effects associated with full-scale energy development. Private philanthropy also played a role, as concerned citizens rallied to purchase the outstanding Wyoming Range leases. Although the Pinedale Anticline development on BLM lands has significantly impacted winter wildlife habitat on the edge of the GYE, litigation and advocacy pushed the agency to incorporate important mitigation measures into its final project approval. And the sprawling Pinedale development provided much of the momentum and funds for the state-created Wyoming Wildlife and Natural Resources Trust Fund, designed to support wildlife habitat enhancement projects into the future.[494]

Simply put, where oil and gas activity once threatened to overrun the GYE, it is now mostly confined to the ecosystem's edges, away from the core park and wilderness lands. Whether that will continue under the Trump Administration, which has prioritized fossil fuel energy development and expedited drilling permit approvals,[495] remains to be seen. Of course, any significant change in market forces or international affairs could alter energy development matters both here and elsewhere.

3. Mining: Echoes from the Past

Historically, mining played an important role in the Yellowstone region, where the prospect of quick riches drew early settlers to the area. In fact, the legacy of early mining activities is on display in several locations near Yellowstone National Park,[496] which have been the scene of several notable controver-

494. WYO. STAT. ANN. § 9-15-103 (2019); *see also* WYOMING WILDLIFE AND NATURAL RESOURCE TRUST, https://sites.google.com/a/wyo.gov/wwnrt/home (last visited Jan. 26, 2019) [https://perma.cc/V9ET-S6E9].

495. Presidential Executive Order on Promoting Energy Independence and Economic Growth, Exec. Order No. 13783, 82 Fed. Reg. 16,093 (Mar. 31, 2017).

496. Perhaps nowhere is this legacy as evident as at the Stillwater Mining Complex, which was "cherry stemmed" deep into the Absaroka-Beartooth Wilderness in 1978 and continues to operate today. *See* An Act to Designate the Absaroka-Beartooth Wilderness, Custer and Gallatin National Forests, in the State of Montana, Pub. L. 95-249, 92 Stat. 162 (1978); U.S. DEP'T OF AGRIC., DECISION MEMO, STILLWATER MINING COMPANY'S BLITZ RIDGE - 2014 SURFACE

sies during recent years. Although Montana towns like Cooke City, Virginia City, and Red Lodge trace their origins to early gold and silver discoveries, the mines have long been dormant, while tourism and recreation businesses propel the local economies today.[497] This transition explains the intense conflicts that have erupted over proposals to reactivate mining near Cooke City, Chico Hot Springs, and Gardiner—one of which was troubling enough to provoke the President to intervene on behalf of the Park.[498] Meanwhile, open-pit phosphate mining continues apace in Idaho's Caribou National Forest in the GYE's southwestern reaches, relatively immune from efforts to curb mine expansions and long-standing stream pollution problems.[499]

The antiquated General Mining Law of 1872 still governs mining on public lands, putting mineral exploration in an exalted position relative to other resource uses.[500] The law invites anyone onto the multiple-use public lands to explore for so-called "hardrock minerals" and, upon finding a "valuable mineral deposit," grants the discoverer a property right in the form of an unpatented mining claim.[501] Subject to modern permitting requirements, the miner can then proceed to develop the deposit notwithstanding competing resource values that might be impaired, such as wildlife habitat or watershed qualities. Neither the Forest Service nor the BLM has the apparent authority to deny a legitimate mine proposal.[502] If the mining site was earlier patented, it is private property and not subject to any direct oversight by the federal land management agencies;[503] rather, the state has the principal responsibility of overseeing mining activities on private lands.[504] Recent

EXPLORATION DRILLING PLAN OF OPERATIONS FOR MINERAL EXPLORATION (2014), https://www.fs.usda.gov/nfs/11558/www/nepa/97762_FSPLT3_1659052.pdf [https://perma.cc/93FG-XPHY].

497. *See supra* notes 35–55 and accompanying text.

498. *See supra* notes 506–523 and accompanying text.

499. *See supra* notes 524–529 and accompanying text.

500. *See* GORDON MORRIS BAKKEN, THE MINING LAW OF 1872: PAST, POLITICS, AND PROSPECTS (2008); JOHN D. LESHY, THE MINING LAW: A STUDY IN PERPETUAL MOTION (1987).

501. 30 U.S.C. § 22 (2018); *see also* United States v. Coleman, 390 U.S. 599 (1968); Belk v. Meagher, 104 U.S. 279, 283–84 (1881); United States v. Shumway, 199 F.3d 1093 (9th Cir. 1999).

502. *See* GEORGE CAMERON COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW 522–38 (7th ed., 2014).

503. 30 U.S.C. §§ 29, 37; South Dakota v. Andrus, 614 F.2d 1190 (8th Cir. 1980).

504. *See, e.g.*, People v. Rinehart, 377 P.3d 818, 828–29 (2016); MONT. CODE ANN. §§ 82-1-101 (2019).

technologies, such as cyanide leaching, enable mining companies to revisit dormant mine sites and extract gold and other valuable minerals left behind when mining practices were more primitive.[505] Given the prevalence of early mining in the Yellowstone region, recent mine development proposals have involved privately owned lands as often as public lands, reducing the legal tools available to block or regulate new proposals that threaten ecological and other values.

During the early 1990s, the extensive legal rights derived from the 1872 mining law collided with the modern national park idea and ecosystem conservation on a high mountainside above Cooke City, Montana, just outside Yellowstone National Park's northeastern boundary. From the late 1800s through the 1950s, the sprawling New World Mining District produced gold, silver, and copper in a boom-and-bust abundance that supported the local economy. But when the mines played out, the miners left behind a legacy of toxic waste, polluted waterways, and a devastated landscape. In 1989, a large Canadian corporation named Noranda announced that, using modern technologies, it planned to construct an underground mine topped by a massive tailings holding pond that would enable it to extract $800 million worth of minerals from the defunct mining district.[506] Noranda's announcement prompted a sustained outcry of opposition from the local community, conservation groups, the Park Service, and even neighboring Wyoming.[507]

Their concerns were manifold. Poised at ten thousand feet in a seismically active area and at the headwaters of three tributaries to the Yellowstone River, the proposed tailings pond could not be trusted to forever retain the massive mine waste deposits, imperiling the waters in Yellowstone National Park, the Absaroka-Beartooth Wilderness Area, and the Clarks Fork River, a federally designated wild and scenic river. Local streams were already sterile from contaminated mining waste

505. WONG W. L. EUGENE & ARUN S. MUJUMDAR, MINERALS, METALS & MATERIALS TECH. CTR., GOLD EXTRACTION AND RECOVERY PROCESSES 5–8 (2009), https://pdfs.semanticscholar.org/7559/67e38c3b788c9d41aaedec4f3d5ebd921855.pdf [https://perma.cc/JR66-SZRQ].

506. For a description of the New World project, see Marc Humphries, *New World Gold Mine and Yellowstone National Park*, *in* AMERICAN NATIONAL PARKS: CURRENT ISSUES AND DEVELOPMENTS 51–56 (Rony Mateo, ed., 2004).

507. Opposition to the mine and related strategies are chronicled in Bob Ekey, *The New World Agreement: A Call for Reform of the 1872 Mining Law*, 18 PUB. LAND & RES. L. REV. 151 (1997).

runoff, but Noranda asserted that it had no legal responsibility for these past misdeeds. Furthermore, the proposed mine and support facilities were located in prime grizzly bear habitat, regarded as critical to the diminished bear population's ultimate survival in the GYE. Finally, the sights and sounds of industrial mining would be evident from within Yellowstone, tarnishing the visitor experience.[508] Even though Noranda touted the several hundred new jobs that mine construction and operation would bring, along with substantial tax and royalty revenues, local and national opposition to the mine proposal was immediate and ardent. Under the 1872 Mining Law, however, neither the Forest Service nor the Park Service had the authority to stop the mine.

Ultimately, strategic litigation, widespread public opposition, and presidential intervention brought Noranda to the negotiating table, where the mine proposal was laid to rest. During a June 1995 town meeting in Billings, Montana, President Clinton—aware of growing public concern about the mining project—expressed his view that the mine posed a threat to Yellowstone National Park.[509] In August, he announced a nineteen-thousand-acre federal land withdrawal designed to protect the three threatened watersheds by prohibiting further mining activity in the area.[510] Shortly thereafter, in a lawsuit brought by conservation groups, a Montana federal court ruled that Noranda, as the "operator" involved in the New World Mine exploration, was liable under the Clean Water Act as a "point source" for ongoing acid mine drainage discharges.[511] As a result, Noranda faced the prospect of massive cleanup costs that threatened the economic viability of its proposed mining

508. *See* Lockhart, *supra* note 140, at 14–35; Peter Dykstra, *Defining the Mother Lode: Yellowstone National Park v. the New World Mine*, 24 ECOLOGY L.Q. 299, 302–304 (1997).

509. Todd Wilkinson, *Global Warning: Designation of Yellowstone National Park as Endangered*, NAT'L PARKS, Mar.–Apr. 1996, at 7, 12; Ekey, *supra* note 507, at 156.

510. Dep't of the Interior, Notice of Proposed Withdrawal, Montana, 60 Fed. Reg. 45,732 (Sept. 1, 1995); Dep't of the Interior, Amendments to Proposed Withdrawal, Montana, 61 Fed. Reg. 49,480 (Sept. 20, 1996).

511. Beartooth Alliance v. Crown Butte Mines, 904 F. Supp. 1168 (D. Mont. 1995). In brief, the court ruled that Noranda violated sections 1311(a) and 1342(a) of the Clean Water Act by discharging a pollutant (acid mine drainage) into navigable waters from point sources without a permit and was thus liable for these ongoing discharges. The court rejected Noranda's argument that it was not an "owner" or "operator" within the terms of the Clean Water Act and also found that the alleged discharge violations were ongoing and not past violations.

operations. Meanwhile, public opposition to the mine proposal mounted, driven by near-unanimous national and local newspaper editorials condemning the project, which cited the danger to Yellowstone National Park as well as general environmental concerns.[512] Not only were Cooke City residents broadly opposed to the mine, but politicians in Montana and Wyoming spoke out against it too.[513]

Faced with such implacable opposition and potentially devastating liabilities, Noranda responded positively when approached by conservation groups about a settlement. The federal government soon joined the negotiations, which resulted in a $65 million agreement that enabled the United States to gain ownership of the mining district lands in exchange for federal lands and resources elsewhere.[514] Noranda agreed to place $22.5 million in escrow to cover the costs of cleaning up the New World site, and conservation groups promised not to pursue additional pollution claims against either Noranda or the federal government.[515] A broad coalition of local, regional, and national opponents, abetted by strategic litigation, were able to enlist the President in blocking an economically attractive industrial project sanctioned under the formidable mining law. The result demonstrated the power of the Yellowstone name and confirmed that the welfare of the Park was inherently conjoined with the surrounding ecosystem. The entire controversy reinforced the need to approach resource management in the GYE on a broader, ecosystem-level scale, while also illustrating the devilish challenges involved in such an approach when property rights, agency jurisdiction, and major economic rewards are at stake.

Twenty years later, troublesome new mine proposals

512. Ekey, *supra* note 507, at 154.

513. *Id.* Wyoming, being downstream from the mine, would bear the environmental costs of the project, while the state of Montana would reap most of the economic benefits.

514. Not until 2010, however, was the United States able to complete acquisition of some of the private lands where the proposed mine was sited, when the estate of the landowner left out of the original settlement sold nearly 1,500 acres for $9 million to the Trust for Public Land, which then transferred the lands to the Gallatin and Custer national forests. Kurt Repanshek, *Land Deal Closes the Book on the New World Mine Proposed on Yellowstone National Park's Doorstep*, NAT'L PARKS TRAVELER (June 15, 2010), https://www.nationalparkstraveler.org/2010/06/land-deal-closes-book-new-world-mine-proposed-yellowstone-national-parks-doorstep6045 [https://perma.cc/3WFV-U5P3].

515. Ekey, *supra* note 507, at 159–62.

emerged again on old mining properties situated near Yellowstone's boundary, provoking the specter of another titanic clash. This time, before any ground-disturbing activities took place, conservation groups and their allies had advance notice of the exploratory interest in Emigrant Canyon above Chico Hot Springs, roughly fifteen miles north of the Park, and in the old Jardine mining district above the town of Gardiner, less than a mile from the Park's northern boundary. Drawing on the New World experience, local businesses and residents quickly mobilized against the Emigrant mine proposal and formed a broad coalition. The depth of public opposition to the mine was on display in the next election, when a vocal mine opponent prevailed in the all-important county commissioner race in Park County, even though local politicians have traditionally favored economic development activities on federal lands.[516] The coalition opposing the mine first helped convince the Forest Service to undertake a NEPA environmental assessment,[517] then convinced two Interior secretaries to withdraw the proximate federal lands from further mining activity.[518]

In response, the mining company suspended its efforts on federal lands, but pressed forward on adjacent privately owned mining claims, securing permission from the Montana Department of Environmental Quality to allow exploratory drilling to proceed.[519] Meanwhile, Congress passed and the President

516. Interview with Bill Berg, *supra* note 45; interview with Caroline Byrd, *supra* note 30; interview with Mike Clark, *supra* note 108; interview with Bob Ekey, *supra* note 57.

517. *See* U.S. Forest Service, *Emigrant Crevice Mineral Withdrawal Environmental Assessment Available for Public Review and Comment*, U.S. FOREST SERV., https://www.fs.usda.gov/detail/custergallatin/news-events/?cid=FSEPRD575374 (last visited Feb. 2, 2019) [https://perma.cc/Z254-VN68].

518. U.S. DEP'T OF THE INTERIOR, BUREAU OF LAND MGMT., PUBLIC LAND ORDER NO. 7875, EMIGRATION CREVICE MINERAL WITHDRAWAL, MONTANA, 83 Fed. Reg. 51,701 (Oct. 12, 2018) (twenty-year withdrawal by Secretary of the Interior Ryan Zinke); U.S. DEP'T OF THE INTERIOR, BUREAU OF LAND MGMT., NOTICE OF APPLICATION FOR WITHDRAWAL AND NOTIFICATION OF PUBLIC MEETING, MONTANA, 81 Fed. Reg. 83,867 (Nov. 22, 2016) (two-year temporary withdrawal by Secretary of the Interior Sally Jewell); *see also* U.S. DEP'T AGRIC., EMIGRANT CREVICE MINERAL WITHDRAWAL: DRAFT ENVIRONMENTAL ASSESSMENT (2018), https://www.fs.usda.gov/nfs/11558/www/nepa/106272_FSPLT3_4278748.pdf [https://perma.cc/75R7-NYQ3].

519. Michael Wright, *State Approves Exploratory Drilling Near Yellowstone National Park*, BOZEMAN DAILY CHRON. (July 26, 2017), https://www.bozemandailychronicle.com/news/environment/state-approves-exploratory-drilling-near-yellowstone-national-park/article_b49c3eff-8ae5-5ea7-8ead-dde0e1610d76.html [https://perma.cc/BFA9-72HC].

signed Montana U.S. Senator John Tester's Yellowstone Gateway Protection Act,[520] which permanently withdrew thirty thousand acres of public lands north of the Park, including substantial acreage with a history of mining activity. Moreover, in a state court action under the Montana Environmental Protection Act,[521] mine opponents have succeeded in blocking the mine from moving forward on private lands—even convincing the judge to vacate the state-granted exploratory permit on state constitutional grounds.[522] Although the proposed Crevice Mine in the historic Jardine mining district has generated similar opposition, the mine proponent remains intent on exploring the claim on private lands under Montana's small mine exemption and also asserts valid existing rights on nearby national forest lands.[523] Thus far, opponents have prevailed in their efforts to block or contain these two new mines, highlighting the profound changes in local economic and environmental priorities in this portion of the GYE.

The story is different, however, in the southwestern corner of the GYE, where major mining companies continue stripping Caribou National Forest lands to produce phosphate, an ingredient used for fertilizer and various consumer products. Southeastern Idaho's rich phosphate sediments—representing the nation's second largest phosphate deposits—have been mined since the late 1800s and generate more income for the state than any other mineral.[524] The so-called "Phosphate Patch"

520. Pub. L. 116-9 § 1204, 133 Stat. 580 (2019). As usual, the legislation includes a "valid existing rights" provision that protects already established mining claims and mineral leases.

521. MONT. CODE ANN. § 75-1-102 (2019).

522. Park County Envtl. Council v. Montana Dep't of Envtl. Quality, No. DV 17-126, slip op. at 29–31 (Mont. Sixth Jud. Dist. Ct., May 23, 2018) (finding several violations of the Montana Environmental Protection Act), https://earthjustice.org/sites/default/files/files/Lucky%20Minerals%20Emigrant%20Gulch%20License%20Decision.pdf [https://perma.cc/3XXL-4NKV]; Park County Envtl. Council v. Montana Dep't of Envtl. Quality, No. DV 17-126, slip. Op. at 21–22 (Mont. Sixth Jud. Dist. Ct., Apr. 12, 2019) (ruling that the amended MEPA provision prohibiting injunctive relief was invalid under the Montana State Constitution's environmental protection provisions, Mont. Const. art. II, § 3; art. IX, § 1), https://earthjustice.org/sites/default/files/files/Order-motion-for-vacatur-of-exploration-license_lucky-minerals.pdf [https://perma.cc/29HH-DRAJ].

523. Michael Wright, *Exec Vows to Open Controversial Mine on Border of Yellowstone*, BOZEMAN DAILY CHRON., April 4, 2019.

524. WILLIAM H. LEE, A HISTORY OF PHOSPHATE MINING IN SOUTHEASTERN IDAHO (2001); Idaho Mining Ass'n, *Phosphate Production in Idaho*, IDAHO MINING ASS'N (Sept. 24, 2013), http://mineidaho.com/2013/09/24/learning-more-about-phosphate-production-in-idaho/ [https://perma.cc/38WQ-EZYG].

sprawls across more than forty-six thousand acres of national forest land, where several large companies—including Simplot, Monsanto, and Agrium—hold phosphate leases issued under the Mineral Leasing Act of 1920.[525] Though phosphate was originally governed by the General Mining Law, Congress determined that it was more appropriately classified as a leasable mineral, which in theory provides the federal land managing agencies with more authority over mine development proposals.

Conservation groups have not slowed mining in the area, notwithstanding evidence of ongoing selenium contamination in local streams and an outstanding CERCLA cleanup effort.[526] A broad-based legal challenge to the expansion of Simplot's Smoky Canyon Mine was rejected by the Ninth Circuit, which ruled that current remediation efforts were sufficient to offset selenium pollution linked to the expansion, that an untested model of water contamination sources was adequate, and that the roadless area rule was inapplicable because the lease predated the rule.[527] In dissent, Ninth Circuit Judge Betty Fletcher found too many uncertainties in the agencies' NEPA analysis of the mine proposal, given existing selenium pollution levels. Her opinion also described the local economic importance of phosphate mining in the region—a fact reflected in the number of intervenors who supported the federal mine expansion decision.[528] Not only do the mines provide decent-paying local jobs in this rural area, but Simplot ships its phosphate ore through an eighty-four-mile-long slurry pipeline to Pocatello where it is processed at the Don

525. The sections of the Mineral Leasing Act (1920) governing phosphate leases are codified at 30 U.S.C. §§ 211–214 (2018).

526. *See* IDAHO DEP'T ENVTL. QUALITY, SOUTHEAST IDAHO SELENIUM PROJECT UPDATE: PHOSPHATE MINE SITE INVESTIGATIONS AND CLEANUP IN SOUTHEAST IDAHO 2–7 (2017), https://semspub.epa.gov/work/10/100072714.pdf [https://perma.cc/FJ37-ZJPH] (indicating that most of the contaminated sites are still in the very preliminary evaluation stages of remediation).

527. Greater Yellowstone Coalition v. Larson, 641 F. Supp. 2d 1120 (D. Idaho 2009), *aff'd sub nom.* Greater Yellowstone Coalition v. Lewis, 628 F.3d 1143 (9th Cir. 2010). *See also* Greater Yellowstone Coalition v. Reese, 392 F. Supp. 2d 1234 (D. Idaho 2005) (rejecting preliminary injunction request to require a full EIS analysis of Simplot's "exploratory project" proposal to gather data on the mining projects involved in the later litigation).

528. Lewis, 628 F.3d at 1153–54 (Fletcher, J., dissenting). The intervenors on behalf of the Forest Service included the cities of Pocatello, Chubbuck, and Soda Springs, Idaho, the town of Afton, Wyoming, Caribou and Bannock counties in Idaho, Lincoln County in Wyoming, J.R. Simplot Company, the Idaho Farm Bureau Federation, and United Steelworkers Local 632.

Plant, which faced closure if the expansion were disapproved.[529]

Thus, despite its remaining natural qualities and wildlife resources, this southwestern corner of the GYE has been effectively industrialized. Neither the federal land management agencies nor the state's environmental regulators are likely to significantly curtail these longstanding corporate mining activities or to jeopardize rural employment opportunities. Local political and economic concerns have plainly carried the day here.

Several lessons can be gleaned from the GYE mining controversies. Communities immediately proximate to Yellowstone National Park have hitched their economic future to the region's environmental wellbeing—another indication that the GYE concept resonates in economic as well as ecological terms. Despite the powerful rights attached to the General Mining Law, determined and focused local opposition—especially when elevated to the national level by the obvious threat to an iconic park like Yellowstone—can succeed in deterring new mining proposals. Such opposition can also prompt congressional legislation like the Yellowstone Gateway Protection Act,[530] which outlaws mining on public lands immediately proximate to the Park. Strategic litigation not only helps to mobilize opposition, but it can also provide meaningful leverage in subsequent negotiations. Finally, convincing the federal government to intercede to safeguard critical environmental values brings a powerful ally into the fray, one with assets that can be used to shift mining activity to a more appropriate location. When these factors are absent—as in the case of phosphate mining—important local economic and job concerns (when combined with distance from an iconic national park like Yellowstone), can triumph over significant ecosystem integrity concerns. At its edges, the GYE concept resonates much less convincingly than at its core, where the two national parks dominate the local economy and enjoy broad public support beyond the region.

4. Wilderness and Recreation: The Debate over Access Intensifies

Within the GYE, more than seven million acres of national forest land are designated as official wilderness, mostly located

529. *Id.*
530. Pub. L. 116-9 § 1204 (2019).

in Wyoming and Montana. Another two million acres—including several wilderness study areas (WSAs)—have long been identified as eligible for wilderness designation, but the region's national forest wilderness debate has dragged on for more than thirty years and remains unresolved.[531] Although Congress passed statewide wilderness bills for most western states in 1984,[532] it did not do so for Montana or Idaho,[533] and there is little likelihood any such comprehensive legislation will ever emerge. Site-specific proposals for solving GYE wilderness issues have surfaced periodically only to flounder, as recently occurred in Montana's Beaverhead-Deerlodge National Forest. In Wyoming, where Congress adopted comprehensive national forest wilderness legislation in 1984,[534] a statewide wilderness review process that included the GYE landscape was recently undertaken. Regardless, most of the region's undisturbed forest lands that qualify for official wilderness designation received protection in 2000 under the Forest Service's national roadless area rule,[535] largely removing the threat of industrial activity on these lands. But controversy has dogged the region's designated WSAs, mainly involving the degree to which these lands are open to motorized recreational use and mountain biking. Similar recreation controversies are also evident on the multiple-use forest lands. In short, wilderness and recreation are stirring strong passions across the region, putting ecologically important areas at risk.

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531. Wilderness Study Areas (WSAs) are undeveloped areas on public lands that retain wilderness characteristics, as defined in the Wilderness Act, Pub. L. 88-577 § 2(c), 78 Stat. 890 (1964), and that Congress (or the managing agency) has determined are eligible for formal wilderness designation. Under existing law, the WSA must be managed to retain its wilderness characteristics until Congress has acted on its wilderness status (or the managing agency releases it through formal planning processes). *See* Pub. L. 95-150, § 2–4, 91 Stat. 1243 (1977) (designating the Hyalite, Porcupine, Buffalo Horn WSA); GENERAL ACCOUNTING OFFICE, FEDERAL LAND MANAGEMENT: STATUS AND USES OF WILDERNESS STUDY AREAS (1993), https://www.gao.gov/assets/220/218719.pdf [https://perma.cc/8BBL-U5ZV].

532. KEITER, KEEPING FAITH, *supra* note 4, at 201.

533. In 1988, Congress passed the Montana Natural Resources Utilization Act, S. 2751, 100th Cong. (1988), which designated 1.4 million acres of new wilderness, including several areas in the GYE, but President Reagan pocket-vetoed the bill in a political maneuver designed to help elect the Republican senate candidate. It succeeded and represents the first and thus far only time a president has vetoed a wilderness bill. For a brief history of the Montana wilderness debate, see KEITER, KEEPING FAITH, *supra* note 4, at 173–80.

534. Wyoming Wilderness Act of 1984, Pub. L. 98-550 § 101, 98 Stat. 2807 (1984).

535. 36 C.F.R. pt. 294 (2016).

The GYE's national forest wilderness lands, combined with the region's national parks, constitute a largely intact landscape vital to its renowned wildlife populations. Yellowstone National Park—regarded as the critical core of the ecosystem—is adjoined on three sides by large designated wilderness areas totaling more than 2.4 million acres: the Absaroka-Beartooth, North Absaroka, Washakie, and Teton wildernesses.[536] Only the Park's western flank abutting the Caribou-Targhee and Custer-Gallatin national forests is unprotected, though the Lee Metcalf Wilderness borders a small segment of the Park boundary in Montana. The same is mostly true for Grand Teton National Park, which borders the Teton, Gros Ventre, and Jedediah Smith wilderness areas as well as the National Elk Refuge and the NPS-administered John D. Rockefeller Parkway. The expansive Wind River mountain range, with three large federally designated wilderness areas—the Bridger, Fitzpatrick, and Popo Agie—extends southeastward from the GYE core for roughly one hundred miles.[537]

Well known as outstanding outdoor recreational venues, the GYE wilderness areas are equally valued as wildlife sanctuaries, though hunting—subject to state management—is permitted.[538] These areas provide shelter and respite to human- and road-sensitive species, such as grizzly bears, elk, wolves, and cougars, while also affording the animals a secure passageway when migrating or dispersing from the core national park lands. As climate change takes hold across the GYE, protected dispersal corridors will become even more important for displaced species seeking new habitat. Given these critical habitat and connective values, conservation groups have long sought additional wilderness protections in the Gallatin Range north of Yellowstone National Park, the east-west running Centennial Mountains west of the Park, and the more distant Beaverhead-Deerlodge National Forest.[539] Wilderness designation

536. Between them, these four wilderness areas cover over 2.5 million acres. The relatively small, 10,700-acre Winegar Hole Wilderness also abuts the southwestern corner of the Park.

537. The Wind River Indian Reservation also embraces part of the Wind River mountain range. During the 1930s, the tribal government established a 188,000-acre roadless area of undeveloped forest land that now abuts the designated federal wilderness areas, creating an expansive wilderness complex across the Wind River mountains. Don Aragon, *The Wind River Indian Tribes*, 13 INT'L J. WILDERNESS 14, 15–16 (2007).

538. 16 U.S.C. § 1133(d)(7) (2018).

539. Interview with Caroline Byrd, *supra* note 30; interview with Rick Reese,

opportunities are also available on Idaho's Targhee National Forest lands.

Although the five GYE national forests contain substantial eligible acreage, the Forest Service's existing forest plans recommend only modest additional wilderness designations. The 2015 Shoshone National Forest Plan, noting that 55 percent of the Forest already enjoys wilderness protection, did not recommend any new wilderness designations, even though more than 684,000 acres are considered roadless.[540] Similarly, the proposed Custer-Gallatin Forest Plan revision recommends only 116,000 acres for wilderness designation, even though the Forest contains 847,000 acres covered by the agency's roadless area rule.[541] However, the Forest Service does not have the final word on wilderness designation; that authority rests with Congress under the Wilderness Act,[542] which makes wilderness designation an inherently political decision. Conservation groups have long pursued their own wilderness designation agenda, and several collaborative efforts aimed toward resolving the wilderness issue have surfaced in recent years, though none can yet claim success.

In Montana, the wilderness debate recently focused on the Beaverhead-Deerlodge National Forest, where the local Beaverhead-Deerlodge Partnership reached an agreement that Montana U.S. Senator John Tester later incorporated into a larger legislative proposal.[543] The proposed bill extended wilderness protection to 573,000 acres in sixteen areas in the Forest, substantially exceeding the 329,000 acres recommended by the Forest Service in its 2008 revised forest plan. However,

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National Park Service (retired), co-founder, Greater Yellowstone Coalition, in Bozeman, Montana (2017); interview with Ed Lewis, *supra* note 30.

540. U.S. FOREST SERVICE, U.S. DEP'T AGRIC., SHOSHONE NATIONAL FOREST LAND MANAGEMENT PLAN 14–17, 123 (2015), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3842886.pdf [https://perma.cc/MK2N-Q7J9].

541. U.S. DEP'T AGRIC., FOREST SERVICE, PROPOSED ACTION—REVISED FOREST PLAN, CUSTER-GALLATIN NATIONAL FOREST 92, 98 (2018), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd567788.pdf [https://perma.cc/87AX-FXYV].

542. 16 U.S.C. § 1131(a) (2018).

543. The so-called Forest Jobs and Recreation Act of 2013, S. 37, 113th Cong. (2013), covered two different national forests across the state—the Beaverhead-Deerlodge and the Kootenai—and reflected locally negotiated agreements regarding new wilderness designations and timber access provisions. Between 2009 and 2012, Senator Tester introduced earlier versions of this legislation without success. *See* Martin Nie & Michael Fiebig, *Managing the National Forests Through Place-Based Legislation*, 37 ECOLOGY L.Q. 1, 23–31 (2010).

the bill also designated nearly 2.3 million acres of stewardship areas open to timber cutting as part of a large landscape restoration strategy, bound the agency to "mechanically treat timber" on seven thousand acres annually in order to assure local mills a reliable supply of timber, and released several WSAs from protection. Critics responded that the legally binding timber commitment smacked too much of commercial logging on a forest already heavily over-cut, protested the release of any wilderness quality lands, and asserted that the consensus group did not represent the diverse viewpoints concerned about these issues.[544] The Forest Service likewise objected, noting that inventoried roadless areas would be opened to timber cutting under the agreement and that the science behind such large-scale restoration efforts was unproven.[545] Despite considerable political support from members of the environmental community, who regarded the Tester legislation as the first realistic opportunity to establish new wilderness in Montana since 1988, the bill ultimately failed. This failure leaves the Montana wilderness debate unresolved in the GYE, exactly where it has been for more than three decades.

In 2015, the Wyoming County Commissioners Association sponsored a statewide initiative to resolve outstanding wilderness issues on both national forest and BLM lands.[546] This collaborative effort addressed two WSAs—Palisades and Shoal Creek—in the Bridger-Teton National Forest as well as wilderness-eligible BLM lands in Wyoming's portion of the GYE, including McCullough Peaks, the Owl Creek range, and Whiskey Mountain. The so-called Wyoming Public Lands Initiative (WPLI)—which was voluntary on each county's part—was structured to promote transparency, openness, and broad participation with the goal of producing a statewide, "bottom-up"

544. *See* Ted Fellman, *Collaboration and the Beaverhead-Deerlodge Partnership: The Good, the Bad, and the Ugly*, 30 PUB. L. & RES. L. REV. 79, 79–82 (2009); Nie & Fiebig, *supra* note 543, at 30.

545. U.S. FOREST SERVICE, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE BEAVERHEAD-DEERLODGE NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN 957 (2008); *see also* Fellman, *supra* note 544, at 102.

546. WYOMING, CTY. COMM'R ASS'N, WYOMING PUBLIC LANDS INITIATIVE: PRINCIPLES AND GUIDELINES (Nov. 2015), http://legisweb.state.wy.us/InterimCommittee/2015/SFR-1202APPENDIX11.pdf [https://perma.cc/6TJH-659U]; *see also* Rebecca Worby, *Can Wyoming Learn from Utah's Public-Land Mistakes?*, 49(10) HIGH COUNTRY NEWS 5 (June 12, 2017), http://www.hcn.org/issues/49.10/wyoming-confronts-wilderness-study-limbo-public-lands-initiative [https://perma.cc/G439-UDH2].

wilderness bill.

In the GYE, the 136,000-acre Palisades WSA spans both Teton and Lincoln counties in Wyoming, as well as Idaho national forest lands. Teton County, with its recreation-fueled economy, engaged deeply in the WPLI process through a twenty-one-person advisory committee, but wilderness advocates and motorized recreation groups were ultimately at loggerheads over wilderness protection for these lands.[547] Neighboring Lincoln County, which looks to ranching and mining for its economic wellbeing, refused to participate in the WPLI process, stating that it opposed any new wilderness designations.[548] In contrast, Teton and Sublette counties agreed to address the fate of the Shoal Creek WSA that overlaps the two counties.

The WPLI process, however, ended in failure, driven by deep-seated opposition to wilderness across much of the state—a sentiment reflected in U.S. House Representative Liz Cheney's "Restoring Local Input and Access to Public Lands Act" bill,[549] which was plainly designed to kill the effort.[550] Though Cheney's bill was unsuccessful, the multicounty Palisades and Shoal Creek WSAs further illustrate the extreme jurisdictional complexity underlying GYE resource management issues and the inherent difficulties involved in finding common ground among governmental entities. Even if the participants had reached agreement, it would have left the wilderness question unresolved for important portions of the Palisades WSA. Meanwhile, motorized recreationists continue to invade the area surreptitiously, further eroding its wilderness qualities and diminishing the quality of wildlife habitat.

The Idaho portion of the GYE contains relatively little

547. Worby, *supra* note 546, at 5–6; interview with Franz Camenzind, Scientist & Wildlife Photographer, Executive Director, Jackson Hole Conservation Alliance (retired), Jackson ,Wyoming (2017); interview with Hank Phibbs, *supra* note 36; interview with Kathy Rinaldi, *supra* note 39; interview with Angus Thuermer, Jr., *supra* note 30; interview with Michael Whitfield, *supra* note 39.

548. Worby, *supra* note 546, at 6.

549. H.R. 6939, 114th Cong. (2018). *See* CJ Baker, *Liz Cheney Bill to Remove Restrictions on Wilderness-Like Lands Advances*, POWELL TRIBUNE (Nov. 23, 2018, 8:08 AM), https://www.powelltribune.com/stories/liz-cheney-bill-to-remove-restrictions-on-wilderness-like-lands-advances,16755 [https://perma.cc/9CQ8-UC5K].

550. Angus Thuermer, Jr., *The Wyoming Public Lands Initiative Risks Collapse*, HIGH COUNTY NEWS, March 1, 2018; interview with Scott Christensen, *supra* note 57; interview with Kathy Rinaldi, *supra* note 39; interview with Michael Whitfield, *supra* note 39.

formal wilderness acreage, though the Targhee-Caribou National Forest offers several wilderness designation opportunities. At 2.6 million acres, these combined forests boast only 134,000 acres of official wilderness,[551] with the Caribou lacking any wilderness areas. Although the 1985 Targhee Forest Plan recommended a mere 65,000 acres for wilderness designation, this number grew to 171,000 acres when the plan was revised in 1997.[552] The Caribou, meanwhile, identified two small potential wilderness areas in its plan revision.[553] Significantly, the Targhee shares the 136,000 acre Palisades WSA with the Bridger-Teton National Forest, with 53,000 acres on the Targhee side separated by the state line. Although the Wyoming Public Land Initiative reviewed the 83,000-acre eastern portion of Palisades WSA for possible wilderness designation,[554] nothing similar has occurred on the Idaho side—another example of the lack of coordination among the three GYE states. Further north in the Targhee, the ecologically important Centennial Mountain Range has been identified as a northwesterly dispersal corridor for grizzly bears and other animals from Yellowstone,[555] but the Forest Service has not recommended any part of this range for wilderness consideration. In 2014, a proposal to establish a Caldera National Monument on the Targhee adjacent to Yellowstone's western border surfaced, but was promptly condemned and soon faded from public discourse.[556] In short, wilderness protection

551. The Targhee National Forest is home to two wilderness areas—Jedediah Smith and Winegar Hole—both of which adjoin Grand Teton and Yellowstone national parks. *See supra* notes 536–537 and accompanying text.

552. REVISED TARGHEE FOREST PLAN ROD, *supra* note 404, at 18. The proposed wilderness areas include the Palisades Wilderness Study Area, the Lionhead Roadless Area, the Italian Peak Wilderness Study Area, and Diamond Peak.

553. U.S. DEP'T OF AGRIC., FOREST SERVICE, REVISED FOREST PLAN FOR THE CARIBOU NATIONAL FOREST 2–13 (2003).

554. PALISADES WILDERNESS STUDY AREA FACT SHEET (Dec. 13, 2016), https://tetonwpli.files.wordpress.com/2016/12/palisades-wsa-fact-sheet1.pdf [https://perma.cc/9ZFQ-BG6G]; *see supra* notes 546–550 and accompanying text.

555. *See supra* note 226 and accompanying text.

556. Heather Randall, *National Monument for Island Park?*, TETON VALLEY NEWS (Sept. 12, 2014), https://www.tetonvalleynews.net/news/national-monument-for-island-park/article_549f0064-3abe-11e4-88cc-1b980a4723c5.html [https://perma.cc/LKY4-52AK]; Bryan Clark, *Caldera Controversy: Folks in Fremont County Dead Set Against National Monument*, IDAHO FALLS POST REGISTER (May 24, 2015), https://magicvalley.com/news/local/caldera-controversy-folks-in-fremont-county-dead-set-against-national/article_b46fb0a5-7800-584a-8ae8-469b9a0eb384.html [https://perma.cc/7MYN-QVYB]; House Joint Memorial No. 2, 63d Legis., 1st Reg. Sess., (Idaho 2015) (opposing "any national monument

has gained little traction on the Idaho GYE national forests, reflecting evident local opposition to any such protective designation in forests long associated with timber, mining, grazing, and motorized recreation uses.

Notwithstanding the prolonged stalemate over new wilderness designations in the GYE, the region's roadless national forest lands enjoy some degree of protection. In 2000, the Forest Service formally adopted a nationwide roadless area rule,[557] extending substantial legal protection to 58.5 million acres of national forest lands—nearly one-third of the total national forest acreage across the United States. These un-roaded areas had long generated controversy throughout the national forest system whenever a development proposal threatened their wilderness characteristics. Explaining that roadless forest lands served as "biological strongholds for terrestrial and aquatic plants and wildlife and as sources of clean water,"[558] the agency prohibited any new roadbuilding or timber harvesting on this acreage with minor exceptions. After a decade of litigation and a concerted effort by the Bush Administration to alter the Clinton-era roadless rule,[559] it emerged unscathed, endorsed by both the Ninth and Tenth Circuits.[560] Along the way, Idaho availed itself of a revised state roadless rule process and successfully altered the original nationwide rule by reducing the level of protection available on portions of the state's un-roaded national forest lands.[561] Having survived a court challenge,[562] Idaho's revised rule affects several areas in the GYE's Caribou-Targhee National Forest.[563] Absent another assault on the 2000 rule, the

designation in the Caldera area of the Island Park region in eastern Idaho"), https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2015/legislation/HJM002.pdf [https://perma.cc/6282-CE7L].

557. 36 C.F.R. pt. 294 (2019).

558. U.S. FOREST SERVICE, FOREST SERVICE ROADLESS AREA CONSERVATION FINAL ENVIRONMENTAL IMPACT STATEMENT 395 (2000), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5057895.pdf [https://perma.cc/E8EE-RSCT].

559. Special Areas: State Petitions for Inventoried Roadless Area Management, 70 Fed. Reg. 25,654 (proposed May 13, 2005) (codified at 36 C.F.R. pt. 294); California ex rel. Lockyer v. U.S. Dep't of Agric., 575 F.3d 999 (9th Cir. 2009).

560. Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1106 (9th Cir. 2002); Wyoming v. U.S. Dep't of Agric., 661 F.3d 1209, 1230 (10th Cir. 2011).

561. 36 C.F.R. § 294(C); Special Areas; Roadless Area Conservation; Applicability to the National Forests in Idaho, 73 Fed. Reg. 61,456 (Oct. 16, 2008) (codified at 36 C.F.R. pt. 294).

562. Jayne v. Sherman, 706 F.3d 994, 996 (9th Cir. 2013).

563. See 36 C.F.R. § 294.29 for a list of the Idaho national forest roadless areas affected by the rule. More than twenty areas in the Caribou and more than a dozen

GYE national forest roadless acreage seems relatively secure from intensive industrial activity, though preexisting mining and other rights are protected under the rule.[564]

With wilderness designation at a standstill, controversies involving management of the region's WSAs have taken center stage, generating important court decisions that largely safeguard these areas from intensive recreational activity. In 2005, the Forest Service renewed a permit for commercial helicopter-based skiing in the Palisades WSA, which overlaps national forest areas in Wyoming and Idaho. Although the heli-skiing company had operated in this area without incident since before the 1984 Wyoming Wilderness Act established the WSA, the permit renewal sanctioned a tenfold increase in skier days. Environmental groups sued, asserting that the Forest Service was obliged to maintain the area's existing wilderness character for potential wilderness designation. The court, finding that the term "wilderness character" meant maintaining "outstanding opportunities for solitude or a primitive and unconfined type of recreation," ruled that the Forest Service failed to explain how this dramatic increase in helicopter activity would not affect preexisting "opportunities for solitude."[565] Having established the important principle that the GYE's WSAs must be managed to maintain their wilderness character, the parties ultimately settled the matter by agreeing to a five-year phaseout of the increased helicopter activity, leaving the company with sixty-five skier days each winter.[566]

Further north, the Forest Service was embroiled in a similar controversy on the Hyalite-Porcupine-Buffalo Horn (HPBH) WSA, which covers 155,000 acres in Montana's Gallatin Na-

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areas in the Targhee receive less protection than they enjoyed under the original nationwide roadless area rule. Interview with Scott Christensen, *supra* note 57; interview with Michael Whitfield, *supra* note 39.

564. *See supra* notes 524–529 and accompanying text (describing phosphate leasing on Caribou National Forest roadless lands).

565. Greater Yellowstone Coal. v. Timchak, No. CV-06-04-E-BLW, 2006 WL 3386731, at 2 (D. Idaho Nov. 21, 2006). The court explained that to meet its statutory maintenance obligation, the agency must measure the allowed increase in the number of helicopter flights against the baseline of activity prevailing in 1984 when the WSA was originally established. *Id.* at 3.

566. *See* Mike Kessler, *The War on Heli-Skiing*, MEN'S J. (Oct. 9, 2013), http://www.mensjournal.com/magazine/the-war-on-heli-skiing-20131009 [https://perma.cc/5BSM-L7P4]; Cory Hatch, *High Mountain Heli Appeals Court Ruling*, JACKSON HOLE NEWS & GUIDE (Sept. 27, 2007), http://www.jhnewsandguide.com/news/environmental/high-mountain-heli-appeals-court-ruling/article_6852e8f7-d620-5f6a-9c42-5427619f04c6.html [https://perma.cc/7EW9-EFWW].

tional Forest. Mechanized recreation in the form of snowmobiles, all-terrain vehicles, and mountain bikes had significantly intensified across the HPBH WSA since it was established in 1977.[567] When the agency's travel plan, citing a lack of data about pre-1977 use patterns, ignored this explosive growth in motorized activity, conservation groups convinced a federal district court to enjoin the plan because it jeopardized the area's wilderness character.[568] The Ninth Circuit affirmed the district court ruling in unequivocal terms: "The Service entirely failed to explain how the travel plan provides current study area users with opportunities for solitude comparable to those that existed in 1977 despite increased volume of motorized and mechanized use."[569] The diverse groups involved in the litigation—seeing an opportunity to resolve the Gallatin wilderness stalemate and hoping to negotiate wilderness acreage and recreational opportunities on these popular forest lands—undertook what became the controversial "Gallatin Community Collaborative" process.[570] The collaboration failed to reach consensus,[571] however, leaving the Forest Service to ponder the group's inconclusive final report as it developed its own wilderness recommendations.

In early 2018, the Forest Service released an initial wilderness proposal for the HPBH WSA in its draft forest plan revision. The proposal recommended classifying seventy thousand acres as wilderness and two other special land classifications covering another thirty-seven thousand acres: a Hyalite Recreation Emphasis Area and a Buffalo Horn Backcountry Area, where motorized use would be permitted.[572] The Gallatin Forest

567. ERIN CLARK ET AL., WILDERNESS CHARACTER MONITORING REPORT: HYALITE PORCUPINE BUFFALO HORN WILDERNESS STUDY AREA 7–8 (2012).

568. Montana Wilderness Ass'n v. McAllister, 658 F. Supp. 2d 1249 (D. Mont. 2009).

569. Montana Wilderness Ass'n v. McAllister, 666 F.3d 549, 558 (9th Cir. 2011).

570. *See* Matthew Koehler, *Groups Object to "Undemocratic" Gallatin Community Collaborative Process*, SMOKEY WIRE (Mar. 31, 2016), http://forestpolicypub.com/2016/04/01/groups-object-to-undemocratic-gallatin-community-collaborative-process [https://perma.cc/6TEQ-RR43] (explaining that the Collaborative was criticized for being too local in its membership and not representative of the various parties interested in the Gallatin Range wilderness issue).

571. *See* GALLATIN COMMUNITY COLLABORATIVE FINAL REPORT (on file with author).

572. CUSTER-GALLATIN REVISED FOREST PLAN PROPOSAL, *supra* note 541, at 92, 103. Motorized use would not be permitted in the Hyalite Recreation Emphasis Area.

Partnership—a new collaborative effort composed of various non-motorized recreation groups—has offered a counterproposal that calls for slightly more wilderness, a special mountain biking area, and two new Wildlife Management Areas, where motorized use would be permitted.[573] Motor-based recreation groups have opposed any new wilderness, citing the shrinking opportunities in the Forest for their preferred forms of recreation.[574] Conversely, dedicated wilderness-wildlife advocates believe the entire area should be set aside as wilderness. They argue that wildlife and habitat preservation should take priority over recreation, lamenting the fragmentation that would accompany the two competing proposals, both of which carve the area into a patchwork of special designations.[575] In any event, whatever land the Forest Service recommends for wilderness designation in the final forest plan will be managed as wilderness until Congress resolves this longstanding impasse.

Burgeoning recreation activities in the GYE extend beyond the region's WSAs, representing a pressing new resource management challenge throughout the national forests. Indeed, nearly everyone interviewed for this article cited outdoor recreation as the region's most difficult current problem,

573. Gazette Staff, *Bozeman Group Proposes Forest Consider More Wilderness, Wildlife Management Areas*, BILLINGS GAZETTE (Jan. 31, 2018), https://billingsgazette.com/outdoors/bozeman-group-proposes-forest-consider-more-wilderness-wildlife-management-areas/article_4e190ba6-354c-5e46-a76a-7cd703657d8f.html [https://perma.cc/8WLY-UGPW]; *see also* Brett French, *Groups Working to Protect Greater Yellowstone Area See Collaboration as Solution to Recreation Crowds*, BILLINGS GAZETTE (May 13, 2018), https://billingsgazette.com/outdoors/groups-working-to-protect-greater-yellowstone-area-see-collaboration-as/article_e3556f2f-0f2f-500b-b25b-4b366fd34c2b.html [https://perma.cc/2FUL-U5KB] (noting the benefits and perils of collaborative efforts).

574. Michael Wright, *Future of the Forest: What's Next for the Hyalite Porcupine Buffalo Horn Wilderness Study Area*, BOZEMAN DAILY CHRON. (Mar. 4, 2018), https://www.bozemandailychronicle.com/news/environment/future-of-the-forest-what-s-next-for-the-hyalite/article_b19ad108-52d4-5b28-9866-5e74cdb75aef.html [https://perma.cc/M6PL-MREW].

575. Todd Wilkinson, *Big Guns Want 230,000 Acres of Gallatins Near Yellowstone Protected as Wilderness*, MOUNTAIN J. (May 14, 2019), https://mountainjournal.org/gallatin-wilderness-debate-goes-national-with-prominent-people-weighing-in [https://perma.cc/7J3B-3YME]; George Wuerthner, *Buffalohorn-Porcupine—The Lamar Valley of the Gallatin Range*, WILDLIFE NEWS (Nov. 8, 2018), http://www.thewildlifenews.com/2018/11/08/buffalohorn-porcupine-the-lamar-valley-of-the-gallatin-range/ [https://perma.cc/TV8H-L96J]; FRANK LANCE CRAIGHEAD, WILDERNESS, WILDLIFE, AND ECOLOGICAL VALUES OF THE HYALITE-PORCUPINE-BUFFALO HORN WILDERNESS STUDY AREA 29 (2015), http://www.craigheadresearch.org/uploads/7/6/9/0/7690832/hpbh_wsa_report.pdf [https://perma.cc/SMV9L6].

referring to it as "thorny," "a ticking time bomb," and the "third rail of conservation."[576] Popular activities like snowmobiling and mountain biking are extending further into the backcountry, where riders displace wildlife from important habitat and adversely impact hikers, hunters, and others seeking solitude and quiet.

Congress has yet to directly address the subject of recreation on national forest lands.[577] Absent congressional direction, two 1970s-era presidential orders are regularly invoked to control motorized recreation on public lands. The first order directed federal land management agencies to zone public lands to minimize the effects of off-road vehicle (ORV) use,[578] while the second order prohibited ORVs from areas where they might cause "considerable adverse effects."[579] In 2005, unable to ignore its growing recreation problems any longer, the Forest Service revised its travel management regulations governing motorized activity on national forest lands, instructing managers to close lands to ORV access to avoid environmental harm, wildlife problems, and user conflicts.[580] The revised regulations, however, did not include snowmobiles. After several lawsuits—including one involving the GYE's Beaverhead-Deerlodge National Forest where the court ordered the Forest Service to curtail snowmobile use to protect wildlife habitat[581]—the agency adopted additional regulations applying specifically to snowmobiles.[582] Other litigation has sustained the Forest

576. Interview with Peter Aengst, *supra* note 95; interview with Franz Camenzind, *supra* note 547; interview with Scott Christensen, *supra* note 57; interview with Dennis Glick, Principal, Future West, Bozeman, Montana (2017); interview with Doug McWhorter, *supra* note 217; interview with Gary Tabor, *supra* note 108; interview with Michael Whitfield, *supra* note 39; interview with Todd Wilkinson, *supra* note 66; interview with Louisa Willcox, *supra* note 45.

577. Of course, the Multiple Use-Sustained Yield Act of 1960, 16 U.S.C. §§ 528–531 (2018), includes outdoor recreation among the permitted multiple uses on national forest lands but is otherwise silent on the subject. The Federal Lands Recreation Enhancement Act, 16 U.S.C. §§ 6801–6814 (2018), provides the federal land management agencies with a revenue source to support recreation and other improvements on the public lands but does not seek to regulate recreational use other than by charging fees for access.

578. Exec. Order No. 11644, 37 Fed. Reg. 2877 (Feb. 9, 1972).

579. Exec. Order No. 11989, 42 Fed. Reg. 26,959 (May 24, 1977); *see* Idaho Conservation League v. Guzman, 766 F. Supp. 2d 1056 (D. Idaho 2011).

580. 36 C.F.R. §§ 212.50–57 (2019).

581. WildEarth Guardians v. Montana Snowmobile Ass'n, 790 F.3d 920 (9th Cir. 2015), *aff'g in part and rev'g in part*, Wildlands CPR, Inc. v. Forest Service, 872 F. Supp. 2d 1064 (D. Mont. 2013).

582. 36 C.F.R. § 212.81 (2019); *see* Winter Wildlands All. v. U.S. Forest Serv.,

Service's authority to close undeveloped areas to mountain bike use.[583] As recreation pressures continue to mount in the GYE and proponents display growing political as well as economic power, the question is not whether the Forest Service has the legal authority to limit potentially damaging motorized and mechanical recreation activities, but whether it will employ that authority to protect the GYE's ecological integrity.

The wilderness designation process is ultimately a political matter where negotiation and compromise are the norm. Finding acceptable compromises in the GYE has proved elusive for more than three decades, though some lessons have become painfully clear. Strong passions and entrenched positions regularly accompany any wilderness designation debate. Collaborative efforts to resolve wilderness issues must therefore be carefully conceived and conducted to ensure that everyone with an interest in the matter is included in the negotiations. But even this was not enough to save the WPLI. The idea of tying timber targets or other development requirements to a wilderness designation proposal will inevitably invite conflict and could doom the effort. In fact, various groups have emerged as "purists" over the wilderness issue, reluctant to accept any wilderness legislation that does not solely protect wilderness lands—a position that runs counter to the political nature of today's congressional wilderness designation process.[584] The courts are available to protect WSAs and roadless area lands, but these designations often contain grandfather provisions and other exceptions that leave such areas vulnerable to preexisting rights and activities. This means that the GYE's wilderness-eligible forest lands remain at risk of having these qualities eroded over time as recreational and other pressures continue to mount.[585] Only formal wilderness designation by Congress will provide full legal protection for this embattled acreage and the important wildlife habitat, watershed, and primitive recreation values it embodies.

No. 1:11-CV-586-REB, 2013 WL 1319598 (D. Idaho, Mar. 29, 2013).

583. Bitterroot Ridge Runners Snowmobile Club v. U.S. Forest Serv., 329 F. Supp. 3d 1191 (D. Mont. 2018), *appeal filed*, No. 18-35875 (9th Cir., Oct. 19, 2018).

584. John D. Leshy, *Legal Wilderness: Its Past and Some Speculations on Its Future*, 44 ENVTL. L. 549, 599 (2014); Nie & Fiebig, *supra* note 543, at 36–38.

585. Nie & Fiebig, *supra* note 543, at 38.

D. The Private Lands Challenge: Ranches, Subdivisions, and Wildlife Habitat

Thirty years ago, ecological management efforts in the GYE largely focused on federal public lands, which were perceived as holding the greatest conservation value while also presenting the primary threats to the region's ecological integrity. This made sense because federally owned lands predominated across the region, while privately owned lands occupied less than 20 percent of the ecosystem. The region's private lands were mostly either large, intact ranch holdings or situated around its scattered communities. To be sure, knowledgeable observers recognized that the region's private lands were ecologically important because they were concentrated at lower elevations and along watercourses where they provided important wildlife habitat as well as water quality benefits. These same observers also recognized lurking problems, such as unregulated subdivisions, inappropriate development proposals, and increased fencing.[586] Those problems have escalated into "a most vexing issue" during the past thirty years, as the region's population has exploded with no sign of slowing down.[587] Today, significant efforts are underway to address the private land challenge in the form of improved planning and zoning requirements, local land trusts, conservation easement purchases, livestock management reforms, and other creative solutions designed to maintain open spaces, critical wildlife habitat, migratory passageways, and water quality. Unlike on the region's public lands, the legal framework governing these private land efforts involves mostly state rather than federal law, which offers limited legal tools to pursue ecosystem conservation goals.

1. Private Land Growth: Patterns and Problems

The importance of private lands in sustaining ecological integrity in the GYE is now widely recognized, as are the region's worrisome development patterns. Early settlers claimed key

586. ALBERT HARTING & DENNIS GLICK, SUSTAINING GREATER YELLOWSTONE: A BLUEPRINT FOR THE FUTURE 92–108 (Chip Rawlins ed., 1994).

587. The "most vexing issue" quotation came from Scott Christensen during my interview with him. Interview with Scott Christensen, *supra* note 57. Other knowledgeable GYE observers echoed similar sentiments during interviews.

low-elevation, riparian lands to support their farming and ranching activities; today, these lands represent biodiversity hotspots and are valued more for their recreational and aesthetic attractiveness than for their agricultural potential.[588] Because the GYE's protected federal lands are mostly located at high elevations, regional wildlife migrate seasonally to the lower private lands. In many locations, however, these lower-elevation lands are being transformed by subdivisions and new homes. This type of exurban development not only displaces wildlife but also fragments the landscape, making it difficult for animals to successfully navigate onto critical habitat due to new roads, fences, and the mere presence of more people.[589] New homes are also springing up on plats adjacent to federal lands, creating wildland-urban interface zones with attendant wildfire risks that constrain the ability of land managers to allow fire to play its natural ecological role.[590] Even when local ranches are not subdivided, they are often purchased by nonlocal amenity buyers, who proceed to erect new buildings, fences, and other barriers. These not only block wildlife usage but also create tensions with locals who may have long enjoyed access to or across these lands for recreational purposes. Moreover, the region's grizzly bears, wolves, and other large predators have expanded their range considerably, increasing the level of conflict with landowners as well as their livestock and pets.[591] To address these growth patterns, scientists have been busy acquiring information about wildlife use and travel patterns during the past thirty years,[592] which enables conservation

588. Patricia H. Gude et al., *Rates and Drivers of Rural Residential Development in the Greater Yellowstone*, 77 LANDSCAPE & URB. PLAN. 131, 146 (2006) [hereinafter Gude, *Rates and Drivers*].

589. Patricia H. Gude et al., *Biodiversity Consequences of Alternative Future Land Use Scenarios in Greater Yellowstone*, 17 ECO. APPLICATIONS 1004, 1005 (2007) [hereinafter Gude, *Biodiversity Consequences*].

590. Gude, *Rates and Drivers*, *supra* note 588, at 146.

591. Gude, *Biodiversity Consequences*, *supra* note 589, at 1015.

592. *See, e.g.*, REED NOSS ET AL., CONVERSATION SCIENCE, INC., A BIOLOGICAL CONSERVATION ASSESSMENT FOR THE GREATER YELLOWSTONE ECOSYSTEM (2001); *Conservation Atlas,* HEART OF THE ROCKIES INITIATIVE, https://heart-of-rockies.databasin.org/ (last visited Aug. 27, 2019) [https://perma.cc/V794-W92A]. *Impacts of Rural Development on Yellowstone Wildlife: Linking Grizzly Bear Ursus Arctos Demographics with Projected Residential Growth*, 18 WILDLIFE BIOLOGY 246 (2012); Abigail A. Nelson et al., *Elk Migration Patterns and Human Activity Influence Wolf Habitat Use in the Greater Yellowstone Ecosystem*, 22 ECOLOGICAL APPLICATIONS 2293 (2012); Eric K. Cole et al., *Changing Migratory Patterns in the Jackson Elk Herd*, 79 WILDLIFE MGMT. 887 (2015); Jon P. Beckmann et al., *Human-*

groups, the region's land managers, and county planners to focus protective efforts on critically important private lands for habitat and corridor purposes.

Development is not occurring evenly across the GYE, but growth impacts are quite evident in many locations.[593] The GYE communities most affected by in-migration and development are those like Jackson and Bozeman that offer amenity values by virtue of their proximity to protected public lands, educated workforces, and access via air travel to larger markets.[594] From 1970 to 1999, while the GYE regional population grew by a robust 58 percent, the area of rural land devoted to exurban housing increased by a stunning 350 percent, revealing the sprawling impact of this growth on the landscape.[595] This growth rate puts the GYE in the upper echelons nationally and greatly eclipses growth rates elsewhere in the three GYE states. The preferred development pattern has been large-lot rural subdivisions,[596] which consume more land than denser development patterns. At the same time, the proportion of private lands converted to urban areas increased by 348 percent, largely at the expense of agricultural land.[597]

Moreover, from 1950 to 1999, the number of rural homes bordering federal lands increased by 302 percent, presenting the neighboring land management agencies with new challenges.[598] Particularly in the GYE resort counties that host the Jackson Hole, Grand Targhee, and Big Sky ski areas, real estate is at a premium, and subdivision activity on nearby rural lands is occurring at a rapid pace.[599] At Big Sky, Montana, for example, a previously unoccupied mountain valley is now filled with ski lifts, second homes, and retail stores to accommodate mainly

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Mediated Shifts in Animal Habitat Use: Sequential Changes in Pronghorn Use of a Natural Gas Field in Greater Yellowstone, 147 BIOLOGICAL CONSERVATION 222 (2012).

593. Gude, *Rates and Drivers*, *supra* note 588, at 139.

594. Ray Rasker & Andrew Hansen, *Natural Amenities and Population Growth in the Greater Yellowstone Region*, 7 HUM. ECOLOGY REV. 30 (2000); *see also* Ray Rasker et al., *The Effect of Protected Federal Lands on Economic Prosperity in the Non-Metropolitan West*, 43 J. REGIONAL ANALYSIS & POL'Y 110 (2013).

595. Gude, *Rates and Drivers*, *supra* note 588, at 132.

596. *Id.*; *see also* Hansen & Phillips, *supra* note 381, at 11, 17–18 (reporting that housing density in the GYE tripled between 1970 and 2010, resulting in a 50 percent decline in wildlife habitat across the region's private lands).

597. Andrew J. Hansen et al., *Ecological Causes and Consequences of Demographic Change in the New West*, 52 BIOSCIENCE 151, 156 (2002).

598. Gude, *Rates and Drivers*, *supra* note 588, at 146.

599. *Id.* at 147.

out-of-town visitors during both winter and summer months—all of which have displaced resident grizzly bears and other native wildlife.[600] Although uncontrolled subdivision activity in Teton Valley, Idaho, subsided during the Great Recession, it is again accelerating with implications for wildlife and water availability on the western side of the Teton mountain range.[601] Simply put, in places where people are attracted to the GYE landscape, private land uses are fundamentally changing that landscape.

2. Ranchlands and Ranching: Changes Afoot

While large ranches are not entirely disappearing in the GYE, they are changing hands, and some new owners embrace conservation values that can help protect ecosystem integrity. Recent trends reveal a noticeable growth in hobby ranches, often purchased for their amenity values and occupied by their new "amenity owners" on a part-time basis.[602] According to one detailed study, although the region's larger ranches are being sold, they are not necessarily being acquired by real estate developers, at least not in areas outside the GYE resort counties. Between 1990 and 2001, amenity purchasers bought 39 percent of the ranches and 43 percent of the acreage sold, traditional ranchers bought 26 percent of the ranches and 25 percent of the acreage, and developers purchased only 6 percent of the ranches sold.[603] These transactions did not occur evenly across the GYE: amenity purchases were quite high in Montana's Madison and

600. Hansen et al., *supra* note 597, at 156.

601. Shawn Hill, *Teton Creek - The Teton Creek Corridor Project: Protecting a Key Resource in the GYE*, WESTERN PLANNER (Oct. 24, 2018), https://www.westernplanner.org/sustainability-articles/2018/10/24/teton-creek-the-teton-creek-corridor-project-protecting-a-key-resource-in-the-gye [https://perma.cc/E6YT-SK4W].

602. *See* WILLIAM R. TRAVIS ET AL., RANCHLAND DYNAMICS IN THE GREATER YELLOWSTONE ECOSYSTEM: A REPORT TO YELLOWSTONE HERITAGE (2003), https://www.centerwest.org/ranchlands/ranchland_dynamics_execsumm.pdf [https://perma.cc/T6DY-KA65]. Though it is hard to classify all "amenity owners," they typically are "individuals who purchase ranches as refuges where they can enjoy recreation, scenery, and privacy"; they may or may not have conservation impulses. *Id.* at 36. Notably, the Travis study did not include the three GYE resort counties (Gallatin, Montana; Teton, Wyoming; and Teton, Idaho), where development and subdivision pressures are highest. *Id.* at 2.

603. Hannah Gosnell et al., *Ranchland Ownership Change in the Greater Yellowstone Ecosystem, 1990-2001: Implications for Conservation*, 19 SOC'Y & NAT. RESOURCES 743, 750 (2006).

Park counties, as well as Wyoming's Sublette and Park counties.[604] These new hobby ranches are not intended for development but are instead being maintained in their present form, though often without large-scale livestock operations. Consequently, they continue to provide open space and conservation benefits, and their owners may be amenable to a conservation easement purchase. In fact, several "conservation brokers" are now working in the GYE real estate market and actively seeking conservation buyers when large ranches become available for purchase.[605] Certainly the GYE's best-known amenity rancher is billionaire Ted Turner, who has placed conservation easements on his 113,000-acre Flying D Ranch outside Bozeman, where he actively husbands bison rather than cattle, welcomes grizzly bears and other wildlife, and undertakes ecological restoration projects.[606] Other large GYE ranch owners have likewise placed conservation easements on their property, sometimes to safeguard wildlife habitat and other times for tax purposes.

Traditional ranchers also persist in the GYE, and their livestock management practices can create conflicts with the region's wildlife. These conflicts generally involve livestock depredation by large predators,[607] either on private ranchlands or on leased public lands. The region's ranchers have long leased national forest and BLM lands from the federal government in order to graze their cattle and sheep seasonally on public grasses. Cattle ranchers traditionally have turned their livestock out on the range without supervision, while sheep ranchers have employed herders to trail their sheep across the public rangelands. But predatory animals, like grizzly bears and now wolves, sometimes depredate on domestic livestock, often costing ranchers dearly. When these predators are protected under the federal Endangered Species Act, ranchers are

604. TRAVIS ET AL., *supra* note 602, at 26–30. Indeed, the Travis study documents notable differences among the GYE counties with respect to the number of transactions, where amenity transactions were occurring, where traditional ranchers were the principal purchasers, the size of the ranch properties sold, and market prices. *Id.*

605. HARTING & GLICK, *supra* note 586, at 103.

606. TODD WILKINSON, LAST STAND: TED TURNER'S QUEST TO SAVE A TROUBLED PLANET 26–29, 45, 154–57 (2013).

607. Indeed, the principal factor in grizzly bear mortalities today is conflict with livestock. Interview with Caroline Byrd, *supra* note 30; interview with Scott Christensen, *supra* note 57; interview with Louisa Willcox, *supra* note 45.

prohibited from killing—or "taking"—them.[608] This prohibition has generated strong anti-federal sentiments within some segments of the local populace and has prompted illegal wildlife killing.[609] Conflicts also arise when diseased bison and elk intermingle with livestock as well as when these same animals consume ranchers' hay crops.[610]

To curtail these conflicts, the GYE federal agencies are committed to reducing contact between domestic livestock and wildlife. To address grizzly bear depredation problems, the federal agencies have adopted the policy of limiting commercial cattle grazing allotments and phasing out sheep allotments in prime bear habitat.[611] Conservation groups are working with the federal agencies to retire grazing allotments on a voluntary basis, though some in the ranching community oppose this approach.[612] A conservation group will offer to purchase the rancher's allotment (frequently at an inflated price) with the understanding that the responsible land-managing agency will then "retire" the grazing permit and remove livestock from the retired range.[613] This same strategy is being used to separate bison and cattle for disease control purposes.[614] In 2009, the National Wildlife Federation (NWF) helped retire six thousand acres of the Royal Teton Ranch allotment on the northern border of Yellowstone National Park in order to secure a migration corridor for bison that were previously killed when they exited the Park.[615] Since 2002, the NWF has retired almost 700,000

608. 16 U.S.C. § 1538(a)(1)(B) (2018).

609. *See* United States v. McKittrick, 142 F.3d 1170 (9th Cir. 1998) (sustaining criminal conviction for illegally shooting a protected wolf in Montana outside Yellowstone National Park).

610. *See supra* notes 338–341, 358–360 and accompanying text.

611. *See supra* note 200 and accompanying text.

612. *See, e.g.*, Francisco Tharp, *Yellowstone Grazing Allotments*, HIGH COUNTRY NEWS (Mar. 21, 2008), https://www.hcn.org/articles/17600 [https://perma.cc/63DQ-M8H]; *Wildlife Conflict Resolution*, NAT'L WILDLIFE FED'N, https://www.nwf.org/WCR/About (last visited Jan. 20, 2019) [https://perma .cc/5UJJ-SR] (explaining that the National Wildlife Federation prefers to use a voluntary approach rather than trying to "compel federal agencies to administra-tively cancel troublesome leases"); interview with Angus Thuermer, Jr., *supra* note 30.

613. John D. Leshy & Molly S. McCusic, *Where's the Beef: Facilitating Voluntary Retirements of Federal Land from Livestock Grazing*, 17 N.Y.U. ENVTL. L.J. 368, 370 (2008). To date, no retired allotments have been reactivated by the Forest Service in the GYE. Interview with Scott Christensen, *supra* note 57; interview with Mary Erickson, *supra* note 61.

614. *See supra* notes 292–294 and accompanying text.

615. *Adopt-A-Wildlife Acre Program*, NAT'L WILDLIFE FED'N, https://www.nwf.org/Our-Work/Our-Lands/Adopt-a-Wildlife-Acre (last visited Jan. 20, 2019)

acres of critical wildlife habitat in the GYE through its Adopt-A-Wildlife Acre program,[616] and additional allotment retirements put the total figure above one million acres.[617] In addition, conservation groups have extended other financial incentives—paid range riders, guard dogs, damage payments, fladry, and even "reverse" bounty payments for allowing wolves to den on private lands—to local ranchers and landowners in an effort to protect wildlife.[618] These allotment buyouts and other incentive-based strategies, distinct from regulatory approaches to enhance ecological integrity, represent instances where economic, market-based approaches are being deployed to reorient the region's federal and private lands toward conservation purposes. The expanding scope of these programs suggests that nature conservation objectives are inexorably displacing traditional livestock operations across much of the region.

3. Federal Law: A Limited Legal Tool

Federal law contains limited legal tools that can be employed to promote conservation objectives on private lands in the GYE. One of the most controversial federal regulatory limits on private land use is found in section 9 of the Endangered Species Act. Section 9 prohibits anyone, including private landowners, from "taking" a federally listed species, which

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[https://perma.cc/AJ6Z-CX5T].

616. *Id.*

617. Interview with Caroline Byrd, *supra* note 30; interview with Scott Christensen, *supra* note 57.

618. *See Co-Existing with Wildlife in Montana's Tom Miner Basin*, YELLOWSTONE TO YUKON CONSERVATION INITIATIVE, https://y2y.net/news/updates-from-the-field/co-existing-with-wildlife-in-montanas-tom-miner-basin (last visited Jan., 20, 2019) [https://perma.cc/VL5L-FYAU] (citing the Range Rider program for its "low-stress" approach toward minimizing conflicts between predators, livestock, and humans); Molly Parks, Participant Perceptions of Range Rider Programs Used to Mitigate Wolf-Livestock Conflicts in the Western United States (2015) (unpublished thesis, Utah State University) (on file with Utah State University Department of Wildland Resources) (outlining various nonlethal management strategies, such as compensating ranchers for livestock lost, fladry, and the use of guard dogs); *but see* George Wuethner, *Range Riders–A False Solution for Predator-Livestock Conflicts*, WILDLIFE NEWS (Apr. 17, 2017), http://www.thewildlifenews.com/2017/04/17/range-riders-a-false-solution-predator-livestock-conflicts/ [https://perma.cc/9EHA-TZQK] (criticizing the Range Rider program for its lack of scalability and doing too little to advance conservation goals). In addition, state and federal law occasionally provides compensation to ranchers for predator depredation and for forage damage. *See, e.g.*, WYO. STAT. ANN. § 23-1-901 (2019).

includes habitat modification that kills or injures such animals.[619] Also, section 404 of the Clean Water Act protects privately owned wetlands, imposing strict permitting requirements before landowners can dredge or fill a waterway on their property.[620]

Beyond these examples, federal law relies mainly on economic incentives to promote ecologically sound land use. The Land and Water Conservation Act makes federal funds available to purchase privately owned lands for wildlife and recreation purposes.[621] These funds have been used to secure key parcels across the GYE, including lands at a bottleneck point on a migration route in the High Divide region west of Yellowstone National Park.[622] Other federal programs offer agricultural landowners incentive payments to dedicate portions of their acreage to wildlife conservation,[623] and federal income and estate tax deductions are available to landowners who donate conservation easements on their property.[624] Further, the Healthy Forest Restoration Act of 2003 (HFRA) is designed to help reduce the wildfire threat to homes located in the growing wildland-urban interface,[625] which is a problem in the GYE

619. 16 U.S.C. § 1538(a)(1)(B) (2018); Babbitt v. Sweet Home Chapter, 515 U.S. 687 (1995); Christy v. Hodel, 857 F.2d 1324 (9th Cir. 1988); *see also* United States v. Charette, 893 F.3d 1169, 1175 (9th Cir. 2018) (holding, in the case of a grizzly bear shooting, that self-defense under section 9 requires a subjectively reasonable fear of imminent harm to self or others); United States v. McKittrick, 142 F.3d 1170, 1172 (9th Cir. 1998) (upholding the conviction of a man for shooting and killing a wolf from the Yellowstone experimental population).

620. 33 U.S.C. § 1344 (2018); *but see* Greater Yellowstone Coal. v. Flowers, 359 F.3d 1257 (10th Cir. 2004) (rejecting a section 404 and NEPA challenge to an Army Corps of Engineers' 404 permit decision approving a 359-acre project for development of sixty-six new homes and a golf course in the Snake River floodplain that was also a bald eagle nesting site).

621. 16 U.S.C. §§ 460l-4 to 406l-11 (2006) (current version at 54 U.S.C. §§ 200301–200310 (2018)). In early 2019, Congress passed and the President signed the John D. Dingell, Jr. Conservation, Management, and Recreation Act, which permanently authorized the Land and Water Conservation Fund. Pub. L. 116-9 § 3001 (2019).

622. *Capital Fundraising,* HEART OF THE ROCKIES INITIATIVE, https://heart-of-rockies.org/what-we-do/capital-fundraising/ (last visited Aug. 23, 2019) [https://perma.cc/HK94-WGJH].

623. *See* David Haight et al., *New York Agricultural Landowner Guide: A Guide to Public Farmland Conservation Programs*, AMERICAN FARMLAND TRUST 1, 12–13 (2010), https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/7/2349/files/2013/07/landownerguide-ooxeyd.pdf [https://perma.cc/87MT-GVCB].

624. *See infra* notes 642–643 and accompanying text.

625. Pub. L. 108-148, 117 Stat. 1887 (codified as amended at 16 U.S.C. §§ 6501–6591 (2012)).

where amenity buyers are routinely building next to public lands in fire-prone areas. Under HFRA, federal funds finance hazardous fuel reduction projects in the wildland-urban interface zone and assist communities in developing wildfire protection plans.[626]

When Congress has sought to extend federal regulation to private lands in the GYE, it has met resistance, even when the effort was directed toward safeguarding Yellowstone National Park's iconic geothermal features. During the 1980s, with the nation facing an energy shortage and developers eager to plumb geothermal resources adjacent to Yellowstone, Congress acted to limit drilling on public lands surrounding the Park.[627] The legislation did not, however, preclude geothermal development on adjacent private lands but merely called for additional studies.[628] By then, the Church Universal and Triumphant (CUT) had drilled a controversial hot-water test well on its ranch at Corwin Springs, located less than ten miles north of Mammoth Hot Springs, prompting widespread fear of damage to an irreplaceable natural feature of the Park.[629] Proposed legislation designed to address the CUT threat—known as the Old Faithful Protection Act—floundered in two successive congresses,[630] unable to surmount state sovereignty and private property rights counterarguments. Meanwhile, drawing upon the federal reserved water rights doctrine, the Park Service and Montana officials managed to negotiate a formal Water Rights Compact that established a fifteen-mile-wide Yellowstone Controlled Groundwater Area adjacent to the Park and also limited the development of groundwater exceeding eighty-five degrees.[631] The incident, though ultimately resolved under a

626. 16 U.S.C. §§ 6513, 6518 (2018); *see also* 16 U.S.C. § 7303 (2018) (providing federal funding for collaborative forest restoration projects designed to reduce wildfire risk to communities).

627. Geothermal Steam Act Amendments of 1988, Pub. L. 100-443, 102 Stat. 1766 (1988)) (codified as amended at 30 U.S.C. §§ 1001(f), 1026 (2006)). The ban on geothermal leasing on public lands is found at 30 U.S.C. § 1026(f).

628. Pub. L. 100-443 § 8, 102 Stat. 1766, 1771 (1988) (noted after 30 U.S.C. § 1026 as "Corwin Springs Known Geothermal Resource Area Study").

629. For a description of the CUT test well drilling controversy and congressional legislative efforts to address it, see Robert B. Keiter, *The Old Faithful Protection Act: Congress, National Park Ecosystems, and Private Property Rights*, 14 PUB. LAND L. REV. 5, 9–17 (1993).

630. H.R. 3359, 102d Cong. (1st Sess. 1991); H.R. 1137, 103d Cong. (1st Sess. 1993). For a detailed analysis of this legislation and competing arguments for and against it, see Keiter, *Old Faithful*, *supra* note 629, at 18–30, 35–36.

631. MONT. CODE ANN. § 85-20-401 (1993).

combination of federal and state legal principles governing water allocation, illustrates the significant political difficulties inherent in any effort to invoke federal law to address GYE private land use issues.[632]

4. State Law: Planning, Zoning, and Conservation Easements

State law, which governs most land use and zoning in the GYE, is weak in the three GYE states. A strong commitment to individual autonomy and property rights prevails across the interior West and permeates zoning, planning, and subdivision regulatory efforts in the GYE. According to one GYE county commissioner, "taxes and zoning are four letter words" across the region.[633] And yet, the three GYE states have each adopted land use planning, zoning, and subdivision laws that empower local governments to direct and control growth and related development activity.[634] These laws generally direct counties to prepare land use plans that are enforced through zoning standards and subdivision requirements.[635] Significantly,

632. *See* Kenneth A. Barrick, *Protecting the Geyser Basins of Yellowstone National Park: Toward a New National Policy for a Vulnerable Environmental Resource*, 45 ENVTL. MGMT. 192 (2010) (arguing for additional protection for Yellowstone's geothermal resources).

633. Interview with Bill Berg, *supra* note 45. Others echo similar sentiments regarding local antipathy toward planning and zoning. Interview with Mike Brennan, *supra* note 31; interview with Scott Christensen, *supra* note 57; interview with Dennis Glick, *supra* note 576; interview with Dan Wenk, *supra* note 161.

634. WYO. STAT. ANN. §§ 18-5-201, 202, 301, §§ 15-1-502, 505(1), 602 (2019); MONT. CODE ANN. §§ 76-2-101, 201, 301, § 76-3-501 (2019); IDAHO CODE §§ 67-6503, 6504, 6511, 6513 (2018). *See generally* Craig L. Shafer, *Land Use Planning: A Potential Force for Retaining Habitat Connectivity in the Greater Yellowstone Ecosystem and Beyond*, 3 GLOBAL ECOLOGY & CONSERVATION 256 (2015) (providing an overview of planning and zoning laws within the GYE and analyzing options for promoting wildlife corridor connectivity).

635. For an overview of the legal framework governing zoning and planning across the intermountain west, see ANNA TRENTADUE & CHRIS LUNBERG, SUBDIVISION IN THE INTERMOUNTAIN WEST: A REVIEW AND ANALYSIS OF STATE ENABLING AUTHORITY, CASE LAW, AND POTENTIAL TOOLS FOR DEALING WITH ZOMBIE SUBDIVISIONS AND OBSOLETE DEVELOPMENT ENTITLEMENTS IN ARIZONA, COLORADO, IDAHO, MONTANA, NEW MEXICO, NEVADA, UTAH, AND WYOMING, VALLEY ADVOCATES FOR RESPONSIBLE DEVELOPMENT 10–36 (2011), https://www.lincolninst.edu/sites/default/files/pubfiles/2031_1353_TrentadueWP11AT1.pdf [https://perma.cc/E8EE-F7CT]; *see also* GARY G. ALLEN ET AL., IDAHO LAND USE HANDBOOK: THE LAW OF PLANNING, ZONING, AND PROPERTY RIGHTS IN IDAHO (Givens Pursley ed., 2019), https://www.givenspursley.com/assets/publications/handbooks/handbook-landuse.pdf [https://perma.cc/33LV-8TB7].

several provisions in these laws mention conservation or wildlife as relevant factors in regulating land use. Montana law expressly includes the terms "wildlife" and "natural resources" in its land use planning and subdivision statutes,[636] though not in its zoning law. Nonetheless, in *Greater Yellowstone Coalition v. Board of County Commissioners*, the Montana Supreme Court ruled that wildlife impacts were properly considered to reject a rezoning application to convert an undeveloped parcel adjacent to Yellowstone National Park zoned for thirty-two single-family residences to one permitting nearly one thousand single-family residences.[637]

Other provisions in these laws are designed to reduce the sprawl that accompanies large-lot subdivisions by encouraging higher-density developments. Wyoming, for example, authorizes county commissions to use a "conservation design process" to protect wildlife habitat through cluster development and density bonuses that permit developers to increase the maximum allowable development on a property.[638] Under these laws, some GYE counties have adopted progressive, conservation-oriented plans and regulations, perhaps most notably in Teton County, Wyoming. In Teton County the land use plan is "organized around stewardship of . . . ecological resources" and recognizes that wildlife, natural, and scenic resources represent "the core of [the community's] heritage, culture, and economy."[639] Other more rural GYE counties, however, lack the resources or political will to move in this direction,[640] and rural sprawl

636. MONT. CODE ANN. § 76-1-601(3), (4) (2019); s*ee also* Michelle Bryan Mudd, DarAnne Dunning, & Melissa Hayes, *The Role of Fish and Wildlife Evidence in Local Land Use Regulation*, 30 PUB. LAND & RESOURCES L. REV. 107 (2009).

637. 25 P.3d 168 (2001). *See also* Heffernan v. Missoula City Council, 255 P.3d 80 (Mont. 2011) (reversing the city's approval of a thirty-seven-unit subdivision because, among other things, it violated the growth plan's density provisions and wildlife conservation goals).

638. WYO. STAT. ANN. § 18-5-401 et seq. (2019).

639. Jackson/Teton County Comprehensive Plan, JACKSON AND TETON COUNTY COMMUNITIES at ES-2 (2012), https://www.tetoncountywy.gov/DocumentCenter/View/1837/JacksonTeton-County-Comprehensive-Plan-April-6-2012-PDF [https://perma.cc/JFK5-W7PY]. *See* Bd. of Cty. Comm'rs v. Crow, 65 P.3d 720 (Wyo. 2003) (sustaining Teton County land use plan's goal of preserving the area's "rural western character" against arguments it exceeded the county's constitutional and statutory authority under Wyoming's land use planning laws).

640. According to several knowledgeable observers, planning and zoning efforts in the GYE are often upended in local elections, when progressive politicians are regularly replaced by their opposite number, frequently over land use issues. Interview with Bill Berg, *supra* note 45; interview with Scott Christensen, *supra* note 57; interview with Michael Whitfield, *supra* note 39.

imprints are clearly noticeable in these areas.

State law also governs the creation and use of conservation easements, a special legal device widely employed in the GYE to protect privately owned lands for wildlife habitat and aesthetic purposes. Through the efforts of national and local land trusts as well as federal and state governmental agencies, more than 750,000 acres (or 11 percent) of private land in the GYE is under conservation easement protection,[641] and easement acquisition efforts continue despite their considerable cost. Available federal estate and income tax deductions have helped to promote conservation easements among landowners,[642] and numerous governmental and private funding sources are now available to support these purchases.[643] A dozen or more land trusts are active in the GYE region, and all three GYE states have adopted conservation easement statutes,[644] though Wyoming did not do so until 2005, much later than most other states. The Idaho and Wyoming laws generally track the Uniform Conservation Easement Act with local variations, but Montana's law was not modeled on the uniform act.[645]

Under these laws, conservation easement agreements are entirely private transactions. While this helps account for their popularity, it also creates transparency and enforcement problems. Because conservation easements impose permanent—"in

641. Personal communication with Andrew Hansen & Linda Phillips, Ecology Dep't, Mont. State Univ. (Feb. 23, 2017) (data derived from U.S. Geological Survey, PAD v1.3) (on file with author). These figures are based on 6,687,869 acres of privately owned land within the GYE and include fee simple holdings as well as lands with conservation easements.

642. I.R.C. § 170 (2018); *see also* Nancy A. McLaughlin, *Internal Revenue Code Section 170(h): National Perpetuity Standards for Federally Subsidized Conservation Easements*, 45 REAL PROP. TR. & EST. L.J. 473 (2011).

643. *See* U.S. FOREST SERVICE & RUCKELSHAUS INST., PRIVATE LANDS CONSERVATION TOOLKIT AND TRAINING FOR WYOMING LAND MANAGERS 18–19 (2011) (listing fourteen public and private sources of funding for land acquisitions and easements).

644. IDAHO CODE §§ 55-2101 (2018); MONT. CODE ANN. §§ 76-6-201 (2019); WYO. STAT. ANN. §§ 34-1-201 (2019).

645. Montana's law, for example, contains a unique provision requiring local planning authorities to review proposed conservation easements to avoid conflicts with local comprehensive plans. MONT. CODE ANN. § 76-6-206 (2019). Though local planning authorities must review proposed conservation easements, their role is only advisory. *Id.*; *see also* Jesse J. Richardson, Jr. & Amanda C. Bernard, *Zoning for Conservation Easements*, 74 LAW & CONTEMP. PROBS. 83, 93 (2011). Also, unlike most other states, Idaho does not offer landowners who encumber their property with conservation easements any property tax relief. Richard Brewer, *Conservation Easements and Perpetuity: Till Legislation Do Us Part*, 74 LAW & CONTEMP. PROBS. 249, 270–71 (2011).

perpetuity"—limitations on land use, they must be carefully planned and regularly monitored, and commitments must be subject to enforcement.[646] These responsibilities ordinarily fall on the easement holder. But the private, bilateral nature of the transaction effectively limits who can monitor an easement, whether for disallowed changes on the property or for easement amendments that might undermine initial conservation purposes. It also limits who can enforce the easement, as reflected in a 2007 Wyoming Supreme Court decision, which found that neither neighboring landowners nor the general public have standing to enforce conservation easement commitments.[647]

These concerns were starkly evident in the GYE in the case of the Carney Ranch, when new owners sought to alter an existing conservation easement. In 2010, a local land trust acquired a conservation easement on the ranch to protect a critical wildlife passageway in the high-profile Path of the Pronghorn migration corridor.[648] The easement prohibited development on Carney lands, situated in the Upper Green River Valley adjacent to the Bridger-Teton National Forest, that provided safe passage for the antelope at a "bottleneck" point in their 200-mile annual migration. Despite the permanent nature of the conservation easement, the new owners of the Carney Ranch began constructing a cabin in the protected pathway without consulting the responsible land trust, which evidently lacked the resources to regularly monitor easement compliance.[649] Once the problem surfaced, the new owners

646. Nancy A. McLaughlin, *Increasing the Tax Incentives for Conservation Easement Donations – A Responsible Approach*, 31 ECOLOGY L.Q. 1, 62 (2004) ("[A conservation] easement represents a liability to the accepting agency or land trust because it entails ongoing and sometimes costly monitoring and enforcement responsibilities."); *see generally* Nancy A. McLaughlin, *Rethinking the Perpetual Nature of Conservation Easements*, 29 HARV. ENVTL. L. REV. 421 (2005) (exploring in detail the problems surrounding the in-perpetuity nature of conservation easements).

647. Hicks v. Dowd, 157 P.3d 914, 921 (Wyo. 2007) (holding that neighboring landowners lack standing to contest modification or termination of conservation easements, but suggesting that the state attorney general, representing the public interest, might have standing in such a case).

648. See *supra* notes 389–390 and accompanying text for discussion of the Path of the Pronghorn migration corridor.

649. Angus M. Thuermer, Jr., *Ranch Owner Builds in Path of Pronghorn*, WYOFILE (Jan. 3, 2017), http://www.wyofile.com/ranch-owner-builds-path-pronghorn [https://perma.cc/86XN-X4MN]. As this matter was unfolding, the Jackson Hole Land Trust, a long-standing, well-endowed western Wyoming land trust, ac-

sought to amend the easement to allow the cabin by proposing to transfer the easement to a different location and to enlarge it—a proposal to which the land trust easement holder originally agreed.

When news of the cabin and proposed easement amendment broke, however, an outraged public called for enforcement of the original easement to safeguard the pronghorn migratory route. In response, the landowner eventually removed the cabin and the easement remains unchanged.[650] But due to the lack of transparency that cloaks conservation easement arrangements, these matters could well have escaped public notice and eventual judicial scrutiny. The lesson is clear: to derive the full benefit of this important legal device, conservation easement arrangements require thoughtful planning, constant vigilance, and the willingness, resources, and ability to enforce the easement terms. Despite their many attractive features, conservation easements are an imperfect—if nonetheless essential—legal device used across the GYE to help address development pressures on the region's privately owned lands.[651]

5. A Landscape Approach: The High Divide Initiative

Private-land conservation efforts in the GYE now extend beyond the defined GYE ecosystem to encompass the broader landscape. The most prominent example of this landscape-scale approach is the High Divide Collaborative (HDC),[652] which

quired the assets of the much smaller Green River Valley Land Trust, which apparently lacked the resources to meet its various conservation easement stewardship responsibilities.

650. Angus M. Thuermer, Jr., *Cabin Removed from Path of the Pronghorn*, WYOFILE (July 18, 2017), http://www.wyofile.com/cabin-removed-path-pronghorn [https://perma.cc/3GEH-DLEX].

651. Given the exorbitant cost of land in Teton County, Wyoming, some observers question whether conservation easement purchases in the county are becoming too expensive for the amount of acreage protected, suggesting that these funds might be better spent securing short-term wildlife habitat leases as needed. Interview with Brian Glaspell, Manager, National Elk Refuge, Jackson, WY (2019). Others observe that conservation easements can cause development to leapfrog across the protected lands, or even attract development because of the open space created by the easement. Interview with Dennis Glick, *supra* note 576; interview with Luther Propst, *supra* note 36. Others note that conservation easements are only available from willing sellers, whose lands may not be of particular conservation value. Interview with Mike Brennan, *supra* note 31.

652. HIGH DIVIDE COLLABORATIVE, http://www.highdivide.org/ (last visited Feb. 18, 2019) [https://perma.cc/G4QH-A6UX]; *High Divide Collaborative*, HEART OF THE ROCKIES INITIATIVE, https://heart-of-rockies.org/where-we-work/high-divide/

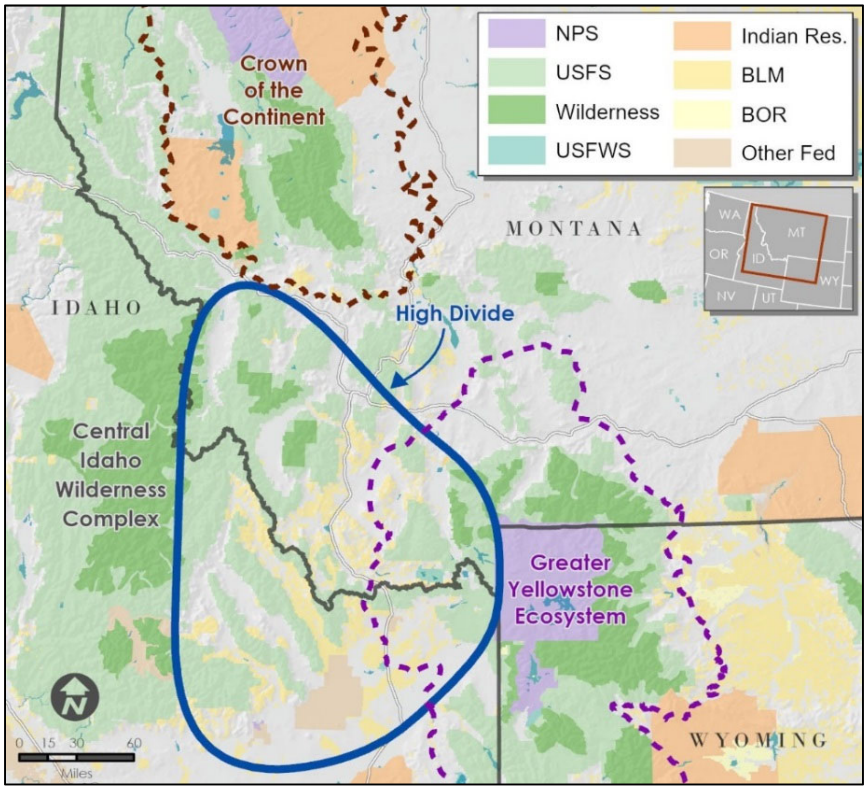

FIGURE 4. The High Divide Area. Situated on the edge of the GYE and beyond, the lightly populated High Divide Area straddles the Idaho-Montana border, encompassing both public and private lands. Regarded as a critical wildlife movement corridor, conservationists are working to protect the High Divide landscape with conservation easement acquisitions on local ranchlands. Protecting the area will help GYE grizzly bears connect with bears in the Crown of the Continent Ecosystem and will enable other species to relocate in response to climate change. © University of Utah Department of Geography DIGIT Lab

focuses on conserving private ranch lands in a rural, sparsely populated area with intermixed public and private lands. The High Divide area stretches westward from Yellowstone National

high-divide-collaborative/ (last visited Jan. 21, 2019) [https://perma.cc/FVS9-8V5L]).

Park across several Montana and Idaho counties. It includes the Centennial and Pioneer mountain ranges; the Madison, Centennial, Beaverhead, and Big Hole valleys; the Henry's Fork country; and other nearby lands. Concerned about looming climate change impacts and escalating development pressures, the HDC's basic goal is to ensure the safe passage of migratory wildlife across the region's private lands. Further, it enables dispersing animals, such as grizzly bears and wolverines, to connect with their more northern counterparts in the central Idaho wilderness areas and Crown of the Continent ecosystems.[653] Over the years, local land trusts had succeeded in protecting more than 750,000 acres, either by fee acquisition or in conservation easements, at a cost of $437 million.[654]

Seeking to build upon that success, the HDC was established in 2012. It was designed to bring together an array of entities—including federal land management agencies, land trusts, conservation groups, and private landowners—in a science-based, collaborative effort targeted at protecting key migratory and linkage corridors while also addressing affected ranchers' economic and other concerns.[655] The basic strategy is one of building trust with local landowners by employing high-quality science to identify key parcels, demonstrating the economic advantages of the conservation initiative,[656] and

653. Sarah Jane Keller, *Carnivores Not Condos: Ranches Provide Key Wildlife Passages Between Two Protected Ecosystems*, WESTERN CONFLUENCE 11 (2016), https://www.westernconfluence.org/carnivores-not-condos/ [https://perma.cc/9DUG-W3PS].

654. BRAY J. BELTRAN, HEART OF THE ROCKIES INITIATIVE, THE HIGH DIVIDE COLLABORATIVE: LANDSCAPE-SCALE CONSERVATION THROUGH COMMUNITY-BASED COLLABORATION 3 (2017). These earlier efforts often secured federal Land and Conservation funds to opportunistically acquire lands and easements, but the HDCI participants concluded that a more focused effort was necessary both to secure adequate funding and to target key parcels with high conservation value. *See* Bob Freimark, *Yellowstone to Yukon: Bridging the Divide*, WILBURFORCE FOUNDATION (2019), http://www.wilburforce.org/story/bridging-the-divide/ [https://perma.cc/GUJ9-JY2R]; *Why Keystone Lands?*, HEART OF THE ROCKIES INITIATIVE, https://heart-of-rockies.org/buttons/why-keystone-lands/ (last visited Jan. 28, 2019) [https://perma.cc/AGC9-P2G8].

655. Freimark, *supra* note 654; interview with Michael Whitfield, *supra* note 39.

656. Since 2000, the High Divide area has seen considerable growth in the service sector of its economy while the non-service sector, including agriculture and forestry, has declined. The region's population is aging and tourism and recreational activities have increased, suggesting the region is in transition. Headwaters Economics, *High Divide Region—Summary of Recreation Economy* (2014), https://headwaterseconomics.org/wp-content/uploads/High_Divide_Outdoor_Rec_Economy.pdf (last visited Jan. 18, 2019) [https://perma.cc/27TE-RZW5].

displaying cultural sensitivity to local concerns in order to overcome a legacy of distrust toward federal officials and outsiders. To date, the HDC has secured substantial funds from the Land and Water Conservation Fund and from private sources that are being used to purchase conservation easements in the region.[657] These efforts, however, have been met with resistance from some local residents who fear the HDC's agenda is driven by outsiders unconcerned with private property rights and intent on imposing a nature conservation agenda across the region.[658] Similar landscape-scale private land conservation efforts are afoot elsewhere across the GYE, including in western Wyoming where easement purchases help protect the officially designated Hoback to Red Desert mule deer migration corridor.[659]

6. Moving to the Next Level: Legal Reform and Financial Incentives

Beyond question, the level of engagement in private land conservation efforts across the GYE is quite substantial today. An assortment of groups—federal land management agencies, state wildlife and agricultural agencies, local governmental bodies, conservation organizations, informed landowners, and others—have recognized the importance of private lands to regional conservation efforts. These groups are cooperatively utilizing available legal and financial tools to control or direct development away from ecologically important lands. Scientists have provided critical data regarding wildlife ranges, winter habitat, migratory corridors, riparian zones, and the like, enabling the groups to target and expand their land acquisition and conservation easement purchases. Although the three GYE states have incorporated important conservation provisions into their planning, zoning, and easement laws, these provisions are not easily deployed and enforced in the face of strong regional sentiments supporting property rights and resisting regulatory

657. From 2016 to 2017, the HDC received $30.5 million from the LWCF, which was used to protect 23,000 acres. Freimark, *supra* note 654; interview with Michael Whitfield, *supra* note 39.

658. Karen Schumacher, *Y2Y: Corridors to Connectivity – The True Agenda*, REDOUBT NEWS (June 12, 2017), https://redoubtnews.com/2017/06/connectivity-true-agenda/ [https://perma.cc/5RHV-G99Z]; interview with Scott Christensen, *supra* note 57; interview with Michael Whitfield, *supra* note 39.

659. KAUFFMAN ET AL., *supra* note 378, at 145.

limitations. Nonetheless, the multi-layered Teton County, Wyoming, land use plan, the collaborative grazing allotment buyouts, the growing acceptance of conservation easements across the ecosystem, and the sheer volume of private acreage now being protected represent obvious progress.

Given the critical importance of private lands to GYE conservation efforts, future progress will depend upon expanding and strengthening the available legal tools. To fully address the region's wildlife needs, current private land conservation efforts must be targeted at the landscape scale, taking cues from the High Divide initiative. Doing so will require even more collaboration among the agencies, local officials, conservation organizations, and others to secure effective outcomes through use of the full range of extant legal strategies. Because incentive-based approaches have proven particularly effective in securing landowner cooperation, a need exists to expand the sources of financial support available for private land conservation projects. Finally, the weaknesses in federal and state laws governing nature conservation on private lands suggest the need to revise and strengthen these laws. The goal is to move GYE private land conservation efforts to another level—one complementing similar efforts on the public lands to ensure the region's ecological integrity and resilience for the long term.

III. ECOSYSTEM MANAGEMENT IN THE GYE: PAST PROGRESS AND FUTURE CONCERNS

The concept of ecosystem management surfaced within the GYE thirty years ago as a means to improve federal resource management on the region's intertwined public lands. At the time, Yellowstone National Park—situated at the core of this extraordinary wildland complex—faced mounting threats from outside its boundaries, and ecosystem management offered a compelling new vision to help address these threats. The responsible federal agencies appeared poised to recognize the GYE as an interconnected entity, and they contemplated policies intended to preserve its ecological integrity. That nascent, vaguely acknowledged commitment, however, has yet to be institutionalized into binding, comprehensive ecosystem-based management policies. Although the law provides a foundation for such a commitment, the agencies have been unwilling to

subordinate their discretionary authority to a collaborative regional vision, and Congress has not been inclined to propel them in this direction.

Nonetheless, the major threats confronting the GYE thirty years ago have mostly not come to pass, and other threats arising since then have been avoided, or at least mitigated—largely through what amounts to a pragmatic, issue-by-issue resource management strategy. During the intervening years, the ecosystem management concept has merged with the related landscape conservation concept, effectively expanding the scale of GYE conservation efforts and compounding the coordination problem. Across the region, serious resource management challenges are still quite evident, and jurisdictional boundaries remain relevant and problematic. On a landscape freighted with scientific, legal, and political complexities, preserving the GYE and its remarkable natural attributes remains a work in progress.

A. Ecosystem Conservation: A Mixed Success Story

Thirty years ago, development activities occurring in the GYE national forests posed the most serious threats to the region's ecological integrity and renowned wildlife resources. Logging was widespread in most of the national forests, highlighted by unbridled clear-cutting in the Targhee and portions of the Gallatin.[660] Oil and gas development threatened Bridger-Teton and Shoshone national forest wildlands.[661] Livestock grazing was ubiquitous across the forests, fostering conflicts between ranchers, grizzly bears, and other predators.[662] Though large-scale mining was confined to phosphate in the southwestern reaches of the ecosystem, mining proposals nonetheless surfaced with seeming regularity.

Today, these environmentally problematic activities are mostly under control. Commercial logging is largely quiescent on the GYE national forests, which are focused on ecological restoration projects and escalating recreational pressures.[663] Although oil and gas development has engulfed the southern-most portion of the ecosystem in Wyoming, it has been held at

660. Keiter, *Taking Account*, *supra* note 1, at 972–75.
661. *Id.* at 975–82.
662. *See supra* note 200 and accompanying text.
663. *See supra* notes 396–439 and accompanying text.

bay elsewhere, with key portions of the Bridger-Teton and Shoshone national forests now off-limits to leasing.[664] Ranching remains a mainstay across the GYE, but livestock grazing in the forests has been noticeably curtailed in critical habitat areas through strategic allotment buyouts, reducing the level of conflict between livestock, bears, and wolves.[665] While phosphate mining continues unabated in southeastern Idaho, troublesome mining proposals adjacent to Yellowstone have been effectively stopped.[666] In short, commodity-based extractive activities in the GYE national forests do not presently pose the same degree of threat to the GYE's ecological integrity as in the past, reflecting a fundamental reordering of resource management priorities—one that appears committed to maintaining and restoring the region's natural heritage.

These changes in public land management policies and priorities have plainly benefited the GYE's prized wildlife resources. Wildlife habitat concerns originally played a key role in defining GYE boundaries, and these concerns have also driven many of the changes noted in the region's national forests. For example, congressional concern over the dwindling grizzly bear population initially brought the federal agencies together in a concerted effort to redefine and coordinate their overall management strategies, which has gradually brought about a notable increase in the bear population. The agencies similarly worked together to facilitate the Yellowstone wolf reintroduction experiment—successfully restoring important predator-prey dynamics and the full array of species that originally inhabited the area. As recent scientific research has uncovered critical long-distance wildlife migration patterns that persist across the region, coordinated efforts—like the Path of the Pronghorn—are underway to better secure these migration corridors.[667] Although bison remain confined largely to the region's national parks and wildlife refuges due to yet-unproven disease transmission concerns, these embattled beasts have gained some ground outside the parks. The impending bison restoration plans on Native American reservation lands hold hope for a long-term resolution to this lingering problem. To be sure, GYE wildlife populations are neither entirely safe nor removed from

664. *See supra* notes 440–495 and accompanying text.
665. *See supra* notes 607–618 and accompanying text.
666. *See supra* notes 516–529 and accompanying text.
667. *See supra* notes 378–390 and accompanying text.

controversy, but these high-profile species generally are not at immediate risk,[668] and their habitat is more secure today on the public lands than in the past.

The GYE's formal wilderness acreage, however, has not increased despite longstanding proposals for new additions. Thirty years ago, Yellowstone and Grand Teton national parks and the adjacent national forest wilderness areas constituted a protected ecosystem core, but not one large enough to fully accommodate the region's wildlife populations or vital natural processes. Today, the GYE's designated WSAs still await formal congressional action, leaving these lands at risk of damage from mounting recreational pressures.[669] Wilderness designation bills, most prominently the Beaverhead-Deerlodge National Forest proposal, have regularly floundered in Congress,[670] while the Wyoming Public Land Initiative has cratered without generating a meaningful wilderness legislative proposal.[671] The hard-fought Gallatin land exchange legislation brought additional wilderness-quality lands into public ownership, but repeated efforts to craft a viable wilderness proposal for these lands have yet to succeed. Although the region's wilderness-eligible forest lands have gained a level of protection under the national forest roadless area rule,[672] the rule remains controversial and is vulnerable to administrative change.[673] The Wyoming Range Legacy Act, though not wilderness legislation, has at least removed these national forest lands from future energy development, and hence largely protects the area's natural qualities.[674] Three GYE rivers—the Clarks Fork, upper Snake, and East Rosebud—have gained protection under the

668. Of course, the arrival of chronic wasting disease in the GYE could change the risk equation for elk and other ungulates. *See supra* notes 359–377 and accompanying text.

669. *See supra* notes 565–575 and accompanying text.

670. *See supra* notes 543–550 and accompanying text.

671. *See supra* notes 546–549 and accompanying text. *But see* Angus M. Thuermer, Jr., *The Wyoming Public Lands Initiative Risks Collapse*, HIGH COUNTRY NEWS, Mar. 1, 2018.

672. 36 C.F.R. pt. 294 (2019); *see supra* notes 557–564 and accompanying text.

673. In fact, following the lead of Colorado and Idaho, Utah has recently petitioned the Secretary of Agriculture to revise the roadless rule for Utah national forest lands. Brian Mafly, *Gov. Herbert Seeks Relief from Roadless Protections on Utah's Forests; Environmentalists Fear Unleashed Logging*, SALT LAKE TRIBUNE (Mar. 2, 2019), https://www.sltrib.com/news/environment/2019/03/01/herberts-petition-seeks/ [https://perma.cc/2HS7-J9WX].

674. *See supra* notes 476–480 and accompanying text.

Wild and Scenic Rivers Act,[675] limiting future development in the designated riparian corridors and reflecting an evident local commitment to protecting vital ecosystem components. Thus, while formal wilderness protection remains elusive, the GYE's undeveloped forest lands now enjoy some degree of protection against intensive development proposals.

These significant conservation accomplishments have mostly been achieved piecemeal, not as a result of an integrated federal policy or broadly coordinated agency efforts to safeguard the GYE's natural qualities. Since the Greater Yellowstone Coordinating Committee's Vision process failed in the early 1990s, the federal agencies have been notably reluctant to pursue any comprehensive, region-wide plan or initiative, proceeding instead to tackle resource management problems on a case-by-case basis. The interagency grizzly bear recovery effort and the interagency bison management plan represent two such examples.[676] In part, this reflects the fact that each federal agency is bound by its own legal mandate defining the scope of its responsibilities, authority, and planning requirements.[677] Enjoying considerable discretionary power under these laws, the agencies have long been committed to rigorously guarding that legal discretion.[678]

This piecemeal approach also reflects the fact that the GYE extends across three different states, each with jurisdictional authority over the region's private lands and wildlife—at least when the animals are outside the national parks and refuges. Significant policy differences are evident within the three GYE states, perhaps best exemplified by Wyoming's elk feedgrounds that are uniformly decried by Idaho and Montana wildlife managers.[679] Likewise, the Wyoming wolf management plan differs markedly from the Montana and Idaho plans, and Wyoming's recent grizzly hunting quota proposal far exceeded

675. *See supra* notes 16–17 and accompanying text.

676. Notably, neither of these efforts can be traced to the GYCC; rather, the grizzly bear recovery effort has been driven by the powerful Endangered Species Act, while the bison management effort has been largely crisis-driven.

677. Perkins v. Bergland, 608 F.2d 803, 806 (9th Cir. 1979) (concluding that the "multiple use" mandate "breathes discretion at every pore"); *see also* Joseph L. Sax & Robert B. Keiter, *Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations*, 14 ECOLOGY L. Q. 207, 259 (1987) (highlighting the role of administrative discretion in public land management).

678. Sax & Keiter, *Glacier National Park*, *supra* note 677, at 259; Keiter, *Taking Account*, *supra* note 1, at 994–97.

679. *See supra* notes 374–375 and accompanying text.

what either Montana or Idaho contemplated.[680] While Idaho has long embraced phosphate mining in the Caribou National Forest, Montana residents have balked at new mining proposals outside Yellowstone National Park.[681] Despite the emergence of recreation and tourism economies in many GYE communities, as well as related development pressures, these communities are hardly synonymous with one another.[682] No one would confuse Jackson with Driggs or Pinedale, or Bozeman with Cody or West Yellowstone, though similar changes are evident in each of these communities. In short, the region's fragmented jurisdictional character creates formidable obstacles to any renewed effort to develop, articulate, and implement a comprehensive vision or plan for the area.

Nonetheless, a *de facto* regional perspective has emerged that elevates the GYE's natural attributes, particularly its wildlife resources, to a priority position on the landscape. Several factors account for this organic development.[683] One factor is the prominent role played by conservation groups in promoting the GYE concept; they have consistently emphasized the region's deep connection to nature conservation, passionately defended the area and its wildlife against ill-conceived development proposals, and articulated a compelling nature-first vision for the region.[684] Many of these same groups are also engaged with a growing number of the region's large private landowners through conservation sales and easement purchases predicated on a shared interest in preserving the area's natural qualities and open spaces.[685] Another factor is the fact that the region's communities and residents have increasingly recognized that their economic well-being and cultural heritage are linked to the area's natural attributes, prompting them to support and join conservation efforts such as the Path of the Pronghorn, Wyoming Range Legacy Act, Emigrant Canyon Mine opposition, and Absaroka-Beartooth

680. *See supra* notes 217, 265–273 and accompanying text.
681. *See supra* notes 516–529 and accompanying text.
682. *See supra* notes 35–51 and accompanying text.
683. *See* Sax & Keiter, *Realities of Regional Resource Management*, *supra* note 108, at 306–09 (identifying four factors driving regional resource management efforts in the Crown of the Continent Ecosystem: the law and litigation; evolving federal land management agency priorities; a changing community culture and economy; and market forces).
684. *See supra* notes 56–61 and accompanying text.
685. *See supra* notes 641–659 and accompanying text.

Front planning effort.[686] Yet another factor can be traced to the extensive work of scientists who have intensively studied the region and its wildlife, documented its inherent ecological connections, identified impending risks, and conveyed this information to the agencies and the public.[687] The federal land management agencies have also evolved, as reflected in their increasingly conservation-driven planning and management decisions, which are now mostly avoiding intensive development activities across much of the GYE. Moreover, law and litigation have been instrumental in preserving the GYE's ecological and natural values.

B. The Role of Law: Promoting Ecological Management

Federal law occupies a central role in the GYE given the prevalence of public lands. Thirty years ago—under laws like the National Parks Organic Act, National Forest Management Act, Endangered Species Act, Wilderness Act, and NEPA—a common law of ecosystem management seemed to be emerging.[688] Specific provisions in these laws and the accompanying principle of managerial discretion offered a legal foundation for refocusing the GYE federal agencies toward more ecologically sensitive and better-coordinated resource management policies and practices. Court rulings, which were largely protective of the region's natural attributes, had already overturned several agency decisions on timber harvesting, oil and gas leasing, and wilderness management that violated these laws.[689] Elsewhere, in a closely watched case, a federal court concluded that these laws effectively compelled federal land management agencies to adopt an ecological management approach.[690] In the GYE, the courts have continued to invoke and interpret these federal laws to stop agency decisions that threaten key resources or ecosystem integrity. Under the shadow of the ESA and other laws, the agencies have also worked collaboratively to address

686. *See supra* notes 389–390, 477, 492–493, 516–522 and accompanying text.
687. *See supra* notes 378–388 and accompanying text.
688. Keiter, *Taking Account*, *supra* note 1, at 997–1001.
689. *Id.* at 973, 977, 983.
690. Seattle Audubon Society v. Lyons, 871 F. Supp. 1291 (W.D. Wash. 1994). In sustaining the Northwest Forest Plan that resolved the region's spotted owl-timber harvesting controversy, the court observed: "Given the condition of the forests, there is no way the agencies could comply with the environmental laws without planning on an ecosystem basis." *Id.* at 1311.

pressing resource management issues—such as grizzly bear recovery and wildlife migration corridors—that transcend existing jurisdictional boundaries. With the GYE federal lands mostly secure from industrial development, state law is assuming a much larger role in contemporary regional conservation issues.

By any measure, the ESA has played a pivotal role safeguarding the GYE's ecological integrity. Indeed, one forest supervisor candidly regards the ESA-protected grizzly bear as a "defining part of our management."[691] The federally protected grizzly bear and its habitat needs have defined GYE boundaries and prompted multiple lawsuits challenging development activity on the region's national forest lands, including the judicial rulings that ultimately convinced the Targhee National Forest to reverse its timber practices.[692] The ESA and the bear have also featured prominently in the region's oil and gas development conflicts, inducing both the Bridger-Teton and Shoshone national forests to place important bear habitat off-limits to drilling.[693] Likewise, concern for the bear has driven livestock grazing allotment buyout efforts that have reduced cattle and sheep numbers across the region's forests.[694] Moreover, the ESA-protected bear has spawned the region's most far-reaching interagency coordination effort—the Interagency Grizzly Bear Committee and the related Yellowstone Ecosystem Subcommittee.[695] It is no surprise that the bear's potential removal from the ESA has spurred contentious, ongoing litigation. Thus far, the courts have responded by not only interpreting the ESA to prohibit the bear's delisting but also effectively expanding the law's reach, requiring consideration of climate change impacts on the bear's recovery and landscape-level connectivity opportunities for the various grizzly bear populations.[696] The grizzly bear, in short, remains a central legal concern as well as a critical biological presence within the GYE.

Beyond protection of the grizzly bear, the ESA has been

691. Interview with Mary Erickson, *supra* note 61. The GYCC Coordinator similarly views the ESA as the "driver for ecosystem management." Interview with David Diamond, *supra* note 61.

692. *See supra* notes 191–226, 401–405 and accompanying text.

693. *See supra* notes 472–484, 492–493 and accompanying text.

694. *See supra* notes 200, 611–618 and accompanying text.

695. *See supra* notes 189–190 and accompanying text.

696. *See supra* notes 205–208, 219–226 and accompanying text.

instrumental in reshaping the GYE ecology, in large part through the wolf restoration effort. In 1994, the FWS and the Park Service employed the statute's experimental population provision to reintroduce wolves to the GYE, where the animals have flourished. The wolves are credited with reducing Yellowstone's northern elk herd population by reestablishing dynamic predator-prey relationships, thereby restoring important ecological processes and components.[697] The wolves have also brought throngs of new visitors to the Park, who are now firm supporters of the wolves, the Park, and the region's natural attributes. However, despite widespread protests and a bitter legal fight, the Yellowstone wolves have been removed from the federal endangered species list following congressional intervention into the dispute.[698] Management of wolves in the GYE is now in the hands of the three states that have adopted very different plans,[699] revealing a troubling lack of coordination among themselves and with the region's two national parks. The ability of the GYE states to enlist Congress in delisting the wolves highlights not only their political power but also the tenuous position of ESA-listed species in the face of determined local opposition—even in such a high-profile, national issue like Yellowstone wolf restoration. Given the ongoing litigation over grizzly bear delisting, some worry the same fate may await the GYE's grizzly bears.[700]

Other federal laws have also figured prominently in controversies confronting the GYE during the past thirty years. The non-impairment mandate of the National Parks Organic Act provided Yellowstone snowmobile opponents with a powerful legal argument in the battle over winter use, eventually enabling the Park Service to implement a workable plan that better safeguards Park wildlife and reduces visitor conflicts during the winter months.[701] The same mandate also buttressed Grand Teton's decision not to widen the Moose-Wilson Road,[702] helping preserve the natural character of this corner of the Park. But the Organic Act has not proven strong enough to protect

697. *See supra* notes 247–252 and accompanying text.
698. *See supra* notes 261–264 and accompanying text.
699. *See supra* notes 271–273 and accompanying text.
700. Interview with Caroline Byrd, *supra* note 30; interview with Dennis Glick, *supra* note 576; interview with Ed Lewis, *supra* note 30; interview with Tom Oliff, *supra* note 26; interview with Todd Wilkinson, *supra* note 66.
701. *See supra* notes 149–165 and accompanying text.
702. *See supra* note 170 and accompanying text.

Yellowstone's bison when they seasonally migrate outside the Park, illuminating the legal significance of the boundary lines and the need for meaningful federal-state coordination. Nor has the Park Service yet employed its discretionary authority under the Organic Act to address mounting visitation pressures that threaten park resources and values. The Wilderness Act has afforded strong legal protection to designated WSAs on the region's national forests, as the courts have invoked the act to stop potentially damaging motorized activities in these sensitive areas.[703] The revised National Wildlife Refuge Administration Act, with its "biological integrity" provision, may yet prove the catalyst for eliminating the National Elk Refuge's supplemental winter feeding program.[704] Other laws and regulations have also been used successfully to address motorized recreation controversies on the region's multiple-use forest lands.[705] Moreover, NEPA litigation remains a staple in the GYE. It has regularly given conservation advocates crucial legal leverage to forestall troublesome proposals on federal lands, ranging from timber sales and mining plans to winter feedground permits.[706] NEPA's rigorous environmental analysis and public engagement requirements provide an unparalleled opportunity to test the reasonableness of proposed federal agency actions against competing ecological and other considerations.

Though federal law underlies important conservation achievements in the GYE, it has not driven the agencies to formally embrace a collaborative, integrated ecosystem management approach. The failed Vision process of the early 1990s still hangs over the federal agencies, serving as a precautionary lesson against comprehensive, region-wide federal initiatives. Political realities within the three GYE states also counsel caution, in light of the several instances when the Wyoming, Idaho, and Montana congressional delegations proved willing and able to intervene in regional issues. However, given the ecological connections binding the region together, any effective ecosystem-wide management approach to the GYE must entail some form of coordinated planning. But the law does not provide ecosystem management advocates with an obvious means to compel this type of planning effort, at least not through

703. *See supra* notes 564–569 and accompanying text.
704. *See supra* notes 350–359 and accompanying text.
705. *See supra* notes 576–583 and accompanying text.
706. *See supra* notes 362–365, 401–405, 517–522 and accompanying text.

litigation. The Supreme Court's ruling in *Ohio Forestry Association v. Sierra Club*,[707] that forest plans are generally not ripe for judicial review, refocused public land litigation on specific project proposals. Although the GYE federal agencies have statutory coordination provisions governing their planning and decision processes,[708] the courts have not had occasion to consider or enforce these provisions—which the agencies ordinarily treat as mere general admonitions met through routine NEPA notices and NEPA cooperating agency arrangements. Yet as the Forest Service embarks upon its next generation of forest plans in the GYE, it is obliged under the revised NFMA planning rules to prepare landscape assessments as part of the planning process.[709] This new requirement should prompt the agency to take critical, region-wide ecological concerns into account as well as the concerns of national park neighbors.[710]

With the passage of time, state law is assuming equal prominence with—and may even eclipse—federal law in the GYE's jurisdictionally fragmented environment. This is occurring for three reasons. First, outside the GYE national parks and wildlife refuges, state law governs wildlife management with the exception of federally protected endangered species, and the grizzly bear is the only major GYE species still under federal

707. 523 U.S. 726 (1998) (explaining that forest plans generally do not make final agency decisions, that these decisions are usually made at the project or plan implementation stage, and that plans might be challenged when they permit ground disturbing actions); *see also* Norton v. Southern Utah Wilderness Alliance, 542 U.S. 55, 71 (2004) (refusing to enforce monitoring commitments in a BLM land use plan, in part because "a land use plan is generally a statement of priorities; it guides and constrains actions, but does not (at least not in the usual case) prescribe them").

708. *See, e.g.*, 16 U.S.C. § 1604(a) (2018) (governing the National Forest System), 36 C.F.R. § 219.4(b) (2019) (regulating the National Forest System); 43 U.S.C. § 1712(c)(9) (2018) (governing the Bureau of Land Management).

709. 36 C.F.R. § 219.5(a)(1) (2019); *see* CUSTER-GALLATIN REVISED FOREST PLAN PROPOSAL, *supra* note 541, at 5–8.

710. *But see* CUSTER-GALLATIN REVISED FOREST PLAN PROPOSAL, *supra* note 541, at 6–10 (containing few references to the surrounding Greater Yellowstone Area, while focusing instead on the six eco-regions that overlap the Forest). The plan summarily states: "The Custer Gallatin National Forest cooperates with other agencies in the Greater Yellowstone Coordinating Committee to coordinate land management on over 15 million acres of federal land in the Greater Yellowstone Area." *Id.* at 8. This conclusory statement hardly constitutes a careful assessment of the role or ecological importance of Yellowstone National Park or other lands in the Custer-Gallatin landscape.

protection.[711] The region's elk, deer, bison, and even wolves are all subject to state management, while the grizzly bear's federal status is tenuous due to the FWS's recurrent efforts to delist it and the ongoing litigation over that decision. Should the bear ultimately be returned to state management, the powerful ESA would no longer play such a prominent role in ordering resource management priorities across the region, particularly in the national forests. Second, with industrial-level development activities at low ebb on most of the GYE national forest and BLM lands,[712] the immediate threat to the region's ecological integrity springs from private lands, where largely unregulated development and subdivision activity is incrementally fragmenting the landscape and displacing wildlife from critical habitat. Conservation efforts directed toward the GYE private lands are rooted in state planning, zoning, and conservation easement law—areas mostly devoid of any federal legal presence. Finally, in the absence of any meaningful federal legal response to climate change, the focus is currently on state or local efforts to address this insidious threat, despite the limitations of such an approach.

The problem is that state law governing wildlife, private land use, and climate change is notably weak or, in the case of the last, non-existent. The three GYE states each manage wildlife under the North American Model,[713] which is built upon

711. Two other wide-ranging mammals—Canada Lynx and the wolverine—received either ESA protection or consideration, and each could have some impact on future forest management practices in the GYE. Although the Canada Lynx is listed as threatened under the ESA, it does not appear to have a significant presence in the GYE, and all forest plans in the northern Rockies have been amended to provide lynx safeguards. Nonetheless, the U.S. Fish & Wildlife Service appears poised to remove the lynx from the endangered species list. *See* U.S. FISH & WILDLIFE SERVICE, SPECIES STATUS ASSESSMENT FOR THE CANADA LYNX (LYNX CANADENSIS), CONTIGUOUS UNITED STATE DISTINCT POPULATION SEGMENT 47, 156 (Oct. 2017), https://www.fws.gov/mountain-prairie/es/species/mammals/lynx/SSA2018/01112018_SSA_Report_CanadaLynx.pdf [https://perma.cc/7W7Y-NGTZ]; *Status Review Indicates Canada Lynx Recovery in the Lower 48-States*, U.S. FISH & WILDLIFE SERVICE (Jan. 11, 2018), https://www.fws.gov/news/ShowNews.cfm?ref=status-review-indicates-canada-lynx-recovery-in-the-lower-48-states-&_ID=36211 [https://perma.cc/7VGM-F5SE]. The wolverine does inhabit higher elevation portions of the GYE, but it has yet to be listed under the ESA, despite a court ruling directing the U.S. Fish & Wildlife Service to reconsider its non-listing decision. Defenders of Wildlife v. Jewell, 176 F. Supp. 3d 975, 978 (D. Mont. 2016).

712. This observation, of course, excludes the oil and gas activity in the Pinedale Anticline on the GYE's southern flank and phosphate mining in Idaho on its southwestern flank. *See supra* notes 457–468, 524–529 and accompanying text.

713. *See supra* note 111 and accompanying text (describing the North American

hunting and fishing license revenues and thus tends to emphasize big game animals and consumptive use. It is no surprise that the states are poised to implement a trophy grizzly bear hunt, wolves are treated as vermin subject to being killed on sight in most of Wyoming, Montana is unwelcoming to bison leaving Yellowstone, and Wyoming persists in maintaining its elk feedgrounds despite the adverse ecological impacts. Biodiversity conservation is a mostly secondary objective for the states.[714] Consequently, animals occupying critical ecological roles in the GYE—like the beaver and pika—receive little attention from state wildlife managers.[715] Among the three states, only Montana has a state environmental policy act,[716] which means that problematic development proposals on state and private lands in Wyoming and Idaho are not subject to careful environmental review and that public comment opportunities are limited. Even the Montana Environmental Policy Act, as evidenced in the Emigrant Canyon Mine litigation, precludes the courts from granting injunctive relief to remedy statutory violations.[717] Land use planning, zoning, and subdivision laws are generally weak and not rigorously employed within the three states; hence, private land development proposals often proceed with little scrutiny.[718] As illustrated by the Carney Ranch conservation easement imbroglio in Wyoming, these private transactions are fraught with troublesome oversight and enforcement issues under existing law.[719] None of the three states has adopted climate change legislation, though Montana's environmental review statute provides an apparent opportunity to address this issue in the context of development proposals.

There are, of course, instances where state law has been

Model of wildlife management).

714. Nie et al., *supra* note 111, at 814 (discussing how hunting, and not biodiversity, is at the core of the North American Model of wildlife management); interview with Doug McWhorter, *supra* note 217; interview with Tim Preso, *supra* note 44.

715. On the national forests, of course, the Forest Service's planning rules obligate the agency to meet species diversity and habitat protection goals. *See* 36 C.F.R. § 219.9 (2019) (employing a complementary ecosystem and species-specific approach to maintain diverse plant and animal communities and persistent native species in the plan area).

716. *See* Montana Environmental Policy Act, MONT. CODE ANN. §§ 75-1-101 (2019).

717. *See supra* notes 520–522 and accompanying text.

718. *See supra* notes 633–640 and accompanying text.

719. *See supra* notes 646–651 and accompanying text.

successfully invoked to advance GYE conservation goals. One example is the Montana district court decision on portions of the Emigrant Canyon Mine project slated for privately owned lands. There, the court found inadequate compliance with the state's environmental review requirements and invalidated the statutory remedy limitations.[720] The Montana Supreme Court's decision sanctioning the transfer of bison within the state is another example.[721] It opens the door for a nonlethal solution to Yellowstone's growing bison population—one that would also benefit the state's Native American tribes interested in restoring bison on their reservation lands. State wildlife management laws generally provide state officials with considerable flexibility in establishing hunting rules, discretion that Montana has used to limit (but not eliminate) wolf hunting near Yellowstone's borders.[722] Under its governing statutes, the Wyoming Game and Fish Department has begun designating wildlife migration corridors,[723] a promising initial step toward protecting these vital routes. The Wyoming Supreme Court's decision rejecting a rancher's wildlife damage claim emanating from a brucellosis outbreak in his herd reflected a judicial reluctance to take sides over controversial disease-transmission questions.[724] And the state courts, on occasion, have enforced specific conservation-oriented land use plan and subdivision provisions.[725] Nonetheless, state law falls well short of the rigorous standards and procedural requirements of federal law when addressing critical GYE conservation issues.

Any assessment of the role of law in the GYE conservation controversies cannot ignore the role of politics, an ever-present reality over the past thirty years that will not change in the

720. *See supra* notes 520–522 and accompanying text (explaining that the state district court found this remedial prohibition unconstitutional under the Montana State Constitution).

721. *See supra* note 312 and accompanying text.

722. *See supra* notes 272–273 and accompanying text. In fact, when Montana wildlife officials closed areas near Yellowstone National Park to wolf hunting, a state district court found they acted illegally, enjoined the closure order, and reopened the area to wolf hunting. Associated Press, *Judge: Wolf Hunting, Trapping Can Continue Near Yellowstone Park*, MISSOULIAN (Jan. 18, 2013), https://missoulian.com/news/state-and-regional/judge-wolf-hunting-trapping-can-continue-near-yellowstone-park/article_a10df02c-61d5-11e2-90f1-001a4bcf887a.html [https://perma.cc/3HX3-J3WF].

723. *See supra* notes 389–390 and accompanying text.

724. *See supra* note 346 and accompanying text.

725. *See supra* notes 637–639 and accompanying text.

future. Given its lawmaking role, Congress generally has the final word on how federal laws governing public lands are written and applied in the GYE and elsewhere. Congress has protected GYE lands with the passage of laws like the Gallatin Land Exchange legislation, Wyoming Range Legacy Act, and Yellowstone Gateway Protection Act.[726] Under the Wilderness Act, Congress holds the key to additional wilderness in the GYE, though it has not been persuaded to take any action since the 1984 Wyoming Wilderness Act.[727] Congress has also proven willing to intervene in contentious regional issues, as it did to prompt removal of the GYE wolves from the endangered species list.[728] Even when Congress does not act, the specter of congressional intervention has hung over several GYE matters, such as grizzly bear delisting as well as the Yellowstone snowmobiling, whitewater boating, and backcountry rafting controversies.[729] Moreover, Congress holds in its hands the future of several key laws—including the ESA, NEPA, and the General Mining Law—that have figured prominently in GYE issues.[730]

Political considerations have prompted presidents and cabinet officials to intervene in GYE controversies. Most notably, President Clinton inserted himself into the New World Mine negotiations, and Interior Secretaries Jewell and Zinke entered land withdrawal orders to stop mining on national forest lands north of Yellowstone.[731] This history of occasional political intervention suggests that Congress or the President will ordinarily step in only when a discrete issue has been elevated to the national level, and then only when a strong local consensus points the way forward.

State-level politics also regularly lurk in the GYE. As seen in the grizzly bear, wolf, and bison controversies, the three GYE states have regularly adopted strong positions on contentious

726. *See supra* notes 407–412, 475–480, 520 and accompanying text.

727. *See supra* notes 531–556 and accompanying text. Of course, Congress has approved three wild and scenic river segment designations. *Id.*

728. *See supra* notes 261–264 and accompanying text.

729. By most accounts, the threat of congressional reprisal also helped to undermine the Vision process. *See supra* notes 105–107 and accompanying text.

730. In fact, legislative proposals designed to alter and, in many cases, weaken these laws persist. *See, e.g.*, H.R. 6345, 115th Cong. (2018) (revising the Endangered Species Act); H.R. 6106, 115th Cong. (2018) (revising the National Environmental Policy Act); H.R. 717, 115th Cong. (2018) (revising the Endangered Species Act).

731. *See supra* notes 509–510, 518 and accompanying text.

wildlife matters and other natural resource issues. Deeply committed to principles of state sovereignty and leery of federal regulatory efforts, the three states have not only flirted with ownership claims to federal lands within their borders but have also sued the federal government for control over endangered species, migrating bison, and refuge management policies.[732] They have each supported major reform of the principal federal laws governing the GYE public lands, most notably the ESA and NEPA.[733] Wyoming has even secured jurisdiction over non-federal lands within Grand Teton National Park.[734]

At the same time, the states have taken conflicting positions on specific GYE issues. This is particularly evident in the case of elk management and Wyoming's feedgrounds, as well as the different responses by Montana and Idaho to mining projects. For the most part, local economic concerns rather than nature conservation ones have driven state and local positions—a fact reflected in the longstanding antipathy toward new wilderness designations, the federal wolf restoration effort, and limitations on park visitation. Given these political realities, it is difficult to conceive the GYE states willingly joining together, or joining with the federal agencies, in any comprehensive plan or expanded coordination effort designed to address regional ecological concerns.[735]

C. The Road Ahead: Landscape Conservation and Coordination Challenges

The GYE, as we have seen, is not free from threats to its ecological integrity. Several existing conservation challenges remain unresolved. The region's grizzly bears face ongoing threats and have yet to connect with their northern cousins. Bison are still being dispatched when too many wander outside

732. *See supra* notes 265–266, 285, 349 and accompanying text.

733. *See* WESTERN GOVERNORS ASSOCIATION, *Letters on Species Management*, http://westgov.org/letters/category/species-management [https://perma.cc/KS8X-GHCM]; *see* WESTERN GOVERNORS ASSOCIATION, *Letters on Environmental Management*, http://westgov.org/letters/category/environmental-management [https://perma.cc/ZQ4J-DQJ4].

734. *See supra* notes 180–183 and accompanying text.

735. Should this change, one model of interstate planning and coordination that might translate to the GYE setting is the congressionally ratified interstate compact between California and Nevada that established the Tahoe Regional Planning Agency to oversee that environmentally prominent, jurisdictionally fragmented region. *See* Pub. L. No. 96-551, 94 Stat. 3233 (1980).

the Park. New wildlife migration science has revealed the expanded habitat needs of the region's resident elk, deer, and other migratory ungulates. Formal wilderness designation remains elusive for large swathes of the region's roadless public lands. Moreover, the emergence of several new, "wicked problems" could undermine present conservation achievements and wreak long-lasting harm. The GYE's public lands face growing, industrial-strength recreation pressures—particularly in the backcountry—as well as exploding visitation in the national parks with spillover effects. Relentless, market-driven private land development pressures fragment wildlife habitat, disrupt migration routes, and diminish open space across the region. Wildlife disease problems are now magnified with the arrival of chronic wasting disease, which could decimate the region's prized elk herds. Climate change also looms over the area, exacerbating these problems and increasing wildfire and drought concerns. Some of these new problems, ironically, can be traced to the region's transition to an amenity-driven economy, long an express goal of the conservation community that may not have initially appreciated the full implications of such an economic transformation. These problems continue to defy jurisdictional boundaries and will require serious coordination efforts to resolve, presenting both political and legal challenges.

By any measure, the scale of GYE conservation efforts must be significantly expanded. Originally framed in terms of grizzly bear habitat, geothermal connections, and vegetative characteristics, the GYE concept has already been expanded to encompass 20 million acres, and an even larger perspective is now essential to meet the region's conservation challenges. This more expansive view of the GYE can be attributed to several factors. First, extensive scientific studies of GYE species, migration routes, and natural processes have inexorably revealed the full extent of ecological interactions and threats within the region. Second, developments on the ground, from the expanding range of grizzly bears and migratory pronghorn to wildfire events and climate impacts, unmistakably demonstrate just how large the GYE is in terms of its natural features and processes. Third, the cumulative impacts of peripheral development activity—oil wells, clear-cuts, subdivisions, roads, fences, recreational activities, and population growth—continue to take a long-term toll on ecosystem integrity. This threatens to

destabilize the GYE and unwind the conservation achievements of the past thirty years. As one longtime observer put it, the region faces "death by one thousand cuts."[736] GYE nature conservation strategies must therefore embrace the larger landscape—a strategic quantum leap that extends to distant lands in central Idaho, southwestern Wyoming, and northern Montana. Simply put, ecosystem management in the GYE has evolved into landscape conservation.

Significantly, tangible efforts are underway to address conservation at this expanded scale.[737] The grizzly bear recovery program, as well as bear advocates, have long recognized the need to connect Yellowstone's bear population with the Northern Continental Divide bear population—viewed as the "Holy Grail" of bear conservation—to ensure genetic vitality and long-term persistence.[738] Climate change has spawned similar connectivity concerns surrounding the ability of displaced species, like the wolverine and pika, to move up-elevation and northward. GYE conservation organizations, with agency involvement, are focusing on the High Divide region in an effort to contain development pressures and secure safe passageways for these species, attempting to ensure their long-term viability.[739] In Wyoming, the accumulating scientific information concerning vital, long-distance wildlife migration routes has prompted creative efforts to protect these corridors. The prime example is the Path of the Pronghorn, legitimized by official Forest Service and BLM decisions, binding conservation easement agreements, and a state highway overpass structure.[740] Since then, Wyoming wildlife officials, scientists, and conservation groups have begun formally identifying and designating other migration routes.[741]

736. Interview with Todd Wilkinson, *supra* note 66.

737. These efforts include two prominent expansive landscape conservation efforts that encompass the GYE. One is the Yellowstone to Yukon Conservation Initiative, which seeks to protect a linear corridor extending the length of the Rocky Mountains from northern Canada to Yellowstone National Park; another is the proposed Northern Rockies Ecosystem Protection Act, which seeks to expand wilderness areas across the northern Rocky Mountains and establish connective wildlife corridors between the region's federally protected areas. *See* KEITER, KEEPING FAITH, *supra* note 4, at 91–92.

738. *See supra* notes 219–226, 236 and accompanying text. Attorney Tim Preso used the "Holy Grail" term in our interview. Interview with Tim Preso, *supra* note 44.

739. *See supra* notes 652–658 and accompanying text.

740. *See supra* notes 389–390 and accompanying text.

741. Angus M. Thuermer Jr., *Game and Fish Proposes New Migration Corridor Protections*, WYOFILE (Mar. 5, 2019), https://www.wyofile.com/game-and-fish-

These efforts are proceeding on a piecemeal basis, however, tackling individual issues as they arise—often at a crisis point, as seems to be the case with the emergent chronic wasting disease threat.[742]

As GYE conservation efforts expand in scale, the need for coordinated planning and management is even more evident. Interagency coordination was a challenge for the GYE federal land management agencies thirty years ago when the ecosystem management concept first surfaced, and it remains incomplete. On certain discrete issues, like grizzly bear management, pronghorn migration, and wildfire management, the GYE federal agencies and their state counterparts have effectively worked together toward common conservation goals. Such piecemeal cooperation, however, has not been formalized on a broad scale, nor does it extend to the full array of conservation problems confronting the region. Within the federal family, the Park Service's efforts to enlist the Forest Service on Yellowstone's Northern Range bison issue floundered early on, though relations have improved over time. The same was true when the New World Mine proposal first surfaced as well as when Yellowstone objected to Targhee logging practices.

Even greater fissures are apparent in terms of federal-state cooperation. Despite ongoing pleas from the Park Service to prohibit wolf hunting immediately adjacent to the parks, the states have refused to do so. The same hunting-at-the-park-boundary problem lurks should grizzly bears be delisted. Wyoming has recently asserted jurisdictional authority over state and private lands inside Grand Teton National Park, an arrangement patently inconsistent with any notion of uniform wildlife management policy.[743] In addition, state-supervised elk and bison hunts on the borders of Yellowstone and Grand Teton

proposes-new-migration-corridor-protections/ [https://perma.cc/XC8Q-PK4V]; *but see* Angus M. Thuermer Jr., *National Debate Erupts over Wildlife Migration Routes*, WYOFILE (May 7, 2019), https://www.wyofile.com/national-debate-erupts-over-wildlife-migration-routes/ [https://perma.cc/CYA9-YNDU] (reporting that Wyoming ranchers and energy companies are questioning further designation of wildlife migration corridors by the state).

742. In fact, the relentless westward progression of the dreaded chronic wasting disease across Wyoming and into the GYE serves as an additional reminder that wildlife management issues literally demand attention at this larger landscape scale. *See supra* notes 359–370 and accompanying text. The same can be said about brucellosis now that elk have been identified as primary purveyors of this wildlife disease. *See supra* note 298 and accompanying text.

743. See *supra* notes 180–183 and accompanying text.

have long troubled park officials. Moreover, the states have shown little interest in collaborating with each other on regional resource management policy, as reflected in the ongoing friction over Wyoming's winter feedgrounds and their impact on the advancing chronic wasting disease threat.

The challenge, therefore, is to structure and implement a coordinated approach to resource planning and management in the GYE's more expansive, jurisdictionally fragmented landscape. The Greater Yellowstone Coordinating Committee, with its long-standing presence in the area, is an obvious candidate to assume a more prominent regional, coordinating role to promote ecological conservation within the GYE. The GYCC, however, has shied away from another regional vision process or anything that might be perceived as a federally driven comprehensive planning effort. It has brought the federal agencies together to gather and share information, and it has supported issue-specific, collaborative management efforts in the case of the grizzly bear and bison.[744] On occasion, it has established subcommittees with federal and state representatives to address discrete, less-contentious issues, such as noxious weed control, white bark pine decline, and wildfire management.[745] Although the GYCC expanded its membership in 2012 to include the three BLM state directors and opens its periodic meetings to the public, it still consists solely of federal land managers, and there is little current interest in expanding its membership to include the three GYE states or other governmental entities.[746] These inherent limitations would only be magnified at the larger landscape scale where many of the GYE's most pressing conservation issues are playing out today.

The hard reality is that the GYE's jurisdictional complexity may preclude any single, coordinated response to the region's ongoing and impending nature conservation issues. Rather, these diverse issues—grizzly bear recovery, wildlife migration corridors, wilderness designation, recreational and visitation pressures, private land subdivision, chronic wasting disease, and climate change—will likely continue being addressed on an issue-by-issue basis. Some of these problems implicate federal

744. *See supra* note 676.

745. Pahre, *supra* note 188, at 70–71.

746. In the course of my interviews, I was told that the states have not expressed any interest in joining the GYCC. Interview with Mary Erickson, *supra* note 61; interview with Tricia O'Connor, *supra* note 61.

land management law and policy, most notably endangered species, wilderness designation, backcountry recreation pressures, escalating national park visitation, and climate change.[747] Others—namely private land development patterns and wildlife management and disease concerns—involve primarily state law and policy and will require committed state and local involvement. However, given the expanded scale and complexity of these different GYE conservation challenges, durable solutions will plainly entail more, not less, coordination among the responsible agencies and governing bodies. Therefore, with state law assuming greater importance in the region and the GYCC's limited capacity, the three GYE states must enhance their coordination efforts with their federal counterparts and among themselves.

In the years ahead, GYE conservation issues will continue to ignite controversy across what has become an expanded regional landscape. Pressure will also mount to further formalize basic ecosystem management concepts, including the use of science and meaningful coordination among the responsible federal, state, and local entities. As has been the case over the past thirty years, these matters will inevitably be addressed at different institutional levels and will reflect the political, legal, and practical realities overlaying this high-profile, jurisdictionally complex region. Advocates within the GYE conservation community will continue pressing for national solutions, either through Congress or the federal courts, having long recognized the power that can be brought to bear by nationalizing GYE issues.[748] Those who perceive state and local forums to be friendlier will, conversely, seek to localize the issues. During the course of my interviews, one experienced federal land manager observed, "[i]t's easier to solve issues locally, because at the national level, politics take over."[749] Others extolled issue-focused collaborative initiatives, arguing the virtues of bringing diverse constituencies together to identify and devise local solutions to the GYE's various conservation

747. *See supra* notes 470–471 and accompanying text (explaining that the federal courts, under NEPA, are requiring the public land agencies to fully analyze the greenhouse gas emissions associated with proposed fossil fuel projects).

748. Interview with Ed Lewis, *supra* note 30; Doug Honnold, *supra* note 196; interview with Tim Preso, *supra* note 44; interview with Louisa Willcox, *supra* note 45.

749. Interview with Mary Gibson Scott, *supra* note 98.

issues.[750] These political dynamics and related legal strategies will undoubtedly persist in the quest for solutions to GYE conservation issues. This enduring reality virtually ensures these matters will continue to be addressed on an individual basis, though guided by basic ecosystem management concepts that are gradually obtaining a foothold in the GYE.

CONCLUSION

Thirty years ago, the GYE concept and related ecosystem management ideas, built on prioritizing conservation and coordination across boundary lines, were widely perceived as audacious. Since then, change has come to the region. Nature conservation has become a priority though is still a controversial concern. The GYE concept of the area as an intertwined ecological entity has attained recognition and legitimacy among much of the local populace and within the federal land management agencies. Important ecological management principles have also taken hold within those agencies, elevating science, adaptive management, and wildlife conservation on their resource management agendas. As the regional population has grown, local economies have visibly shifted from natural resource extraction to economies built upon the area's natural amenities. Extractive activities on the region's public lands, though still quite evident on the GYE's periphery, no longer pose an imminent threat to the ecosystem core. The GYE's natural attributes remain largely intact, the once-imperiled grizzly bear population has rebounded, and wolves have been restored to the ecosystem. Yellowstone's growing bison population has gained limited access outside the Park during winter months, and other wildlife migration routes have been identified, officially recognized, and granted some modicum of protection.

Within the GYE, a confluence of diverse forces has contributed to the perceptible shift toward nature conservation and ecosystem management. The ecological sciences have advanced understanding of the region's species and natural processes, assuming a pivotal role in shaping conservation efforts. The responsible federal agencies have evolved. Perhaps most noticeably, the Forest Service has shifted from its historic

750. Interview with David Diamond, *supra* note 61; interview with Mary Erickson, *supra* note 61; interview with Tricia O'Connor, *supra* note 61.

focus on commodity production toward an agenda clearly valuing wildlife conservation, recreation, and ecological sustainability. As the GYE concept has gained acceptance among residents, it has provided a unifying regional identity that has helped to build political support among diverse constituencies for policies protective of the region's natural attributes and heritage. Federal law has provided conservation advocates with a powerful litigation tool, and the federal courts have proven receptive to many of their arguments. All of this has served as a catalyst to advance an ecological conservation agenda protective of the GYE's natural qualities. On some occasions, the national prominence of Yellowstone has even prompted congressional action and presidential intervention to preserve the region's natural attributes.

Looking ahead, as we enter the Age of the Anthropocene, an ecological approach to resource management in the GYE is more important than ever. Visitation and recreation pressures continue unabated across the GYE public lands, private land development and subdivision activities are escalating, and potentially devastating climate change and wildlife disease impacts now hang over the area. These serious new threats portend adverse ecological impacts at least tantamount to those confronting the GYE thirty years ago, including wildlife displacement, habitat fragmentation, open space loss, warming temperatures, increased wildfires, and altered water regimes. To address these new challenges and solidify existing achievements, current GYE conservation efforts must be expanded in scale to embrace a larger landscape—one that connects the GYE to more distant ecosystems stretching across the central Idaho wilderness complex to the Crown of the Continent region and into southern Wyoming. Shifting to a new landscape conservation perspective will also require even greater coordination efforts among the responsible agencies and with the three states—something not always evident within the GYE. In addition, strategic interventions at the national level are inevitable, at least on contentious matters involving federal lands, endangered species, additional wilderness protection, and climate change, which wholly transcends state and regional boundaries.

It remains to be seen whether the same forces that moved the GYE conservation agenda forward during the past thirty years can now expand these efforts to the landscape scale and

enhance regional coordination. Such a transition may prove challenging as a formal legal matter. Despite individual instances of interagency coordination, the region's complex jurisdictional boundaries remain a barrier to integrated regional planning and coordination. Notable differences are still quite evident among the federal agencies and the three GYE states, and within the GYE states and the region's various communities. Moreover, state law—a matter of growing importance within the region—does not provide the same strong, protective legal handles available under federal law. It may be possible, nonetheless, to continue meeting the GYE's impending conservation challenges on an issue-by-issue basis, as has occurred on the region's federal lands with the gradual-yet-perceptible shift toward an ecosystem management approach over the past thirty years. Failure to do so will not only put the existing GYE conservation achievements at risk but will also imperil this unique, wildland region's economic and ecological well-being. In sum, a joint federal-state commitment to fundamental ecosystem management concepts throughout an expanded GYE landscape would go far toward addressing the region's prevailing problems, thus preserving its abundant natural attributes.

APPENDIX

List of Individuals Interviewed:

Stephanie Adams
Northern Rockies Associate Director, National Parks Conservation Association, Bozeman, MT

Peter Aengst
Senior Regional Director, Northern Rockies Region, The Wilderness Society, Bozeman, MT

Bill Berg
Commissioner, Park County, MT

Mike Brennan
Private Attorney, Jackson, WY; former U.S. Fish & Wildlife Service attorney

Caroline Byrd
Executive Director, Greater Yellowstone Coalition, Bozeman, MT

Franz Camenzind
Scientist & Wildlife Photographer; Executive Director, Jackson Hole Conservation Alliance (retired), Jackson, WY

Scott Christensen
Deputy Director, Greater Yellowstone Coalition, Bozeman, MT

Mike Clark
Executive Director, Greater Yellowstone Coalition (retired), Bozeman, MT

Susan Clark
Professor and Author, Yale University School of Forestry and the Environment, Jackson, WY

David Diamond
Coordinator, Greater Yellowstone Coordinating Committee, Bozeman, MT

Bob Ekey
Northern Rockies Regional Director, The Wilderness Society (retired), Bozeman, MT

Mary Erickson
Supervisor, Custer-Gallatin National Forest, Bozeman, MT

Brian Glaspell
Manager, National Elk Refuge, Jackson, WY

Dennis Glick
Executive Director, Future West, Bozeman, MT

Andrew Hansen
Professor, Montana State University, Bozeman, MT

Doug Honnold
Attorney, Earthjustice (retired), San Francisco, CA (by telephone)

Virginia Kelly
Forest Planner, Gallatin National Forest, Bozeman, MT; former Greater Yellowstone Coordinating Committee Executive Coordinator

Ed Lewis
Consultant; Executive Director, Greater Yellowstone Coalition(retired), Bozeman, MT

Bart Melton
Northern Rockies Regional Director, National Parks Conservation Association, Bozeman, MT

Doug McWhorter
Biologist, Wyoming Fish & Game Dept., Jackson, WY

Tricia O'Connor
Supervisor, Bridger-Teton National Forest, Jackson, WY

Tom Oliff
Coordinator, National Park Service, U.S. Geological Service Northern Rocky Mountain Science Center, Landscape Conservation Cooperative, Bozeman, MT

Hank Phibbs
Commissioner, Teton County, WY (retired); co-founder, Greater Yellowstone Coalition, Jackson, WY

Tim Preso
Attorney, Earthjustice, Bozeman, MT

Luther Propst
Commissioner, Teton County, WY, Jackson, WY

Ray Rasker
Executive Director, Headwaters Economics, Bozeman, MT

Rick Reese
Ranger, National Park Service (retired); co-founder, Greater Yellowstone Coalition, Bozeman, MT

Kathy Rinaldi
Idaho Conservation Coordinator, Greater Yellowstone Coalition, Driggs, ID; Commissioner, Teton County, ID (retired) (by telephone)

Mary Gibson Scott
Superintendent, Grand Teton National Park (retired), Jackson, WY

Michael Scott
Hewlett Foundation; Executive Director, Greater Yellowstone Coalition (retired), Bozeman, MT

Liz Storer
President & CEO, George G. Storer Foundation, Jackson, WY

Gary Tabor
Executive Director, Center for Large Landscape Conservation, Bozeman, MT

Angus Thuermer, Jr.
Journalist, WyoFile; Jackson Hole News & Guide (former reporter), Jackson, WY

Dan Wenk
Superintendent, Yellowstone National Park (retired) (by telephone)

Michael Whitfield
Conservationist; High Divide Initiative Coordinator (retired), Driggs, ID

Todd Wilkinson
Journalist and Author, Mountain Journal, Bozeman, MT

Louisa Willcox
Conservationist, Grizzly Times; Natural Resources Defense Council (retired), Livingston, MT