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The Use and Preservation of Grasslands: The Logic of Hard Lessons

Irma S. Russell
University of Missouri-Kansas City

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Irma S. Russell[a1]

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As long as the weave of grass was stitched to the land, the prairie would flourish in dry years and wet. The grass could look brown and dead, but beneath the surface, the roots held the soil in place; it was alive and dormant .... It could hold moisture a foot or more below ground level even during summer droughts, when hot winds robbed the surface of all water-bearing life. In turn, the grass nurtured pin-tailed grouse, prairie chickens, cranes, jackrabbits, snakes, and other creatures that got their water from foraging on the native turf. Through the driest years, the web of life held.

Timothy Egan, *The Worst Hard Time: The Untold Story of Those Who Survived the Great American Dust Bowl.*[1]

INTRODUCTION

In the 1930s the United States found itself in the deep trough of the Great Depression.[2] The causes of that major economic and social disruption of the Depression are multilayered and debated, but authorities agree that wide-spread drought and flawed farming practices played a major role in the desperate situation of the area known as the Dust Bowl.[3] There is no doubt that this economic dislocation of a generation forced off the land reverberated in the wider world.[4]

***360** My parents were children of the Depression, so when I was growing up I heard some things about the hardscrabble[5] days on an Oklahoma farm, the general hard time they were lucky to live through by moving to Kansas, and the dusty days I was lucky to miss by a decade or so. As a Kansas kid growing up in wheat country, I heard my California relatives--who escaped the Oklahoma dust by moving west--joke about my hometown and its prairie. So "boring" the California cousins said, and the only reason to keep Kansas was that the map would "look funny without it." God was a developer, they said, who "ran out of money when he got to Kansas."[6]

Riding my horse along the edge of Pratt where the city limits met the prairie, I knew how wrong they were. The flatlands were not flat; they curved toward a textured horizon of tallgrass, short grass, and wheat and arched toward significance and stars, folding all the way to connectedness and back down again. Lying in the tallgrass face-up to the stars, on the real top of the planet, the overwhelming evidence of distance and space and the possibility of here to there engulfed me. The view from each degree of 360 evoked the freedom of the long view and the near weightlessness of knowing that each person lucky enough to be floating here in space is one small passenger in a big world. Underneath, tiny burrowing creatures do their work in the woven roots and rich humus. By some happy mystery we have the right warmth from one distant star. In that spot it is clear that gravity holds us in its embrace, air streams above, and the grasses hold it all together.[7]

Planning for preservation of grasslands and all environmental resources is essential for the long-term well-being of the environment and humans. The interrelated nature of all resources of the physical world requires sustainable practices to maintain productivity and life. Recognition that the often-overlooked resource of grasslands is foundational to economic, environmental, and political stability of the region leads to the conclusion that planning for the long-range health of grasslands is essential to the economy as well as to the ***361** environment. Part II of this article explores the history of grasslands of the Midwest. It identifies the historical mismanagement of grasslands and focuses on the lessons to be learned from past catastrophes, from a time that lacked protections for assuring sustainability. Part III describes the recent growth of agribusiness and the need for profitable uses of grasslands as part of the nation's economic mission. Part IV provides examples of innovative and evolving protections for the prairie grasslands from examples of laws, state and federal programs, and organizations and people seeking to provide support for the long-term. Part V examines longstanding disputes regarding

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the relative benefits and claims on grasslands. It considers the need for a unifying principle such as sustainability to balance competing goals of use and future use of the grasslands of Kansas. Part VI concludes with observations on irreducible minimums for protection of finite resources and policies for balancing the use and preservation of the grasslands.

II. HISTORY AND PRE-HISTORY OF THE GRASSLAND PRAIRIE

The history of the Midwest's grasslands includes stories of stark deprivation and mismanagement, disasters, narrow escapes, and second chances and, we hope, more chances. Originally, the tallgrass prairie of the territory spread nearly 400,000 miles (approximately 256 million acres) across the Midwest.[8] Now only 4% of that original vast stretch survives as prairie land.[9] "Few natural prairie regions remain because most have been turned into farms or grazing land. The flat and treeless areas are generally farmed because they are easy to cultivate and have rich soil."[10] Today the rolling grasslands of Kansas and the Midwest continue to form a major geographic feature of the nation and serve as the bread basket for the world.[11] Kansas prairies reveal the quiet beauty of spectacular stillness, and plains that seem to stretch forward to the edge of the earth. The heart of the heart of the country is big, embracing both prairie grasslands and expanses of wheat fields. The fruited plains are interspersed with oil wells in some parts of the state. Farmers depend on the land for income and continuity, and people of this country and the world depend on it for crops and livestock, food and energy.

Setting the stage for the history of grasslands needs to start with the era most aptly described as "pre-history" when the formation of grasslands defined the subject as a category of ecosystem or biome. Grasslands are generally described as land areas "dominated by grasses rather than large shrubs or ***362** trees."[12] This simple statement, like many definitions, presents a circular observation along with its defining classification.

> In the Miocene and Pliocene Epochs, which spanned a period of about 25 million years, mountains rose in western North America and created a continental climate favorable to grasslands. Ancient forests declined and grasslands became widespread. Following the Pleistocene Ice Ages, grasslands expanded in range as hotter and drier climates prevailed worldwide. There are two main divisions of grasslands: (1) tropical grasslands, called savannas, and (2) temperate grasslands.[13]

In temperate grasslands, like those of Kansas and the Midwest, grasses are the dominant vegetation.[14] There are few or no trees, annual rainfall is moderate or low, and fires serve biodiversity in the ecosystem.[15] The soils of these areas are composed of nutrient-rich "growth and decay of deep, many-branched grass roots."[16]

As part of the development of the continental United States, Congress encouraged westward expansion with numerous land disposition programs. In 1862, it passed the Homestead Act, which focused on stimulating settlement of the Great Plains.

> A person, or head of a household, could own 160 acres with a free title as long as he lived on the land for at least 5 years, cultivated part of the land, and made improvements. In addition to the Homestead Act, the federal government enacted the Timber Culture Act and the Desert Land Act in the late 1800s, allowing settlers to claim large amounts of land.[17]

The settlement of the west was not as rapid as Congress had hoped, in large part because the homestead acreage allocated in semi-arid areas was not adequate to support a family farm. Accordingly, in 1909, Congress amended the Homestead Act to double the acreage allowed for homesteading to 320 acres.[18] Railroad companies and states also supported the effort to encourage people to settle the Great Plains.[19] The westward expansion of the American population was influenced by the availability of plots of land large enough to attract settlers and make survival possible.

Grassland wars affected the development of the West, rights in public lands, and the law relating to range and grasslands. Professor George Coggins recounts historical developments on the range and the fate of settlers: "Before 1900 the range was heavily overgrazed and resource productivity declined ***363** precipitously ... The consequences of inconsistency included widespread fraud, bewildering ownership fragmentation, and resource deterioration .... Attempts to curb monopolization led chiefly to fueling the range war brushfires."[20]

Grasslands are inextricably linked to water. Water is essential to both using grasslands for agriculture and preserving grasslands for future use.[21] While the United States has "a wealth of freshwater," it is "not distributed evenly throughout the nation."[22]

> The 100th meridian--which cuts the Dakotas roughly in half and runs through Nebraska and Kansas, cleaves Oklahoma's panhandle, and forms the eastern edge of the Texas panhandle-- provides a dividing line for rainfall. East of this line, at least twenty inches of precipitation spills from the sky each year, enough to sustain agriculture. Land west of the line, with the exception of a strip of temperate rainforest along the Pacific Northwest coast and scattered patches of lushness on mountain slopes, receives less than twenty inches of

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> precipitation--not enough for crops to flourish without irrigation. Simply put, the West begins where moisture tapers off and dryness takes over.[23]

An old advertising slogan now seems too foolish to be fraudulent: "The Rain Follows the Plow." But it was a different time and the slogan sparked interest in homesteading in the West and Midwest.[24] It quieted fears about the possible low productivity of the area labeled on some maps as "The Great American Desert."[25] While rain does not follow the plow, financial crashes do follow market run-ups that are not in sync with reality. Before the market crash in 1929, there had been "a great speculative frenzy to make money in an unsustainable wheat market."[26] Together with the market, the drought dealt the Midwest a terrible blow. "After a big run-up, prices crashed. The rains disappeared--not just for a season but for years on end. With no sod to hold the earth in place, the soil calcified and started to blow."[27]

***364** During the Dust Bowl of the 1930s, "children died of dust pneumonia. Families chewed through canned tumbleweed for dinner. The schools that managed to stay open were heated with cow chips and relied on whatever ragged books they had on hand for education."[28] "The Dust Bowl reached its greatest extent from 1935 to 1936 when it covered about 50 million acres and was concentrated largely in southwestern Kansas."[29] Though the worst of the drought hit Kansas hard, the effects of drought and the market crash reached far beyond the borders of the state.

> People *were* starving now in parts of the United States, despite ... the song that played in the background, Rudy Vallee's "Life Is Just a Bowl of Cherries." American families were reduced to eating dandelions and foraging for blackberries in Arkansas, where the drought was going on two years. And over in the mountains of the Carolinas and West Virginia, a boy told the papers his family members took turns eating, each kid getting a shot at dinner every fourth night. In New York nearly half a million people were on city relief, getting up to eight dollars a month to live on.[30]

Scientists and scholars alike assess the Dust Bowl days as a tragedy caused in part by flawed farming methods that failed to protect the land and the people who depended on it. Historians call it the nation's "worst prolonged environmental disaster."[31] The misuse of the land ushered in the Dust Bowl era and bankrupted landowners in the Midwest. Woody Guthrie rose to prominence as a folk singer in the 1930s, capturing the desperate times in songs about the Dust Bowl, including Talking Dust Bowl Blues, Hard Times, I Ain't Got No Home, Dust Storm Disaster, Dust Pneumonia Blues, and Dust Bowl Refugee.[32] Many owners had assumed that the wetter weather of 1920s that made farms flourish meant that the climate of the area had actually changed to one of more plentiful rain, validating the slogan that "the rain followed the plow."[33] While things seemed to have changed for the better, this turned out not to be the case, and historical patterns returned. Crop yields fell, leading farmers to plow more land and expand the problem of land misuse.[34] This problem is inevitably related to water. The relationship of grasslands and the waters that feed the grasslands is indisputable, and numerous laws attempt to preserve water and water quality. ***365** In his book *The Dust Bowl: An Agricultural and Social History*, R. Douglas Hurt gives context to the tragedy.[35]

> During the 1950s, Dust Bowl farmers, particularly in Texas and Oklahoma, began removing the shelterbelts. These farmers contended that they could control wind erosion better with modern equipment than with shelterbelts. They also argued that the land taken by tress could be more profitably used for crop land and that the trees took valuable moisture from adjacent fields. These attitudes were especially prevalent among younger farmers who had not lived through the dust storms .... [T]he shelterbelts were only part of a larger conservation program. Still, when the Shelterbelt Project was combined with the work of the other government agencies which fostered land retirement, controlled grazing, farm pond construction, strip cropping, terracing, and agricultural diversification, it made a major contribution to the physical and psychological fight against the wind erosion menace. During the early 1950s, however, just as many Dust Bowl farmers were beginning to destroy their shelterbelts, the drought returned and with it came the dust storms.[36]

Hypothesizing what climate disruption means for the nation and world is a challenge. A 2016 scientific study predicts that the historically artic Yukon region will have a substantially warmer climate by the turn of the century, making it much like the climate found today in Midwest prairie grasslands areas of Kansas.[37] Of the seventeen cliomes (distinct local climates) on earth today, seven may disappear by the century's end with major consequences, including water scarcity and flooding.[38] The temptation to look outside ourselves for causes of catastrophes such as the Dust Bowl is strong. Just as people today dispute the cause of global climate change, they resisted the idea that farming mechanisms caused the Dust Bowl.[39]

The linkage of water and grasslands does not end when a drought ceases. The commitment to protection of water continues although frequent impediments arise.[40] In 1972, the Clean Water Act sought to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," including the wetlands that support this integrity of the waters. The extent of ***366** the power conferred by Congress on the Army Corps of Engineers has been subject to debate ever since.[41] Federal law has made a real difference in the availability of water, and courts have recognized, under the Public Trust Doctrine, the

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government's duty to act as a fiduciary and hold properties such as submerged lands and waters in trust for the people and future generations.[42]

This interconnectedness should surprise no one since all of the media of earth are connected to each other and to all resources. "When we try to pick out anything by itself, we find it hitched to everything else in the Universe."[43]

III. AGRIBUSINESS

The growth of agribusiness as a business has focused the attention of family farmers and others on the drive for profitable uses of grasslands as an integral part of today's economy. The term "agribusiness" is relatively new, appearing in 1956.[44] Several decades earlier, academics advocated for the concept of efficient integration of all the stages of food production, with the earliest of these academic arguments appearing in 1913.[45] Additionally, academics noted the need of family farmers to have access to both reliable credit and broader marketing techniques to foster an efficient system.[46] The concentration of food processing flourished in the 1950s,[47] and farm cooperatives, supply markets, industrial organization, vertical integration, and market power of food processors began to dominate food production.[48] This movement included a shift of land use to more intensive methods of production and more concentrated operations, which are associated with increased damage to the environment in some cases.[49] A shift from grassland to crop land, for example, can lead to a reduced biodiversity and loss of habitat for endangered or threatened species.

***367** Today, agribusiness is big business. "Suppliers, manufacturers, and retailers, generate more than $5.7 trillion in the business of developing food and selling it for consumption."[50] This relatively new approach of agribusiness and corporate owners managing grassland resources raises questions of benefits and risks. American public opinion is deeply divided regarding the appropriate balance of natural resources and private enterprise.[51] While trade-offs between current use and sustaining resources for the future seem inevitable, getting the balance right is crucial to the well-being of people, future generations, and the planet.

Approximately 98% of the food consumed in the United States is produced by agribusiness, large-scale operations rather than the traditional small farms of the past.[52] Advocates for prairie ecosystems and local control of local agricultural interests question the viability of the corporate and agribusiness approach to farming.[53] Some farming states fought to preserve small family farmers by passing anti-corporate farming statutes.[54] State legislatures' attempts to support small farmers have largely failed, though, and "the family farmer has been squeezed out, with a decrease from 25% of Americans participating in farming in the early twentieth century to merely 2% currently.[55] Moreover, the agribusiness lobby has successfully sought state agricultural disparagement statutes, easing the burden of suing for criticism of foods.[56] As law, technology, and a globalized marketplace have changed agriculture, there is a need for enhanced planning for both resource use and preservation generally and in grasslands in particular. Innovative farming techniques are seen by some as advancing toward meeting the challenge of feeding the world's burgeoning population. Others see innovations in farming and agribusiness as risking depletion and endangerment of grasslands and other resource for short-term gain, and call for "a reconsideration of the framework of agricultural law and the development of an agricultural policy that supports and encourages a sustainable ***368** food policy.[57] Balance in this area of law and policy is essential to any goal of meeting these linked responsibilities. Moreover, finding this equilibrium is crucial in today's climate of political and physical uncertainties such as global climate disruption. The dominant corporate philosophy of quarterly return on investment and short-term profits presents serious problems for long-term sustainability.[58] Moreover, other theories of the firm reveal a diversity of real individual interests and complex constellations of rights involved in firms.[59] Taking greater care to understand the legal relationships and social ontology of business firms may pave a road toward regulatory and judicial decisions that can best address continuing large-scale social issues, including combating corruption, respecting diverse faiths, and finding an appropriate balance among the institutions of business, government, and religion in our complex modern society.[60] Finally, supplementing the traditional public law "toolkit" with private governance options opens a door to address intractable environmental problems, including issues related to climate change and biodiversity, clean water sources, destruction of public and private options of insurance and supply chain management to address local and global problems.[61]

Whether the topic is farming practices of corporate farms or traditional farms, the need for planning is crucial to sustainability. Some practices, such as monoculture crops, reap efficient profits but endanger the land itself by diminishing the resilience of ecosystems and enhancing the threats of blight and insect attack. Moreover, preservation practices require planning as much as harvesting the fruits of the land. Farmers and social organizations both must support maintaining a bank of rich, uncultivated land for the future. Soil erosion and agricultural practices that focus on short-term gains over long-term viability are, at their root, destructive to grasslands and to sustainable family farming. The intensive use of petro-chemicals and other inorganic substances causes soil loss and degradation, and diminishes the ability of the grassland ecology to respond to threats.

Environmental stewardship seems to have come of age in recent years with corporations from a wide range of industries

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seeking to join profitability with sensitivity to the physical integrity of the planet.[62] The energy sector and corporate lenders also recognize that "adverse economic consequences for the institution" flow from failure to assess or account for unstainable practices.[63] ***369** Whether this change of view has come from recognizing the risks of liability or a desire for sustainable development, it leads to enhanced efforts to reduce environmental harm.[64]

IV. EXAMPLES OF GRASSLANDS PROTECTIONS

The protection of grasslands resources in the Midwest has been building for decades, and the durability of the protections can be seen in numerous initiatives and examples over the years. The examples explored here include federal, state, and local initiatives to harness economic development without sacrificing grasslands values. Local governments now embrace their role and authority in establishing and implementing grasslands protections. Likewise, indigenous peoples have exercised their power to provide input on resource development, giving rise to a commitment of self-determination for indigenous peoples and the resources they depend on for their culture as well as economy. Examples of innovative management practices and protection of grasslands are burgeoning, with an uncountable number of programs, organizations, and people who work to promote sustainable environmental amenities. The examples given here are by no means an exhaustive list of the programs currently at work in this area, and no single project could address the challenge of establishing sustainable policies and practices. The likelihood of success of these efforts depends on the multitude of approaches now at work.

A. The Kansas Tallgrass Prairie National Preserve

The Tallgrass Prairie National Preserve is an example of the goal of preservation of the grassland resource. While this is a significant area protected by this system, more protections for Kansas grasslands are necessary to create a sustainable balance, preserve the land and protect the economy. Nationwide, a significant acreage is protected as National Grasslands. As of September 30, 2015, the total area of National Grasslands was 4,450,964 acres.[65]

In creating the Tallgrass Prairie National Preserve in 1996, Congress recognized the specific environmental values of the grassland ecosystem.[66] The legislation declared "lands and interests in land, including approximately 10,894 acres" earlier known as the "Flint Hills Prairie National Monument."[67] On November 12, 1996, Congress added Tallgrass Prairie National Preserve to the ***370** National Park System. The National Park Trust operates the preserve as a semiprivate/semi-public park,[68] with the purpose of preserving and restoring the remnant of the tallgrass prairie ecosystem on the North American Great Plains.[69] The preserve lies in the heart of Kansas and includes some of the last remnants of the bluestem grasslands, old homesteads and farms, and a 20-acre plot with eighteenth and nineteenth century limestone and wooden buildings known as Spring Hill Ranch.[70] Interest in preserving the grasslands began in the 1920s, spearheaded by scientists at the University of Nebraska, University of Iowa, Iowa State University, and the University of Illinois. However, the Great Depression diverted attention from the national prairie park.[71] Now under a 35-year lease, the majority of the grasslands area is used for grazing,[72] and the National Park Service is developing a management plan to balance the needs of the ecosystem and visitors.[73] In 2007, the Kansas Sampler Foundation selected the Tallgrass Prairie National Preserve as one of the Eight Wonders of Kansas. The legislative protection of tallgrass shows Kansans' commitment to preserving a wonder of the past. The Tallgrass Preserve *preserves* a specimen of the sweep of the historic prairie, but its reach cannot protect the ecological system of tallgrass or the state or regional sustainable resource. This outcome of the preserve fails to reveal the battle that nearly defeated the legislation or the deep philosophical divisions that embroiled proponents and opponents in a protracted debate over the brief report of the creation of the Tallgrass Prairie National Preserve.[74] Clashing ideologies continue to battle today. The Act states that the Secretary "may accept, retain, and expend donations of funds, property *(other than real property)*, or services from individuals, foundations, corporations, or public entities for the purposes of providing programs, services, facilities, or technical assistance."[75]

B. Research on Prairie Ecosystems

Some scholars, managers, and government agencies have proposed reformed public rangeland management to protect the function of grasslands and to manage old-growth forest.[76] Interest in biological research on prairie ecosystems is strong. For example, the Youngmeyer Ranch, in Elk County, is a 4,700-acre prairie in the Flint Hills. Wichita State University will use the site for ***371** ecological research. Rich in biodiversity, the still-working ranch is a wildlife habitat for the grater prairie chicken and home to over 500 documented plant species.[77] "Over the past several years the Kansas Land Trust collaborated with National Fish and Wildlife Foundation to conserve over 16,000 acres."[78] The Grassland Reserve Program (GRP) allows farmers to receive rent for voluntarily limiting the use of land.[79] Grazing and pasture land is prevented from turning into cropland through this program.[80]

C. State and Federal Programs

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The United States Department of Agriculture Farm Service Agency (FSA) administrates a number of programs that allow farmers to participate in voluntary conservation assistance efforts.[81] "The Conservation Reserve Program (CRP) pays a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that will improve environmental quality."[82] Part of CRP is called the State Acres For wildlife Enhancement (SAFE).[83] The program's goal is to enhance 500,000 acres of wildlife habitat.[84] Under the program, farmers voluntarily enroll acreage in the program by signing 10-15 year contracts.[85] In return for not farming, the farmers receive yearly rent from the program, as well as incentives to improve the land for wildlife.[86] This process might "involve planting trees, grasses, forbs, or other species that help restore or improve wildlife habitat."[87] The FSA identifies eligible land and targets areas with high-priority wildlife species, generally identified as being a listed species, having suffered a significant decline, or economically valuable species like sportfish, pollinators, and game birds.[88] Government bodies as well as nonprofit organizations seeking to protect habitat and wildlife can prepare SAFE proposals.[89] Similar programs like the Conservation Reserve Enhancement Program (CREP), the Emergency Conservation Program (ECP), and the Emergency Forest Restoration Program (EFRP) offer farmers resources to recover from natural disasters and protect farmland that has been identified as high priority farmland.[90] In some cases, ***372** FSA also provides funds through these programs to restore natural habitats.[91]

Integrated roadside vegetation management (IRVM) is a management method for maintenance of highway and road right-of-way (ROW) areas following sound ecological principles.[92] Kansas has been employing IRVM since 2000.[93] In 2008, Kansas Department of Transportation Secretary Deb Miller responded favorably to Audubon of Kansas's (AOK's) continued advocacy and formed a special "Aesthetics Task Force" to pursue ways to develop more ecological and economical ways to manage the 150,000 acres of vegetated "public land" along 10,000 miles of state highways.[94] The Kansas Native Plant Society, Kansas Wildlife Federation, Monarch Watch, and Kansas Department of Wildlife & Parks joined the task force to implement management policies to reduce unnecessary mowing and to use native grasses on rural roadsides, saving money, and reducing fuel consumption for mowing the ROW.[95] The IRVM also enhances bird and native pollinator habitat and presents "living snow fences" with the result of improved water quality and reduced runoff and soil erosion. Full implementation of these principles will save Kansas millions of dollars annually through water management and reduced fuel and maintenance costs, including fuel for mowing.[96] Additionally, the areas show visitors to the state the heritage ofKansas as a "prairie state."[97]

D. Conservation Easements

Another tool for conserving prairie and grasslands is conservation easements. A conservation easement "is a non-possessory property right through which a government entity or nonprofit land trust restricts a landowner's use of a parcel of land with the goal of yielding a conservation benefit."[98] Conservation easements are a legal device employed by conservation organizations and individuals seeking to preserve natural lands and resources. "The use of conservation easements has risen dramatically over the past twenty years, resulting in the protection of millions of acres of conservation land and historic properties."[99] One indication of the significance of interest and support for the use of conservation easements is the economic investment of individuals and governmental units. "The public is investing billions of dollars in ***373** conservation easements."[100] The Kansas area within grasslands conservation programs is significant.[101]

Conservation easements have been around for decades. The conservation easement has "existed since the 1930s, the explosion of growth of conservation easements took place only after states enacted authorizing statutes in the 1970s and 1980s.".[102] It is currently estimated "that conservation easements encumber approximately 40 million acres of land in the United States."[103] Currently, Kansas has more than 111,000 acres subject to conservation easements.[104] Climate change has motivated people to make use of conservation easements in the last decade Concern about the impact climate change will have on species extinction, habitat migration, and rising sea levels has spurred the development of legal agreements.[105] "The harm from climate change is likely to be magnified as it 'interacts with other stressors, such as habitat modification, over-exploitation, pollution, and invasivespecies.'"[106] The option to purchase a conservation easement (OPCE) is seen as a way to mitigate a variety of potential harms from climate disruptions.[107] An OPCE is a real estate option that allows the purchaser to have an option to buy a conservation easement rather than an obligation to purchase that easement.[108] An OPCE provides the right within a specified timeframe or option period.[109] The uncertainty of climate change in a particular area makes the OPCE an attractive option since the agreement can expand protection without committing a conservation organization to a particular parcel of land.[110]

The Agricultural Conservation Easement Program (ACEP) provides financial and technical assistance to help farmers preserve agricultural lands and wetlands.[111] ACEP offers these services through the Natural Resources Conservation Service (NRCS) to Tribes, state and local governments, and non-governmental organizations working to protect agricultural lands.[112] The ***374** program works specifically to conserve grasslands, "including rangeland, pastureland and shrubland."[113] The amount contributed by the program depends on the fair market value of the land, and additional funding can be contributed to "that grasslands of special environmental significance."[114] "In the decades ahead, when many scientists anticipate more extreme weather events as a result of climate change, having conservation plans for areas that are prone to these events can

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facilitate more effective conservation efforts."[115]

E. Other Protective Mechanisms

The range of efforts to advance a conservation ethic is noteworthy. Private organizations serve various causes that also support grasslands protection, both directly and indirectly. Some government programs mentioned above that support this protection include as the Kansas Native Plant Society, Kansas Wildlife Federation, Monarch Watch, and Kansas Department of Wildlife & Parks. The number and extent of such organizations in the state and the nation are virtually uncounted. The Rocky Mountain Elk Foundation, Pheasants Forever, Quail Forever, Ruffled Grouse Society, Wild Turkey Federation, the Kansas Land Trust, Ducks Unlimited, and Trout Unlimited are a few examples of non-profit organizations working for conservation. The Audubon of Kansas (AOK) is an organization devoted to promoting protection and restoration of natural ecosystems. AOK works with organizations and individuals seeking to "establish a culture of conservation and an environmental ethic" throughout Kansas and the country with "organizations and individuals representing thousands of people committed to conservation throughout the state and country."[116]

Current efforts can give a sense of the synergies available for resource protection. Collective action for conservation occurs at every level, including international treaties and agreements, state and local government. Likewise, private industry, corporations, and non-governmental organizations collaborate to advance sustainable methods and ideas. In particular, a new approach to corporate operations, called corporate social responsibility (CSR), seeks to create a social benefit rather than solely work to maximize shareholder wealth. Moreover, the corporate culture often now includes the goal of stewardship.

In addition to incentive programs there are programs and organizations which provide technical assistance and education, such as the Conservation of Private Grazing Land (CPGL). While the CPGL does not allocate funding, it provides technical assistance to farmers looking for better grazing land management and soil health protection.[117] Several states run programs that ***375** provide assistance to private landowners attempting to maintain parts of their property.

International agreements and programs have seen some success in preservation of resources. The Universal Declaration of Human Rights includes a declaration that states should maximize and protect the natural resources of their country.[118] The recent Paris Agreement focuses primarily on climate disruption and the risks of continuous increases in the Earth's temperature, and notes "the importance of ensuring the integrity of all ecosystems."[119] In service to this goal, the Agreement calls for the "protection of biodiversity."[120] Other international agreements aim to protect specific plant and animal species. In particular, wetland and species protection efforts suggest ways to combine interests to enhance protections of grassland and other biome resources. For example, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) currently protects 183 parties.[121] Nation members of CITES have an obligation to limit the trade in listed species.[122] Likewise, the United States is a member of bi-lateral agreements to protect wetlands abroad.[123] The Convention on Wetlands of International Importance, also called the Ramsar Convention, deals specifically with wetlands.[124] The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world."[125] The United States became a party to the Convention in 1987 and has registered 37 sites.[126] There are 168 member countries in the Ramsar Convention with a combined total of 2,192 Ramsar sites covering 516,057,967.47 acres.[127] Professor John Head details the international dimension of grasslands protection specifically in his ***376** article in this symposium issue.

The thread that ties together the goals and purposes of these programs is use and sustaining use for the future. If the value provided by grasslands could be recognized in a way commensurate with other fundamentally necessary resources like wetlands, the preservation of grasslands would be assured. "The societal understanding of wetlands has changed ... dramatically during the past century," making the idea of ecological nuisance viable. "Ecosystems of all types provide services, and the interference with those services could constitute a nuisance."[128] One avenue to consider for this purpose is the addition of grassland species to existing agreements in ecosystem that depend on protection of grasslands in order to sustain wetlands and endangered species. Grasslands, like wetlands, provide many services and protections for people. "At the ecosystem level, wetlands moderate the effects of floods, improve water quality, and have aesthetic and heritage value. They also contribute to the stability of global levels of available nitrogen, atmospheric sulfur, carbon dioxide, and methane."[129]

Both science and history help us appreciate the longstanding disparate visions of resource use and additionally, help us understand that a unifying principle is necessary. Only adoption of a reliable and defining principle makes successful planning. If we do not know what the goal is, success is not possible. Like wetlands, grasslands provide many services and protections for people as one of the interlocking building blocks of the ecosystem on which people depend. The challenge is striking the right, or sustainable, balance among use and preservation, industry and protection. This is a challenge that grows larger as the population of the nation and the world continues to grow.

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V. A UNIFYING PRINCIPLE FOR THE LONG-TERM

The unifying principle of sustainability balances the competing needs of the present generation and future generations.[130] Sustainability is meaningful for all resources, and "understanding sustainability as a stand-alone concept is essential to seriously addressing the challenge of global climate change and the environmental and public health threats it poses."[131] The United Nation Brundtland Report entitled "Our Common Future" appeared in 1987.[132] It defines "sustainable development" as development that "meets the needs of the present without compromising the ability of future generations to meet their own ***377** needs."[133] This definition and the principle it embodies go beyond development and identification of individual resources to present a general principle for a world of limited resources. "It is the Intergenerational Golden Rule: use the resources but do not use them up."[134]

Professor Nagle analyzed the nuisance value of loss of a particular resource (wetlands) and makes the point that such a "theory of ecological nuisances is not limited to wetlands" because "ecosystems of all types provide services, and the interference with those services could constitute a nuisance."[135] He provides dramatic insights on wetlands that also apply to the grasslands as a foundational resource.

> Wetlands provide many services and commodities to humanity. At the population level, wetland-dependent fish, shellfish, fur animals, waterfowl, and timber provide important and valuable harvests and millions of days of recreational fishing and hunting. At the ecosystem level, wetlands moderate the effects of floods, improve water quality, and have aesthetic and heritage value. They also contribute to the stability of global levels of available nitrogen, atmospheric sulfur, carbon dioxide, and methane.[136]

The same recognition is equally deserved by grasslands and all resources. Just like wetlands, grasslands are part of a robust and viable ecosystem. They are part of the necessary ecosystem supporting wildlife and human life. Indeed, these resources undergird life on the planet. As Professor Nagle explains, "[e]cosystems ... provide services" and the social acceptance of the value of wetlands "has changed so dramatically during the past century."[137] The need for an ethic of sustainability derives from the numerous threads of analysis, whether the line of analysis is resource management, or the positive value of a resource, or valuing the loss of the resource under nuisance law. From every line of inquiry, the inevitable conclusion is the need for a unifying principle of sustainability for survival.

The lynchpin of economic and sustainability analysis of Garrett Hardin's famous article, *The Tragedy of the Commons* uses grasslands to provide insights into the balance of cost and benefits and the public good.[138] Hardin draws from use and overuse of grasslands to explain use, protection, and survival writ large with all resources and to demonstrate that overuse leads inevitably to tragic destruction.[139] Rational actors maximizing their own preferences lead toward destruction even though this loss is predictable. Recognition of the tension between individual action and the group is necessary for the survival of the ***378** group. The benefit to an individual making the decision of whether to use--and possibly overuse--the commons accrues directly to the individual, and the loss created by overuse is only a fractional loss to the individual. Thus, overgrazing is a cost shared by all the herdsmen, and rational actors who seek to maximize individual gain are forced toward overuse. Recognition of private rights in property is the first level of protection against inevitable self-interest.[140] Hardin's analysis also applies to resources that though owned privately (the first level of protection) still provide environmental amenities, or common value for the community. The second tier solution Hardin suggested was mutual coercion mutually agreed to (i.e., law). The term "mutual coercion mutually agreed to" is a general description of law. A rule of law or a guideline is such mutually agreed coercion. General acceptance of such rules and norms is needed to curb the destructive tendencies of individual competition when that competition consumes or destroys a common resource. Hardin's conclusion, that use of a commons without constraint leads to destruction, has continuing significance when the protection of private property does not fully align with the public benefits provided by the commons, particularly when the tyranny of short-term accountability to shareholders. Hardin applied his point (that mutual coercion is necessary to prevent actors from exploiting the commons to the extent of destruction) to pollution as well as to use of the public commons. The loss of the value of the commons or any resource needed for continued existence calls for analysis of the incentives that created that loss. The use of public lands is another example built on exploitation of common resources.

> The open invitation to use the public domain forage created the paradigmatic case of the "tragedy of the commons" .... where each rancher's private self-interest was to run as many head as possible on the "free" range before somebody else did. The consequence was severe overgrazing and degradation of the forage-producing capacity of the land.[141]

The tragedy of depletion (extraction) or intrusions (pollution) continues today, as does the risk of destruction from individual efficiency unchecked by law or social ordering Thus, the risks of use of environmental resources hold more than theoretical significance,[142] and analysis of use of commons continues into our time. "At the beginning of the 21st Century, the developed Missouri River Basin is operated as a Commons. Every new use and user is accommodated without limit, beyond the constraints of basin-wide considerations, and free of any form of central decision-making the unfettered system has led to a

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first example of the Tragedy of the Commons in the damage to the River ecosystem, loss of native habitat for plants and animals, and severe impact on threatened and endangered species."[143]

***379** The concept of sustainability is truism, an inherent value or law of nature. How could it be otherwise? Humans depend on the earth and its resources. If, rather than using and sustaining those resources, humans intend to use them up, there is no future for humans. As a dependent part of the ecosystem, humans must want both use and sustainability in the realm of physical resources. Nevertheless, disparate visions of the relative benefits and claims on grasslands have persisted for as long as resource use has existed. In *The Tragedy of the Commons,* Garrett Hardin presents an economic expose of the risk--indeed the inevitability-of destruction of a resource when individual gain depends on a commons.[144] In his seminal work, Harden analyzed the economic forces that incentivize individuals to overuse and deplete the commons (a common resource). His work presented to steps of corrective measures. First, the replacement of the commons area with the concept of private property to helped to align the interests of the individual with the long-term interest of preservation. The second insight dealt with the problem of putting things into the commons (pollution).

Discussions about the economy and the environment often refer to the two as disparate concepts that are appropriate for balancing, like oppositional forces that one identifies with and roots for. "I'm for the Yankees; you are for the Royals! Go Yankees! Go Economy!" In reality, of course, these are far from independent spheres. The economy is intimately connected (indeed, nested) inside the environment. The economy depends on the environment for existence. Gaylord Nelson famously said: "The economy is a wholly-owned subsidiary of the environment."

This relationship of survival and sustainability is a truism. Dependency on nature and the narrow band of temperature, moisture, and cultivation that hit target for our existence is as insightful a tautology as "survival of the fittest." Despite the modern obsession with measurement and metrics, this tautology provides insight at the same time it defies measurable verification. What is the measure for this assertion? Survival? Who is it who survives? The ones who do. Who are the fittest? The ones who survive. What is the measure? Survival. The World Trade Organization has an Environmental Committee, but we reject the basic truth of dependency on the environment; there is no World Environmental Organization with a Trade or Economy Committee. Rejection or even acknowledgement of the fiction of human control is uncomfortable. The World Environment Organization could have a Trade Committee but that would be an uneasy acknowledgement of our vulnerability and dependency on the environment.

Recognizing the inherent dependency of the economy on the environment exposes the myth of human control and reveals the specious nature of the dichotomy. The economy exists *because* of the environment. The environment ***380** can exist without the economy but the economy cannot exist without the environment. Despite human enterprise and plans and the Hoover Dam, people lack ultimate control over the environment and its intricate balance. Despite the lingo of "remediation" and "restoration," we do not create nature. In trying to "make a living," or "make a *killing"* in business vernacular, we lose sight of the reality that our survival depends on this planet. This reality can be lost when the struggle for survival or success or dominance occupies center stage, and perhaps survival must occupy center stage to keep the species going. We know that the long-term existence of the species and the economy depend on the environment and the resiliency within the environment, but we do like to think about this reality of dependency. That human narrative of the conquest of nature and even conceptions of husbandry present the myth of human control of the whole. Like our ancestors on the glaciers, the veldt, or the high plains, we whistle in the dark, planning to tame tigers and rivers. That the narratives we tell run contrary to the truth does not alter the truth or make the narrative less compelling and influential. The survival of people depends on the environment and perhaps it also depends on whistling in the dark. It seems understandable that people focus on enterprise to pay the bills and meet the needs of this generation. Taking without sustaining breaks the cycle and, inevitably, brings us to an end. What hard times proceed an end time is a matter of specifics. In a contentious hold on survival we may question the possibility of a unifying principle for the struggle. What possible unification can exist in this tug and pull of enterprise and given resources? A unifying principle depends on assent and may remain provisional, but what we do know is that in the hustle of living and using, sustainably is the only path that has a way forward rather than an end time. The need for sustainability as the true principle for planning has been established by history and reason. Without the goal of sustainability, the inevitable result is tragedy.

VI. CONCLUDING OBSERVATIONS

Sustainability is the required and unifying principle for the long-term success of the human species and others. To thrive and even to exist, humans need this place. This point seems too simple to debate, however, that does not diminish the need for stating it, however, and should not detract from its impact. The point cannot have effect without commitment to it: what Hardin called "mutual coercion, mutually agreed to." Sustaining future populations depends not only on planning and monitoring resource use, but also on cultivation of cooperation of governments, legal standards, and private enterprise to preserve and use resources for now and the future. How can we identify irreducible minimums for protection of finite resources? What types of policies are needed to balance use and preservation of the grasslands? Can we hope to pass on

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grasslands to future generations or is the decline of this resource inevitable? Fulfillment or frustration of the mission also turns in significant and discernable part on the philosophy of the players in the debate and in the position to make decisions for the long term.

The crucial role the grasslands play in the ecological and economic life of ***381** the country has long been taken for granted, and long-range planning for grasslands and pasture lands has never received the kind of attention paid to other resources. Perhaps in part because of the less dramatic nature of grasslands compared with other protected areas, a low percent of grasslands are protected worldwide: "Less than 8 percent of all grasslands worldwide are protected. The lowest protection of any biome on earth is temperate grasslands, at less than 1 percent. This includes North America's Great Plains."[145]

> While the first dusters of 1932 were a mystery to farmers and meteorologists, a man who had spent his life studying cultivation of the earth thought he had some answers. Hugh Hammond Bennett toured the High Plains just as the ground started to blow, and he, too had never seen anything like the black blizzards .... [T]he diagnosis seemed obvious. It was not the fault of the weather, although this persistent drought certainly didn't help. The great unraveling seemed to be caused by man, Bennett believed. How could it be that people had farmed the same ground for centuries in other countries and not lost the soil, while Americans had been on the land barely a generation and had stripped it of its life-giving layers?[146]

The ability to preserve ecological diversity while using the land for agriculture depends on wise management of grassland resources and necessarily considers sustainable practices to preserve the resource for the nation's future. Protecting grasslands is vital to the ecosystems that make grassland areas economically useful and environmentally sustainable. Concern and disagreements about global climate change has made the term "sustainability" a flash point in political dialogue and a debatable issue to some.[147] The challenge of grassland management is to cultivate and sustain grassland ecosystems. Sound planning requires land policies tailored to consider sustaining the ecology of the land while making productive use of the resource.

Much of the U.S., including many agricultural states, faced significant drought in recent years.[148] Research suggests that drought on the Great Plains is something that should be part of the planning process.

> The study of tree rings from red cedar and yellow pine trees in western Nebraska indicates that during the 748 year period prior to 1958, ***382** twenty-one droughts occurred which lasted for a duration of 5 or more years, with recurrence every 35.7 years. During that time, the average drought lasted 12.8 years, and a drought of 10 or more years came every 55.6 years.[149]

Taken seriously, the durable principle of sustainability elevates the debate and increase the likelihood of going forward together. Even the term "sound management practice" suggests the only road to success is one charted by philosophy and action of resource use without depletion or destruction. Action and enterprise must use but must not use up the resources necessary for life.

> The soil still blows in the region of the Dust Bowl when drought, wind, and inadequate vegetative cover provide the necessary ingredients for another dust storm. Nevertheless, if major dust storms similar to the black blizzards of the 1930s and to the dusters of the 1950s are not to return during periodic droughts ... farmers must continue to make major adjustments in their farming operations as changing conditions dictate. When the water table drops below levels where irrigation is no longer profitable, they must be quick to revert to wise dryland farming techniques. Furthermore, they must constantly realize the value of planting more drought-resistant crops, of diversification, and of reducing grazing on pasture lands during dry periods. Another Dust Bowl is not inevitable, but, given the right circumstances, it is possible.[150]

The impact of water shortages in farming and grasslands areas is real and sobering. "Droughts, then, have occurred for centuries in the Great Plains and will continue to recur as long as man is unable to control the climate."[151] For example, California has over-allocated surface waters, with the result that the water rights exceed the average runoff; in some cases, rights exceed the water available by five to ten times.[152] The challenge of balancing the needs of use of grasslands and preservation of grasslands continues today and is likely to escalate as population increases and global climate change affects all resources.[153] Increasing local government decision making may be one avenue for mediating the challenges for good management of grasslands preservation and use to meet the need for a sustainable economy and world. Addressing the need for planning is crucial to sustainability, whether for corporate farms or small, traditional farms. Moreover, preservation practices also require planning. Farmers, social organization, and governments must share the goal of ***383** maintaining a bank of rich uncultivated land for the future. Soil erosion and agricultural practices that focus on short-term gains over long-term viability are, at their root, destructive to grasslands and to sustainable farming. The intensive use of petro-chemicals and other inorganic substances results in soil loss and degradation, and diminishes the ability of the grassland ecology to respond to threats. Moreover, the practice of the monoculture crops diminishes the resilience of plants and

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ecosystems to threats of blight and insect attack. The significance of a meaningful consensus on sound management of all the resources needed for life and the interconnectedness of those resources, such as water and energy, cannot be overstated.

Although the hard times and destroying winds of the Dust Bowl and the Great Depression cannot be attributed to farming techniques alone, their destructive power reached far beyond the bread basket to the national and world economy, teaching Kansas and America hard lessons about the need for long-term planning and the inevitable link of sustaining resources to sustain ourselves. These lessons from recent history teach hard truths about grasslands and economic viability. The question for every generation is whether it remembers the hard lessons learned by past generations. George Santayana wrote "Those who cannot remember the past are condemned to repeat it,"[154] and Mark Twain--or someone--said: "History doesn't repeat itself but it often rhymes."[155] We have too many examples showing that the lessons of catastrophe and history may be wasted either by lack of knowledge or lack of will to avoid the disasters and create a sustainable world for future generations.

The Dust Bowl, with its economic and social devastation, is surely a period of history that no one wants to repeat. Kansans and others must remember and apply the lessons it taught because avoiding tragedies requires a check on the drive toward efficiency and short-term profits. It requires commitment to sustainable practices. For people who inhabit, use, and protect the prairies and for all who depend on them, the abiding question is whether we learned the lessons of history "by heart," as the lessons that count are the hard ones.

Footnotes

a1 Professor of Law and Edward A. Smith/ Missouri Chair in Law, the Constitution, and Society, University of Missouri-Kansas City School of Law. I thank Diane Parrish, Marie Woodbury, Anna Russell, Professors George Coggins, Nancy Levit, and John Ragsdale for their insights. I am also grateful for diligent research by the following students: Dakota Paris, Isaac Straub, John Parker, Traci Hayes, and Christin Tolle. Errors, of course, are my own.

1 TIMOTHY EGAN, THE WORST HARD TIME: THE UNTOLD STORY OF THOSE WHO SURVIVED THE GREAT AMERICAN DUST BOWL 112-13 (2006).

2 Gene Smiley, *The Concise Encyclopedia of Economics: Great Depression,* LIBRARY OF ECONOMICS AND LIBERTY, http://www.econlib.org/library/Enc/GreatDepression.html (last visited Jan. 29, 2017).

3 Ben Cook, Ron Miller & Richard Seager, *Did dust storms make the Dust Bowl Drought worse?,* THE EARTH INSTITUTE AT COLUMBIA UNIVERSITY, http://ocp.ldeo.columbia.edu/res/div/ocp/drought/dust_storms.shtml (last visited Jan. 29, 2017).

4 This was not the first or the only economic depression connected to the Great Plains. The depression of the 1890s resulted from drought, inflated prices, large mortgages, and crop failures. *See* Niki Christopher, *Cattle Ranch with Park Rangers: The Battle for A Tallgrass Prairie National Park in in Kansas,* 18 STAN. ENVTL. L.J. 211, 216-17 (1999).

5 The terms "hardscrabble" and "scrabbling" are ones I heard from my parents to denote both a way of life and a type of cooking that makes a meal from fried potatoes and corn meal. These terms are not ones I hear now, but they still exist. *See* Elizabeth Corcoran, *The Answer on the Wind/Those Who Didn't Escape Scrabbled f or a Living. But How Did the Dust Bowl Happen?,* SFGATE.COM (Jan. 8, 2006, 4:00 AM), http://www.sfgate.com/books/article/The-answer-on-the-wind-Those-who-didn-t-escape-2507107.php (reviewing EGAN, *supra* note 1).

6 Today, Californians call these states the "fly-over states."

7 The power of nature to shape lives can hardly be overstated. Writings of other panelists illustrate this power. John Copeland Nagle, *Biodiversity and Mom,* 30 ECOLOGY L.Q. 991, 992-93 (2003) ("My most enduring memory of a family vacation to Lexington and Concord was not any historical insight about the Revolutionary War, but rather that of the hundreds of goldfinches flying amidst the purple thistle that covered the vacant field next to our discount hotel .... Somehow my mother persuaded her thirteen-year-old son to rise at the unimaginable hour of 5:30 a.m. for a bird walk at the nearby Peninsula State Park. We saw quite a few birds early that morning, most notably a bunch of cedar waxwings. Ever since then, I have associated cedar waxwings with Mom.").

8 Keith Stokes, *Tallgrass Prairie National Preserve,* KANSASTRAVEL.ORG, http://www.kansastravel.org/tallgrassprairie.htm (last visited Oct. 2, 2016).

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[9] *Last Stand of the Tallgrass Prairie*, KANSASTRAVEL.ORG, http://www.kansastravel.org/tallgrassprairie.htm (last visited Feb. 15, 2017).

[10] *See The GrasslandBiome*, U.C. MUSEUM OF PALEONTOLOGY, http://www.ucmp.berkeley.edu/glossary/gloss5/biome/grassland.html (last visited Mar. 29, 2017) [hereinafter U.C. MUSEUM].

[11] Exports of Kansas wheat products to other countries are significant. *See https://www.census.gov/foreign-trade/statistics/state/data/ks.html#comm.*

[12] U.C. MUSEUM, *supra* note 10.

[13] *Id.*

[14] *See id.*

[15] *See id.*

[16] *See id.*

[17] R. DOUGLAS HURT, THE DUST BOWL: AN AGRICULTURAL AND SOCIAL HISTORY 19 (Nelson-Hall ed., 1981).

[18] EGAN, *supra* note 1, at 4.

[19] *Id*

[20] George Cameron Coggins & Margaret Lindberg-Johnson, *The Law of Public Rangeland Management II: The Commons and the Taylor Act*, 13 ENVTL. L. 1, 3-4 (1982).

[21] Reed D. Benson, *A Few Ironies of Western Water Law*, 6 WYO. L. REV. 331, 331 (2006) ("President Grant sent a cabinet member to the West with orders to report back on 'what it is they need out there.' The secretary dutifully wrote back saying, 'All this place needs is good people and water.' President Grant sent back a four-word telegram: 'That's all hell needs.'").

[22] STEPHEN GRACE, DAM NATION: HOW WATER SHAPED THE WEST AND WILL DETERMINE ITS FUTURE at xi (2012).

[23] *Id.; See also* Coggins, *supra* note 20, at 20 (arguing that homesteading "proved wholly inadequate" for settlement "between the 100th meridian and the Pacific coastal ranges").

[24] EGAN, *supra* note 1, at 24 (citing H. W. CAMPBELL, 1907 SOIL CULTURE MANUAL: A COMPLETE GUIDE TO SCIENTIFIC AGRICULTURE AS ADAPTED TO THE SEMI-ARID REGIONS (1907)).

[25] *See* California Oregon Power Co. v. Beaver Portland Cement Co., 295 U.S. 142, 158, 55 S. Ct. 725, 729, 79 L. Ed. 1356 (1935) (noting that substitution of appropriation doctrine for riparian rights "became the determining factor in the long struggle to expunge from our vocabulary the legend 'Great American Desert,' which was spread in large letters across the face of the old maps of the far west").

[26] EGAN, *supra* note 1, at 5.

[27] *Id.*

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[28] HURT, *supra* note 17.

[29] Elizabeth Corcoran, *The answer on the wind/Those who didn't escape scrabbled for a living. But how did the Dust Bowl happen?* SFGATE (Jan. 8, 2006, 4:00 AM) http://www.sfgate.com/books/article/The-answer-on-the-wind-Those-who-didn-t-escape-2507107.php.

[30] EGAN, *supra* note 1, at 101.

[31] *Id.* at 10.

[32] *Woody Guthrie Lyrics*, WOODYGUTHRIE.ORG, http://woodyguthrie.org/Lyrics/Lyrics.htm (last visited Feb. 5, 2017); *Hard Times*, ALL MUSIC http://www.allmusic.com/song/hard-times-mt0048053374 (last visited Feb. 21, 2017); *Woody Guthrie*, WIKIPEDIA, https://en.wikipedia.org/wiki/Woody_Guthrie (last visited Feb. 5, 2017).

[33] EGAN, *supra* note 1, at 24 (citing HARDY WEBSTER CAMPBELL, CAMPBELL'S 1907 SOIL CULTURE MANUAL: A COMPLETE GUIDE TO SCIENTIFIC AGRICULTURE AS ADAPTED TO THE SEMI-ARID RUEGIONS (1907)).

[34] *Id.*

[35] Hurt, *supra* note 17.

[36] *Id.* at 136-37.

[37] *See* Yereth Rosen, *Arctic: Yukon to become Prairie Grassland by Next Century*, *Alaska Dispatch News*, Sept. 27); Climate Wire, Sept. 29, 2016, http://www.eenews.net/climatewire/2016/09/29/stories/1060043581.

[38] *Id.*

[39] The Clean Water Act asserted federal jurisdiction under the Commerce Clause to exercise authority over the waters of the United States, prohibiting the discharge of a pollutant into the waters of the U.S. and requiring a permit for dredge and fill of wetlands, extending protection to waters and enhancing the existence of usable water.

[40] John Davidson, *Allocating Water Uses of the Missouri River: The Search for Legal Process* 15 (2015) (unpublished paper), https://works.bepress.com/john_davidson/16/ (reporting that Kansas does not intend to move forward with a proposal to transport surplus water from the Missouri River in northeast Kansas to western Kansas, although the idea was still in discussion by the Kansas legislature).

[41] *See* United States v. Rapanos, 126 S.Ct. 2208, 2266 (2006) (Breyer, J., dissenting) (dissenting in *Rapanos*, Justice Breyer suggested agency regulations on the question. The intractable nature of the question is likely to continue. Federal law has influenced state water law and state water allocation, especially in relation to reserved federal rights and reserved Indian water rights.)

[42] Juliana v. United States, No. 6:15-CV-1517-TC, 2016 WL 1442435, at 1 (D. Or. Apr. 8, 2016) (noting plaintiffs include "younger individuals (aged 8-19) who assert concrete harm from excessive carbon emissions" and activists asserting harm by "alienation of public trust resources through ongoing actions to allow fossil fuel exploitation").

[43] JOHN MUIR, MY FIRST SUMMER IN THE SIERRA 211 (1911).

[44] Mark Dorenkamp, *Harvard Business School Coined "Agribusiness,"* BROWNFIELD AG NEWS FOR AM. (Sept. 30, 2015), http://brownfieldagnews.com/2015/09/harvard-business-school-coined-agribusiness/ (crediting Professor Ray Goldberg of Harvard University School of Business with coining the term).

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[45] Robert P. King et al., *Agribusiness Economics and Management*, 92(2) AM. J. AGRIC. ECON. 554, 555 (2010).

[46] *Id.*

[47] *Id.*

[48] *Id.*

[49] SERV., U.S. DEP'T OF AGRIC., GRASSLAND CONVERSION FOR CROP PRODUCTION IN THE UNITED STATES: DEFINING INDICATORS FOR POLICY ANALYSIS 1 (2010), uhttp://www.oecd.org/tad/sustainable-agriculture/44807867.pdf.

[50] Mallorie McCue, *Follow the Money: Insulating Agribusiness Through Lobbying and Suppression of Individual Free Speech*, 6 PITT. J. ENVTL. & PUB. HEALTH L. 213, 213 (2012).

[51] *See* Anna V. Smith, *Trump's Pick for USDA Head Mixed on Climate Change*, HIGH COUNTRY NEWS (Jan. 26, 2017), http://www.hcn.org/articles/sonny-perdue-usda-secretary-of-agriculture-trump-pick?utm_source=wcn1&utm_medium=email (reporting on the connections of large-scale agriculture industry to nominee for Secretary of Agriculture; the nominee's "business-friendly attitude to land management;" and a statement from the Center for Biological Diversity that the Department of Agriculture should understands the intrinsic value of forest and public lands rather than seeing them as "things in terms of commodities and profits").

[52] Melanie J. Wender, *Goodbye Family Farms and Hello Agribusiness: The Story of How Agricultural Policy Is Destroying the Family Farm and the Environment*, 22 VILL. ENVTL. L.J. 141, 141-42 (2011).

[53] WES JACKSON, NEW ROOTS FOR AGRICULTURE 1 (1980); Christopher, *supra* note 4, at 212-13 (advocating state ownership and cooperative management of the Preserve with agencies experienced in operating park).

[54] Matt Chester, *Anticorporate Farming Legislation: Constitutionality and Economic Policy*, 9 DRAKE J. AGRIC. L. 79, 81 (2004).

[55] *Id.* at 80.

[56] McCue, *supra* note 50, at 220-21.

[57] Susan A. Schneider, *A Reconsideration of Agricultural Law: A Call for the Law of Food, Farming, and Sustainability*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 935, 937 (2010).

[58] *See* Nancy Levit and June Carbone, *The Death of the Firm*, MINN. L. REV. (March 8, 2017).

[59] Eric W. Orts, *Theorizing the Firm: organizational ontology in the Supreme Court*, 65 DEPAUL L. REV. 559, 596 (2016).

[60] *Id.*

[61] *See* Sarah E. Light & Eric W. Orts, *Parallels in Public and Private Environmental Governance*, 5 MICH. J. ENVTL. & ADMIN. L. 1, 72 (2015).

[62] Irma S. Russell, *The Sustainablilty Principle*, 4 ENVT'L & ENERGY L. & POL'Y J. 165, 166 (2009).

[63] *See* Russell S. Frye, *The Role of Private Banks in Promoting Sustainable Development, from Outside Counsel's Perspective*, 29 LAW & POL'Y INT'L BUS. 481 (1998) (reporting that lenders and their lawyers are a major force in promoting sustainable development); Irma S. Russell, *The Sustainability Principle in Sustainable Energy*, 44 TULSA L. REV. 121, 130 (2008) (noting that climate change has refocused energy policy on renewable energy sources).

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[64] Frye, *supra* note 63, at 498-99.

[65] *Id.*

[66] BRUCE A. JONES, ARCHAEOLOGICAL OVERVIEW AND ASSESSMENT FOR TALLGRASS PRAIRIE NATIONAL PRESERVE, CHASE COUNTY, KANSAS 1 (1999).

[67] 16 U.S.C. § 698u-2(b) (2012).

[68] TALLGRASS HISTORIANS, TALLGRASS PRAIRIE NATIONAL PRESERVE LEGISLATIVE HISTORY, 1920-1996 ADMINISTRATIVE HISTORY 3 (1998).

[69] JONES, *supra* note 66, at 1.

[70] *Id.*

[71] TALLGRASS HISTORIANS, TALLGRASS PRAIRIE NATIONAL PRESERVE LEGISLATIVE HISTORY, 1920-1996 ADMINISTRATIVE HISTORY 3 (1998).

[72] JONES, *supra* note 66, at 8.

[73] Stokes, *supra* note 8.

[74] *See* Christopher, *supra* note 4, at 211 (discussing how compromises destroyed preservation and recreation values and economic benefits alike).

[75] 16 U.S.C.A. § 698u-3 (2000) (emphasis added).

[76] *See, e.g.*, Joseph M. Feller & David E. Brown, *From Old-Growth Forests to Old-Growth Grasslands: Managing Rangelands for Structure and Function,* 42 ARIZ. L. REV. 319, 320 (2000).

[77] Jerry Jost, *Scenic Ranch Preserved in the Flint Hills,* KANSAS LAND TRUST (Dec. 21, 2016), http://www.klt.org/news-events/2017/1/26/scenic-ranch-preserved-in-the-flint-hills.

[78] *Id.*

[79] *Id.*

[80] *Id.*

[81] *See* FSA, *Conservation Programs Overview,* USDA, https://www.fsa.usda.gov/programs-and-services/conservation-programs/.

[82] *Id.*

[83] *Conservation Reserve Program State Acres For Wildlife Enhancement (SAFE),* USDA (Jan. 2008), https://www.fsa.usda.gov/Internet/FSA_File/safe08.pdf.

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[84] *Id.*

[85] *Id.*

[86] *See id.*

[87] *Id.*

[88] *See id.*

[89] *See* USDA, *supra* note 83.

[90] FSA, *supra* note 82.

[91] *Id.*

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