



2021-22

PRAIRIE WINGS

Advancing Environmental Advocacy, Conservation,
and Education in the Great Plains



A Letter From the Chair

Elsewhere in this Issue of *Prairie Wings* readers will find an article in which I discuss what it means when Audubon of Kansas commits to accepting someone's property with the intention of managing it in its current condition in perpetuity (pp. 23-26). In addition, there is a shorter article penned by Liz Weslander of The Kansas Land Trust (pp. 27-28), in which she describes the use of Conservation Easements as a tool to protect open space and natural environs. The thrust of both options is to allow an individual, a couple or a family to take steps to ensure that property they own today will exist in a similar state long after they are gone.

The massive bur oak trees on our Far West Farm have survived since the 1860s, when they sprouted as seedlings after most of the timber along Clarks Creek was cut by pioneers from the Eastern U.S. When people ask how they have survived so long, I explain that it was most likely a matter of chance, as it only takes a decision by one person to cut down a forest, plow a native prairie, or channelize a natural stream. Once such decisions are made, the natural forest cannot be restored, the diversity of the prairie cannot be recreated and a straightened stream will never again meander in an individual's lifetime. Extirpated species can be restored, but only with great effort over time.

My wife Carolyn and I have seen the effects of economic decisions in our lifetime. Our north property would have many more large bur oaks, except for the fact that oaks on the property were logged for barrel staves in the 1950s. Had we been successful in our efforts to purchase adjacent land from one of Carolyn's relatives, our north parcel would have an additional expanse of large oaks and black walnut trees. Instead, those trees were logged within the last 15 years. The bur oaks on our south parcel got lucky. They didn't end up being cut by some fly-by-night logger who would have sold them at a bargain-basement price to a sawmill to be converted into railroad ties. The large hackberries, ash and sycamores didn't end up as pallets.

While an ill-conceived decision by one person can doom trees, prairie, a bird, an animal or even an ecosystem, the converse is also true: a positive decision by one person, a couple, a family or a business can save a forest, give life to a threatened or endangered species, or assure a diverse ecosystem remains intact.

Preservation of land is by no means the only way an individual can make a difference. Ron Klataske, who retired as AOK's executive director last year, is a hero in the eyes of many in Nebraska, for his efforts to protect the Platte and Niobrara rivers. In Kansas, he is recognized as a hero among prairie dog lovers for his efforts in Logan County.

While Ron did a lot on his own and sometimes worked without a paycheck, it wasn't publicized that when AOK was on the ropes economically at various points some board members stepped forward with gifts of \$5,000 to \$10,000 to allow AOK to pay its bills.

A prime example of how one individual can make a profound difference is the case of Joyce Davis, who lived in Dodge City. Joyce was an AOK member, but she was never on the board of trustees and she never indicated her intentions to bequest money to AOK. We were quite surprised, as an organization, when she bequeathed a quarter of a million dollars to AOK when she passed a half decade ago. Her gift, which we at AOK recently named the Joyce Davis Legacy Fund, has provided AOK with critical economic flexibility, as we can use the proceeds from that investment to assure we can make payroll as we have added new staff in recent years. Joyce's name comes up frequently and with reverence as AOK moves forward.

More recently, individuals have stepped up with special gifts in support of AOK's legal efforts to guarantee that the Quivira National Wildlife Refuge receives the water due to it. Those commitments are greatly appreciated. Not everyone has an estate that can make a huge difference, but every individual has the potential to have an impact, whether that is volunteering time, serving on the AOK board, offering expertise on conservation issues or making a financial contribution while still alive or through a bequest. When someone suggests one person cannot make a difference, don't believe it. The decision of one person can make a huge difference, whether good or bad. Our success at AOK depends on good decisions and good outcomes, and we greatly appreciate the contributions to our success made by those good efforts by caring individuals.



Prairie Wings is a publication of Audubon of Kansas, Inc. — the only widely distributed magazine devoted specifically to statewide conservation and wildlife advocacy initiatives. It is made possible by your generous support and contributions. We encourage you to share this publication with friends, family, and other organizations. Please feel free to leave copies in reception areas, hospitals and other business locations to help spread awareness about critical wildlife issues.

Support AOK and Prairie Wings today! Please consider becoming a sustaining member by signing up for monthly giving at audubonofkansas.org. This is convenient and secure for you, and helps us to stabilize our operations all year long. By giving a gift membership and/or contributing to the vital work of Audubon of Kansas, you can help promote the appreciation and proper stewardship of our natural world.

Ensure the future of AOK and Prairie Wings! Legacy Gifts ensure the future success of AOK and the continuation of important initiatives such as Prairie Wings. AOK gratefully accepts gifts in the form of stocks, bonds, charitable gift annuities, trusts, and bequests, as well as assets to be sold such as gifts of land, real estate, and vehicles. Gifts of land to be preserved as wildlife sanctuaries require an adequate endowment to fund future operations and taxes; property must meet requirements stated in AOK's property acceptance policy. See the AOK brochure, Your Land, Your Legacy, copies of which can be obtained by request.

To learn more about AOK or ways to support our mission, please contact (785) 537-4385 or aok@audubonofkansas.org. Audubon of Kansas, Inc. is an independent 501(c)(3) organization that is neither administered nor funded by the National Audubon Society. Contributions are fully tax-deductible to the extent allowable by the IRS. Contributions can be sent to: PO Box 1106, Manhattan, Kansas 66505-1106

*Cover image Greater Prairie-Chicken by Jim McCormac
Back cover Raccoon by Bob Gress, BirdsInFocus*

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The Mission of Audubon of Kansas includes promoting the enjoyment, understanding, protection, and restoration of natural ecosystems. We seek to establish a culture of conservation and an environmental ethic.

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Michael L. Donnelly

A Note from the Editor

In this edition of *Prairie Wings*, articles look back to the history of conservation in Kansas, address current news and issues, and look forward to consider issues that must be confronted in the future. Richard Seaton reviews for us the long history of effort, reversals, and breakthroughs that gave us the Tallgrass Prairie Preserve, reminding us of some of the foresightful and persistent people whose commitment finally won through to its establishment. In another article we offer a tribute to Joyce Wolf, reviewing her career spanning nearly half a century of cheerful and resolute commitment to the cause of conservation and particularly water issues in Kansas.

Water is a central concern of several articles in this *Prairie Wings*. We offer from one of our lawyers in the case a report on the filing of a lawsuit by Audubon of Kansas against federal and state authorities on behalf of the senior water right of the Quivira National Wildlife Refuge, asking that they uphold the law. Rex Buchanan, Emeritus Director of the Kansas Geological Survey, provides an update on recent and current personnel changes and issues concerning water resources throughout the state. And we close our examination of water issues in this edition with a review of the recent book, *Running Out*, which provides a devastating account of the causes and magnitude of the water crisis that is depleting the aquifers under the High Plains.

Two articles present “Approaches to Conserving Kansas Lands”: a piece by AOK Chair Gary Haden on his reasons for planning to make his and Carolyn’s Far West Farm into an AOK legacy sanctuary, and an article from Liz Weslander of the Kansas Land Trust on the uses of conservation easements to secure landowners’ wishes for the future. An update on AOK’s three current sanctuaries by AOK Executive Director, Dr. Jackie Augustine, follows.

News of two AOK signature happenings is included. First, the third and fourth annual Celebration of Cranes, last year and this year, are described by Cindy Jeffrey, who has ably coordinated these events, live at Quivira when possible, virtually when necessary thanks to Covid-19. The other signature event is a new occasion for AOK, planned for this coming spring. Executive Director Dr. Augustine previews the planned Prairie-Chicken Festival, and offers as well a supporting article on the two species, their fascinating habits, and status. Turning from the prairie grouse to their habitat and the health of the larger ecosystem of which they are an iconic part, Kathy Roccaforte Denning tells of the crucial role of pollinators in the flourishing of prairie grasses and forbs.

On a happier note, Don Marler recounts how the constraints imposed by the covid pandemic renewed both his childhood interest in birds, and his hobby of photography, and Elizabeth Dodd surveys the history of river otters in Kansas, from their near-extermination, through concerted efforts at restoration, to possibly more hopeful prospects today. Finally, we close with Dave Rintoul’s stunning photo of two Scissor-tailed Flycatchers in combat, and Elizabeth Dodd’s accompanying meditative poem inspired by the picture, reaching back through associative memories and a plate from Audubon’s *Birds of America* to bring us back to the original image, and remind us of the manifold and powerful ways nature and art engage and enrich—and sober—our minds and emotions. Once again, we hope that you will find the articles and illustrations equally engaging and informative, and that you will be inspired to learn more and become more involved in Kansas’s rich environmental legacy.



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A view of the Niobrara River from the Hutton Ranch. Photo by Dr. Jackie Augustine

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2021 Memorials

Daphne Fautin
Marge Kennedy
Jan Meyers
Linda Sue Mitchell
Joseph Poracsky
Paul Willis
Charlie Wright

HONORING AOK'S ENVIRONMENTAL LEADERS THAT WE HAVE LOST

AOK and the conservation community in Kansas and the Great Plains have recently lost several staunch supporters. We include in this issue of Prairie Wings brief notices of these valued friends and colleagues.

■ Marge Kennedy, 1944-2021

Bruce and Marge Kennedy have long been critical components of leadership for Audubon at all levels within Nebraska, the Nebraska Wildlife Federation, and Save the Niobrara River Association which became the Friends of the Niobrara (FOTN). They have added greatly to the success of the Hutton Niobrara Ranch Wildlife Sanctuary and also Audubon of Kansas outreach in Nebraska. Marge and Bruce brought a group of FOTN volunteers to the Niobrara just last May for their annual river clean up, and they stayed at the Hutton Guesthouse. They have been known as active conservationists for nearly a half century. Marge completed her Bachelor's Degree at the University of Nebraska in 1966. She married Bruce Kennedy of Lincoln in November 1965. Bruce and Marge moved to their "place" south of Malcolm in 1972, and in the next 49 years, turned it into a refuge of happiness and joy, horseback riding, cookouts, fishing and fireworks. Marge is survived by her loving husband, Bruce. Marge made friends with everyone she met, and she will be sorely missed.

■ Jan Meyers, 1928-2019

Jan Meyers was the first Republican woman to be elected to the United States House of Representatives from Kansas. She represented the Third Congressional district, including Kansas City, from 1985 to 1997. A moderate on social issues and a staunch conservative on fiscal issues, she chaired the House Small Business Committee for two years. Sometimes voting against her party, she declared, "Listen to your conscience and your constituents—if your conscience is different than your constituents', then you'll have a hard time." Her father was a newspaperman, running the *Nebraska Superior Express* in Superior, Nebraska, Jan's hometown. She was particularly proud of the role she played in the long fight to establish the Tallgrass Prairie National Preserve in the Flint Hills. She joined Kansas Democratic Representatives Dan Glickman and Jim Slattery in sponsoring legislation to establish the Tallgrass Prairie National Preserve. It passed the House of Representatives in 1991, but was stalled in the U.S. Senate until 1996 when Senator Nancy Kassebaum won approval for a revised authorization bill. Jan Meyers enjoyed her family's native prairie pasture in Jewell County. As an AOK Trustee, she also shared pride in the Hutton Niobrara Ranch Wildlife Sanctuary. She thought that House members should serve no more than ten to fourteen years, and chose not to run for re-election in 1996.

■ Paul Willis, 1929-2021

Paul M. Willis, a former AOK Trustee and an Honorary Trustee, died on July 11, 2021 at the age of 92 in Salina. Paul, who was born in Cherryvale, Kansas, was an energetic individual who was especially active in issues related to prairies, birds and roadside habitat while on the AOK Board. Paul earned a Bachelor's Degree from Kansas State Teachers College at Pittsburg, KS, and a Master's Degree from Kansas State University. He taught biology at Highland Park High School and Shawnee Heights High School, both in Topeka, for 32 years, retiring in 1989. He was active in the Topeka Audubon Society (President 1980-82 and 1998-99), Kansas Wildflower Society, Shawnee and Saline County Master Gardeners, Senior Olympics, and the Kansas Advisory Committee on Environmental Education and many other groups. Paul married Lillian Maxine "Lil" Curry on August 12, 1951 in Prescott, Kansas. Lil, who served many terms as secretary of Topeka Audubon Society, preceded him in death on June 17, 2010. He married Barbara Harris on November 26, 2011 in Salina. She survives in Salina.

■ Charlie Wright, 1932-2021

Audubon of Kansas was honored to have Charles E. Wright of Lincoln, Nebraska as an Honorary Trustee. Charlie was a prominent attorney, a dedicated conservationist and historian. He grew up in western Nebraska and enjoyed fishing, muskrat trapping and hunting with his father. He served two terms on the Nebraska Game and Parks Commission and was a founding member of the NGPC foundation in 1983. He was a friend of Ron Klataske and, following the gift of the Hutton property to AOK in 2001, he, along with fellow Nebraskan and former AOK Trustee Harold W. Andersen, took a particular leadership interest in the Hutton Niobrara Ranch Wildlife Sanctuary. He had a special passion for Native American history and causes and wrote the book entitled *Law at Little Big Horn: Due Process Denied*. Charlie and his wife Suzy established the Standing Bear Scholarship Fund in 2007.



Mount Mitchell, Winter dawn sunset. Photo by Dr. Jackie Augustine

2021 MEMORIALS TO AOK

■ Joseph Poracsky

Joseph Poracsky earned his Ph.D. from KU in 1983 in geography and was a professor of geography for 31 years at Portland State University, teaching cartography, remote sensing, and urban forestry. He also served on and chaired the Portland Urban Forestry Commission.

■ Linda Sue Mitchell

Linda was a devoted wife and a loving grandmother. “She wasn’t afraid of hard work or making sacrifices. She was an excellent listener and moral support person. Mom taught us how to bake, sew and do crafts. She also taught us the importance of gathering as a family. She was fairly quiet about her faith but we all knew where her heart stood we knew that her morals and values centered around Jesus. The mountains were Mom’s favorite vacation destination but whether she was in the mountains or back home here in Kansas, she always wanted to take care of the trees and her hummingbirds. She also loved butterflies, dragonflies, and ladybugs. Basically she loved all of nature and felt strongly that we should take care of it. Mom was actually the person who convinced me to start composting.” Memories of Linda were shared with us by her daughter Julie Klahr.

■ Daphne Fautin

Daphne Gail Fautin was an American professor of invertebrate zoology at the University of Kansas, specializing in sea anemones and symbiosis. She was world-renowned for her extensive work studying and classifying sea anemones and related species. Fautin has been called “the world authority on sea anemones” by Professor J. Frederick Grassle of Rutgers University. About studying sea creatures from landlocked Kansas, she was quoted as saying, “you only need to be near an airport, not the ocean.” When she retired, Daphne and her husband Bob Buddemeier moved to Medford, Oregon.

REPORT ON HER FIRST NINE MONTHS IN THE SADDLE

Dr. Jackie Augustine



Jackie at the state house after testifying for SB 279

As I am writing this letter in early October, I'm wondering how long I can still say that I'm the 'new' Executive Director. I've been in the Executive Director position for a little over nine months now, and the newness is starting to wear off, but in a good way. When I start work each day, I have a clear idea of what needs to be done, and I feel proud of what I've been able to accomplish thus far to advance **Audubon of Kansas's (AOK's) three-fold mission of advocacy, conservation, and education.**

Advocacy takes many forms, but AOK generally provides resources and support so that those with environmental concerns can be heard by local, county, and state elected officials. This year, we have worked to conserve prairie dogs, ensure that wildlife is considered when siting industrial wind turbines, commented on the listing of Lesser Prairie-Chickens under the Endangered Species Act, and filed a lawsuit that seeks to ensure that the Quivira National Wildlife Refuge has the water it needs to support wildlife. The lawsuit and Lesser Prairie-Chicken Listing are discussed elsewhere in *Prairie Wings*, so I will describe our other efforts.

In Kansas, county commissioners can lawfully eradicate prairie dogs on private land and charge the landowner for doing so, even if the landowner does not want them eradicated and prefers to enjoy the comical behavior of prairie dogs. This year, we wrote to the commissioners of two counties who ultimately decided to exercise their right to execute prairie dogs. In the future, we hope that counties allow landowners to control their prairie dog colonies through non-lethal means.

In Marshall County, an industrial wind facility was proposed, and the county failed to regulate the development despite local

landowner opposition. The issue was heard at the statehouse in association with Senate Bill 279, with many landowners in Marshall County and throughout the state providing supportive testimony. The testimony was heart-wrenching to hear and included descriptions of a family having to move because of a sensory-sensitive child being unable to tolerate the sounds the turbines produced. Another family wanted to build an aviation community surrounding a grass strip runway, but turbines surrounded the area. Marshall County residents focused on nesting Bald Eagles and prairie-chickens, species that are to be protected if industrial wind installations follow the guidelines set forth by the Kansas Department of Wildlife and Parks and by The Nature Conservancy's Site Wind Right guidelines. AOK provided neutral testimony because SB 279 did not explicitly include wildlife considerations when siting industrial wind turbines, but SB 279 did include provisions which would have addressed most of the landowner's complaints. The bill failed to leave the committee for consideration.

Although our work with prairie dogs and siting of industrial wind turbines was ultimately unsuccessful, we were able to build resources and connections with industry, government, and other non-profit organizations so that we increase our chances of success when the next issue arises.

AOK's **Conservation** efforts center on demonstrating how people and wildlife can coexist through our sanctuary program. The Hutton Niobrara Ranch Wildlife Sanctuary shows how cattle ranching not only provides income for the landowner, but can also be a mechanism for grassland habitat management. At Achterberg Wildlife-Friendly Demonstration Farm, AOK demonstrates how

a small, but well-placed prairie buffer habitat can support wildlife including Northern Bobwhite quail. Although Mount Mitchell Heritage Prairie is primarily a public park, Dickcissels, Collared Lizards, and wildflowers abound. Elsewhere in this *Prairie Wings*, you will find specific updates about conservation initiatives associated with each sanctuary.

Of the 3 components of AOK's mission, our **Environmental Education** efforts have shown the most growth. Our first initiative was getting myself, as Executive Director, to present to local community groups. Not only do attendees learn more about AOK, they also leave with helpful information about what they can do to support wildlife and wildlands. So far, I have talked to two Rotary groups, Ambucs, and two Audubon chapters, and several more talks are scheduled in the future for more Audubon chapters, libraries, and Rotarians. Secondly, AOK is reaching out to Audubon chapters in the state and connecting them with each other. We are holding a monthly virtual 'meetup' where chapters can discuss their challenges and learn what other chapters are doing. Six of the seven active chapters in Kansas have participated. Thirdly, we are building on our success with Celebration of Cranes, by adding a new festival focused on prairie-chickens (described in detail elsewhere in this issue of *Prairie Wings*). Lastly, AOK is hoping to provide a 'birdwatching backpack' to a library in every county in the state (105 counties) or possibly every library in the state (331 libraries). The backpack would include a pair of adult binoculars, two pairs of child-sized binoculars, a fold-out bird identification guide, and a handout which suggests where they could go bird watching in their county. We are currently writing grants to support this effort, and hope to do fund-raising in the spring to cover any costs that are not grant-supported.

AOK needs to ensure that we can fulfill our advocacy, conservation, and education mission for many years to come. When I became Executive Director, it was a good time to examine the business side of AOK to see if we could do anything better. In January 2021, we launched our strategic plan which is to be completed by the end of 2023. It offered many concrete suggestions for expanding AOK's impact and streamlining operations. One of the things called for in the strategic plan was management plans for each sanctuary that outlined habitat management priorities and ensured that donors' wishes were being respected. A Sanctuary Management Plan was completed in April. Finally, we carefully considered all aspects of AOK operations to see where money could be saved and where money should be invested. We determined that a physical office was no longer needed as most of our work could be accomplished virtually. We closed our office in May. One of the major investments this year was in the purchase of new software for managing donors, paid for with Grow Green donations and matching funds through the Greater Manhattan Community Foundation.

As you can see, AOK is making a difference in Kansas. We stand up for wildlife in Kansas when no other environmental organization will.

However, we could do even more if we had your help. Consider taking these steps to preserve wildlife and wildlands in Kansas:

1. Become a member of Audubon of Kansas.

When members support AOK financially, they are joining a passionate group of people dedicated to advocacy, conservation, and environmental education in Kansas. Visit audubonofkansas.org and click the 'Join AOK' link at the top, right-hand corner of the page.

2. Actively engage with Audubon of Kansas. Follow us on social media – FaceBook, Twitter, Instagram, and LinkedIn. Sign up to receive our monthly electronic newsletter ('Join mailing list' link in the upper right of audubonofkansas.org). Make plans to attend an event, such as the Celebration of Cranes or the Prairie-Chicken Festival. Volunteer to serve on one of our committees, such as communications, advocacy, environmental education, sanctuaries, Celebration of Cranes, or Prairie-Chicken Festival. We can find a committee that is right for you! Contact Jackie with your interest at jackie@audubonofkansas.org or 785-537-4385.

3. Make a giving plan. AOK's work never stops, so we need supporters that we can count on. Consider making a monthly gift or plan on making a yearly gift. You can even set this up electronically, so your giving is automatic. Select the 'donate' button in the upper right hand corner of our website or contact Kelley, our Director of Philanthropy, to assist you (khurst@audubonofkansas.org or 785-917-0400.) For other planned-giving options, such as a charitable gift annuity or gift of stocks or bonds, please contact me, Jackie Augustine, at jackie@audubonofkansas.org or 785-537-4385.

4. Solidify your conservation legacy by including a bequest to AOK in your will or trust. You can designate specific property, a fixed dollar amount, or a percentage of your residual estate, for the benefit of AOK. AOK is a not-for-profit 501(c)3 conservation organization incorporated in the state of Kansas with its address at PO Box 1106, Manhattan, Kansas 66505-1106. AOK's Federal Identification Number is 48-0849282. For more information, contact Kelley, our Director of Philanthropy at giving@audubonofkansas.org or 785-917-0400.





meet **KELLEY HURST**

For the past 20 years, Kelley has been a road warrior consultant, a self-employed qualitative market researcher who translates consumer interviews into actionable insights for Fortune 500 clients. In 2017, Kelley was poised to break a miles-travelled personal best when the state of Kansas tracked her down during the Walnut Valley Festival to be a foster mom to an 11-month old baby. Kelley sought to make a career shift to balance the duties of “mom” with a meaningful career where she could apply her marketing and communications skills closer to home.

Kelley’s passion for nonprofits started with her first volunteering gig at an animal shelter before her teens and has continued through today, as a volunteer at Baker Wetland and a sighted volunteer through Be My Eyes. Her interest in wildlife and habitats has taken her to Oasi Bolgheri (WWF) in Italy, through game parks in Kenya, up Colorado mountains, on hiking trips in New Hampshire and Vermont, guided trips through The Konza Prairie, and many times to her favorite birding spot, Quivira National Wildlife Refuge.

Kelley looks forward to serving Audubon of Kansas as its Director of Philanthropy, and hopes that she can build on the efforts of the committed trustees, staff, volunteers and interns that have come before and contribute to its future success.




AOK thanks **NATHALIE KIND-CHALMERS**

Nathalie joined Audubon of Kansas in 2020, and enjoyed working with a really great group of individuals who feel as deeply about conservation of wildlife and their habitats. Originally from San Diego, she grew up camping with her parents all over the United States and really fell in love with nature and all things wild and free. She was a docent for the Torrey Pines State Reserve for several years prior to moving to Manhattan, Kansas. She has been an invaluable resource while AOK transitioned to new individuals in both the Executive Director and Director of Philanthropy positions. We thank Nathalie for her efforts during this time of transition and her wonderful smile that brightened every room. We wish her the best.



*Hutton sunrise in February.
Photo by Dr. Jackie Augustine*



*Ron and Joyce Wolf.
Photo by Mehrzad (Tony) Alison.*

Joyce Wolf: the Making of an Environmental Activist

Michael L. Donnelly

Joyce Wolf has played an important role in environmental causes here in Kansas for going on forty years. The route that brought to Kansas her knowledge, dedication, and ability to network with sometimes hostile groups was intriguingly circuitous, filled with seeming happenstance and fortuitous connections.

She grew up in southern Ohio, where formative childhood experiences revolved around visits to the all-purpose farm of a family friend, and her mother's intense interest in birds. She would have gone to medical school like her older brother, but that was in the 1950s, and she knew her family would not have been able to finance two medical educations—especially when one was a girl, when not that many women even finished college—so she majored in bacteriology at the University of Cincinnati, where she met Ron, her husband of some sixty years, through their common interest in birding. Ron's work with the US Geological Survey took them and their growing family first to Indianapolis, then to Minnesota, where Ron's work involved field site measurements of water well depths. At that time, both Ron and Joyce became active in the Minnesota River Valley Audubon Club (MRVAC).

One of three Audubon groups in the Minneapolis area, the MRVAC was the one most engaged with environmental issues. Fellow members encouraged Joyce's involvement in local, regional, and national environmental issues, including the preservation of the Wood Lake Nature Area locally, the formation of the Minnesota River Valley Wildlife Refuge regionally, and active opposition to drilling for oil in the Arctic National Wildlife Refuge in Alaska.

When she and Ron moved to Kansas in 1982, one of the leaders of Audubon in Minnesota who had come to know her work as an activist with the MRVAC recommended her to Ron Klataske and Ed Pembleton of what was then the Kansas Audubon Council. When the National Audubon organization pulled back from its regional branches, she became one of the founding members of Audubon of Kansas, along with Ron, Bob McElroy, Richard Seaton, and Richard Tucker. Her training in bacteriology at the University of Cincinnati had led to work while still a student on various projects including weekend lab work with the predecessor of the EPA documenting coliform bacteria in the Ohio River and tributaries, and work at Proctor and Gamble studying toothpaste additives that would be effective antimicrobials but harmless to

humans. Because the Audubon chapter in Minnesota that she and Ron had joined (at first just because it had good child care programs for young couples with infants and younger children!), engaged in environmental activism, her experience was quickly valuable to the fledgling Audubon of Kansas. She was an ideal candidate for training in how the legislative process worked, and how to influence legislation on behalf of the environment. Accordingly, she was sent to an Audubon “boot camp” in Washington, D.C. to train in lobbying techniques.

She was tasked in 1985 with helping to form the Kansas Clean Air Coalition, working with the Kansas chapter of the American Lung Association to address acid rain issues. Joyce’s task force was to mobilize public opinion to appeal to Congressional representatives in support of regulations that would reduce the sulfur and nitrogen compounds in the air from industrial fossil fuel combustion, pollutants causing a mounting crisis for flora, fauna, air, and waters. Based on her increasing record of environmental activism, she was selected to represent the Kansas Audubon Council, precursor to AOK, at the Kansas Statehouse in 1988. Because of the importance of knowledge of agricultural and water issues for credibility to Kansas legislators, Joyce’s childhood exploration of her parents’ friends’ farm and her work on water quality in Ohio were important factors in her success.

Another factor, though, was her openness to personal interaction with people “on the other side.” Joyce’s native disposition is irenic, rather than polemic; she will firmly confront and challenge flawed arguments and unfounded claims made by opponents, but she never demonizes those who are making the arguments. Her credo is,

“You can disagree on issues but it’s important to remain cordial in your personal relationships with people that you work with at the legislature”

—a principle sadly forgotten in many quarters in politics and government today! When she first began lobbying on agricultural issues in Kansas that affected the environment, she often found herself in disagreement with Bill Fuller, lobbyist for the Kansas Farm Bureau. However, he always had a pleasant greeting for her: “Well, young lady, what are you up to today?” And she would reply, “Running to keep up with you!”

An example of the fruits of this willingness to maintain open lines of communication with people often perceived as “the other side” was her championing of a Conservation Easement Bill when easements, particularly designed to protect wetlands, became an issue in the 1990s.

She was asked to come to the headquarters of the Farm Bureau in Manhattan, Kansas, representing “the conservation side,” to address

a group of farmers interested in possible benefits for them from the bill. When the Farm Bureau chose not to oppose the bill, and it received bi-partisan support from GOP Senator Ross Winter and Democratic Representative John Solbach, both attorneys from Lawrence, the bill was ultimately passed with little opposition.

At that time, as a result of her work on conservation easements, Joyce also became one of the founding members of the Kansas Land Trust, which just celebrated its thirtieth anniversary in 2020.

In her own estimation, however, the most significant achievement in all her years of working on behalf of the environment was working in the 1990s with Jan Garton, at that time president of the Kansas Audubon Council, to save Cheyenne Bottoms. Cheyenne Bottoms, a 41,000 acre wetland in Barton County and the largest in the interior of the United States, is a crucial stopover for migrating shorebirds and waterfowl, and was designated in 1988 as a Wetland of International Importance by the Ramsar Convention on wetlands. The marsh is owned by the Kansas Department of Wildlife and Parks, and adjacent properties are now protected by the Nature Conservancy and Ducks Unlimited. Cheyenne Bottoms holds the senior water right for Walnut Creek, which feeds the marsh, and was formerly sustained also by the Arkansas River. However, the Ark River is now dry, and increased pumping of groundwater by irrigators in violation of the Bottoms’ senior water right is depleting the feeder streams and endangering the continued existence of the marsh, notwithstanding its recognized international importance.

This campaign presented an example of the tact and self-discipline that was so central to Joyce’s efforts, but not always exemplified by her allies in the cause. Joyce was a member of the Environmental Lobby Caucus, a group of representatives from the Kansas Audubon Council, the League of Women Voters of Kansas, the Kansas Rural Center, the KNRC, the Sierra Club, and the Kansas Wildlife Federation who met each Friday during the legislative session to consult and plan which bills to follow and who should testify on which bills. During the campaign of 1990, the members of the caucus met with gubernatorial candidate Joan Finney. At one point in the meeting, Ms. Finney said something about being “a blank slate”— meaning that she was not aware of many of the issues being introduced to her, though she expressed an interest in learning more. However, the lobbyist for the Sierra Club went to the press and told them that “Joan Finney says she’s a blank slate.” Ms. Finney had a reputation for being somewhat touchy, and when that remark received a lot of press coverage, she paid the environmental caucus back by vetoing the bill funding work on behalf of Cheyenne Bottoms.

Joyce credits Jan Garton’s “sharp mind and wonderful wit” with saving the day: she purchased yards and yards of orange fabric to cover seat cushions, on the outside of which she had written in large print, “SAVE OUR BOTTOMS!!” Volunteers from Audubon chapters delivered those cushions to each Kansas legislator. Meanwhile, an aggressive campaign of letters, phone calls, and advertisements was mounted to make state senators and



A solitary bee (likely *Andrena* sp.) nectaring on fawn lily (*Erythronium mesochoreum*) in an eastern Nebraska prairie. Joyce was active in publicizing the plight of pollinators. See her article, “Silent Spring 2016” in the Winter 2016-Spring 2017 *Prairie Wings* (pp. 8-9). Photo by Kathy R Denning

representatives aware of the crucial need to protect the Bottoms’ water right. The result was that the veto was overridden and the bill reinstated.

This effort generated some important spin-offs. As a result of a meeting at the Kansas History Center in Topeka at which representatives of the EPA and the National Parks Service were present, the Kaw Valley Heritage Alliance was formed. Ron Parks, who worked for the Historical Society, suggested the establishment of what became the Rollin’ Down the River Festival, first held in 1997 to spread information about the advantages of conservation easements to preserve in perpetuity environmentally valuable features of landowners’ property. The first Kaw Valley Eagles Day was held that same year in Lawrence and Manhattan, with funding from the EPA. When that funding was later lost, Joyce engineered financial support from a few businesses in Lawrence, including what was then Farmland Industries, Westar (now Evergy), City of Lawrence Recycling, Crown Automotive, Kansas Department of Wildlife and Parks, United States Army Corps of Engineers, USD 497, and the Baker Wetlands—another instance of her gifts for persistence and persuasion.

Yet another of her gifts is the ability to conceive of what might be, and to press on even in the face of ridicule or dismissal. At the time of the Cheyenne Bottoms campaign, on one occasion she and Jan Garton met with members of the Kansas Department of Wildlife and Parks. They presented the idea of an education center at the Bottoms to heighten awareness and appreciation of what a tremendous resource the great marsh was. The KDWP response

was to laugh at such a “silly idea”: such a facility would surely just be vandalized and wrecked. Joyce today takes particular pleasure in visiting the present-day Visitor/Education Center on Highway 281, across from the east entrance to the wetlands, which fulfills that long-ago proposal by Garton and Wolf. Joyce allows that the Cheyenne Bottoms Education Center, staffed by people from Fort Hays State University, is now “one of my favorite places to visit in Kansas.”

Joyce’s time as a registered lobbyist ended in 2000. Since then, however, she has continued tireless efforts to educate the public on the importance of water issues in Kansas, the State Water Plan, and various other matters of environmental concern such as declining populations of pollinators and encroachment of wind turbines on unsuitable sites. She has served faithfully and, thankfully, without editorial comment as recording secretary for AOK Board meetings and various subcommittees for many years, finally stepping down only two years ago. She has been an active member and often the driving force in the Jayhawk Audubon Chapter in Lawrence, one of the most active in the state in education and outreach.

One of the things that has made Joyce so effective in pushing for environmental issues in Kansas is her patient willingness to go to water- or environment-related meetings year after year after year, and sit and listen, and not only maintain an openness to hearing often the same personalities reiterate the same talking points over and over, but to actually master crucial details in the midst of all the give and take, and put those details into a more persuasive rejoinder or position statement.

As Rex Buchanan has remarked,

“If members of the water community were to be asked to name somebody from the environmental community that they respect and know and who shows up, they’d be hard pressed to identify many people, **but they would know who Joyce is from her having done just that.**”

Joyce’s thought has always been that “you can’t be successful making enemies out of potential friends. Why not try to have a frank discussion about what your different positions are and see if you can’t come up with something that both can agree on?”

Despite health issues in recent years, she tirelessly keeps up with environmental issues in the state and region. She views with dismay divisions among the friends of the environment over wind energy, wishing for an accommodation between enthusiasts for green energy without qualifications and those who urge that wildlife concerns—migratory bird corridors, bat concentrations, destruction and compromise of crucial habitat—would have a larger share in decisions about suitable siting. For the future of the Quivira Federal Wildlife Refuge, she wishes that the solution to the similar problems of enforcement of senior water rights that faced Cheyenne Bottoms thirty years ago might provide the template for a solution on the Rattlesnake Creek watershed today, satisfactory to all parties. Only two things were needed, she said in an interview in 2019 with Rex Buchanan for the Kansas History Project: “It’s going to take somebody to 1) to sue for the water right, and then 2) I’m hoping that Mr. Barfield [current Chief Engineer, DWR] will understand, and that there will be data developed and presented, similar to that for Cheyenne Bottoms, that makes the case that it’s possible to do this.”

In the last years of the previous administration in Washington, it appeared that Dave Barfield was ready to move in the desired direction, but the US Fish and Wildlife Service, at the intervention of the then-Secretary of the Interior, stepped in and prevented further action. Audubon of Kansas has now put forward the lawsuit; we can hope that the climate (political and, unfortunately, meteorological) has changed enough in the interim that Joyce’s hopes for this irreplaceable wetland can be realized.

In her interview with Buchanan, Joyce noted that most of the environmental lobbyists when she was active in the last years of the twentieth century were women. Jan Garton, Laura McClure, Joyce herself are prominent examples—“grassroots women who felt strongly about an issue and pushed it.” She speculated that one reason was that lobbying on behalf of the environment was “not a high-paying job. I don’t know that anybody could maintain a family on [it]—when I first started out, I had a negative net income because of going back and forth.” One might also speculate that in gender stereotypes, women are seen as nurturers, more attuned with nature and with aesthetic values; and in a day when many highly intelligent and able women were not employed outside the home, they had the time and inclination to do the homework

necessary to master the facts and details of environmental issues that Joyce made so much her own—and perhaps, not being tied by employment to the interests of large corporations and polluters of the environment, they were able to exercise a more independent judgment on what we now see as matters of universal concern, from the standpoint of health, and even from the standpoint of the economy—not to mention the future of the earth.

In her years of service to the landscape, water needs, and wildlife of Kansas, and to her fellow-citizens who enjoy the benefits of her efforts, Joyce Wolf is a sterling example of what one of those able, well-informed, dedicated, bridge-building and persistent women can do as an individual working for positive change.



Joyce loves tending large indoor plants like this Norfolk Island Pine in the background. Photo by Ron Wolf.



NOTICE OF AOK LAWSUIT

on behalf of Quivira Water Right

Dick Seaton

American Avocet (*Recurvirostra americana*). Photo by Dave Rintoul

AOK has gone to court to protect Quivira National Wildlife Refuge.

On January 15, 2021, Audubon of Kansas filed a federal lawsuit against Kansas and federal government defendants asking the court to force them to restore and protect the water rights of the Quivira National Wildlife Refuge.

Randy Rathbun, AOK trustee and former board chair, is our lead attorney. Much of the heavy research and drafting was done by Burke Griggs, a water law expert at Washburn University Law School, and by Randy's young associate Dylan Wheeler. The attorneys are all donating their services, but will seek compensation from the government defendants if AOK is successful.

The suit names as defendants the U.S. Department of Interior and its Secretary, the U.S. Fish and Wildlife Service and its Director, the Kansas Secretary of Agriculture, and the Chief Engineer of the Kansas Division of Water Resources.

Quivira is a 22,135 acre wildlife refuge in south central Kansas, which provides sanctuary to a wide variety of waterfowl, shorebirds and other wetland species. It is a wetland of international importance.

The federal government owns it and the Service manages it. But its water rights are determined under Kansas law. AOK's suit claims

that the defendants have ignored and violated state and federal law, and that the result has been to deprive the Refuge of water it needs and is legally entitled to.

In 1957 the Service obtained a Kansas water right which has priority over all later rights. But both state and federal defendants have allowed upstream irrigators in the Rattlesnake Creek basin to exceed the limits of their rights for the last 34 years, reducing the water available to Quivira.

AOK's case alleges violations of several federal laws, including the National Wildlife Refuge System and Improvement Act of 1997, the Endangered Species Act, and the National Environmental Policy Act. It also claims defendants have violated the Kansas Water Appropriation Act.

Our federal complaint asks the court for (1) a declaration that the rights of the Refuge have been violated, (2) an injunction barring further violations, (3) an order requiring the defendants to take all steps necessary to eliminate upstream violations, and (4) an order for AOK's attorney fees and costs.

Editor's note: In late October, the judge hearing the case dismissed AOK's suit on procedural grounds; our legal counsel informs us that they have decided to appeal to the Tenth Circuit Court of Appeals. Once again, stay tuned by checking the AOK website for further developments.



Song Sparrow (*Melospiza melodia*).
Bob Gress, BirdsInFocus



Lesser Prairie-Chickens (*Tympanuchus pallidicinctus*).
Bob Gress, BirdsInFocus

SOME OF THE TYPICAL BIRDS THAT ENLIVEN OUR DIMINISHING GRASSLAND ECOSYSTEMS

“Grassland species are among the most imperiled groups of birds in the United States,” according to the National Audubon Society publication, North American Grasslands and Birds Report (2019). More than 60% of the original 550 million acres of historical grassland—shortgrass, tallgrass, and mixed grass—have been lost today, and total populations of grassland bird species have declined by more than 40% just since 1966. 88% (in some estimates, 99%) of the original tallgrass prairie has been lost in the past century and a half, while mixed grass prairies have shrunk from 140 million acres to approximately 30 million acres, and of shortgrass prairies, once some 265 million acres, only half are left.

We present here a portfolio of some of these denizens of what is perhaps our most threatened biome, right here in our backyard in the northern Great Plains.




Eastern Meadowlark (*Sturnella magna*).
Bob Gress, BirdsInFocus



Golden Eagle (*Aquila chrysaetos*).
Bob Gress, BirdsInFocus



Henslow's Sparrow (*Ammodramus henslowii*).
David Seibel, BirdsInFocus



*Quivira dawn reflection.
Photo by David Rintoul*

UPDATE ON WATER IN KANSAS

Rex Buchanan

DIRECTOR EMERITUS OF THE KANSAS GEOLOGICAL SURVEY

Water, as a natural resource issue, never goes away. That's true throughout the American West, where droughts seem endemic. And while Kansas hasn't really dealt with severe drought over the past few years, the state continues to grapple with water issues. Or tries to.

Probably the most looming long-term issue is the ongoing depletion of the Ogallala portion of the High Plains aquifer in the western third of Kansas. Depletion has been going on, more or less, for the past 50 years. During that time, people and water agencies in the state have developed responses to those declines, some effective, some conjectural.

Perhaps the most significant has been the evolution and adoption of Local Enhanced Management Areas (or LEMAs). In these areas, water-rights holders have agreed, largely voluntarily, to reduce their pumping. The state's initial LEMA was created primarily in a portion of Sheridan County in northwestern Kansas, where locals agreed to reduce pumping by 20% over a five-year period, beginning in 2013 and renewing in 2017. In 2018, the Northwest Kansas Groundwater District created a LEMA over the entire extent of that district, and in 2020, the West-Central Kansas Groundwater Management District authorized a LEMA for parts of Wichita County.

LEMAs are complex creations, and they include provisions that give water-users flexibility (for an excellent summary of LEMAs from a legal perspective, see Griggs, 2021). For the most part, the areas covered by LEMAs have not faced a time of really significant drought since their creation. Still, they appear to have encouraged

landowners, mainly irrigators, to schedule and allocate their water use in ways that allow them to maintain production and profit (for a recent analysis of the efficacy of LEMAs, see Zwickle, *et al.*, 2021). Pumping reductions are just a condition of a successful LEMA. Ultimately, the success of a LEMA depends on the impact of the pumping reduction on water-level decline rates. So far the Sheridan County LEMA appears to have done that. In short, LEMAs appear to be an effective tool for extending the life of the aquifer—without causing undue economic dislocation (see Butler *et al.*, 2020; Butler *et al.*, 2018; and Whittemore *et al.*, 2018).

While LEMAs have seemingly been effective in places, they have yet to be adopted in southwestern Kansas, where the Ogallala is the thickest and absolute water-level declines have historically been the greatest. During drought years, water levels in the Ogallala can drop an average of three feet per year in southwestern Kansas. And while those declines were less severe in the past few years, the aquifer declined an average of 1.3 feet across southwestern Kansas in the year ending in January 2021 (for 2021 results, see https://www.kgs.ku.edu/General/News/2021/groundwater_levels_fall.html).

For the most part, however, southwestern Kansas has focused on solutions that involve water importation, rather than limiting water use. The concept of an aqueduct from northeastern Kansas to southwestern Kansas faces obvious issues of energy, environmental, financial, and legal hurdles, but the idea continues to be floated.

Water issues aren't relegated to western Kansas. In central Kansas, Audubon of Kansas filed a lawsuit against the federal and state government, claiming that water rights in Quivira National Wildlife



Canada Geese (*Branta canadensis*) and goslings. Photo by Nathalie Kind-Chalmers.

Refuge have been impaired by upstream pumping for irrigation along Rattlesnake Creek, the source of much of Quivira's water. Quivira has long been recognized as an important stop for migratory waterfowl and shorebirds, and conversations have gone on for decades about ways to fulfill the refuge's water rights. Dick Seaton, one of the attorneys involved in the lawsuit, has written a Quivira update on p. 15 in this issue of *Prairie Wings*.

In eastern Kansas, conversations continue about reservoirs and sedimentation. In 2016, the Kansas Water Office led an effort to dredge sediment from John Redmond Reservoir, a ground-breaking project between the state and the Army Corps of Engineers that was generally considered a successful proof-of-concept. But dredging is expensive and requires an ongoing commitment. The Kansas Water Office and other agencies have looked more and more at upstream conservation measures that keep sediment out of reservoirs in the first place. Those efforts continue, along with conversations about other ways to move sediment out of reservoirs without the ongoing expense of dredging.

On top of all this, the Kansas House of Representatives formed a committee on water, chaired by Representative Ron Highland from Wamego, to study the state's water agencies and their response to water issues (some excellent instructive videos from the committee's work are available on YouTube. Find them by searching under Kansas Water Committee). The committee held hearings in 2021, including several days in the field in Garden City. Recommendations will likely be unveiled before the 2022 legislative session.

There were leadership changes in the state's most visible water agencies and organizations. Earl Lewis moved from the Kansas Water Office to become chief engineer of the Division of Water Resources (DWR) of the Kansas Department of Agriculture. The DWR is the primary regulator of water rights in the state and thus the agency central to dealing with issues of groundwater declines and impairments. Connie Owen, an attorney from Overland Park, moved from her role as chair of the Kansas Water Authority to director of the Kansas Water Office, the agency that coordinates water planning and policy in the state. The Water Office began updating the state's water plan in 2021. And Dawn Buehler of Eudora, head of the Friends of the Kaw, replaced Owen as chair of the Kansas Water Authority, the committee that provides guidance to the governor, legislature, and Water Office concerning water issues.

In short, the state, especially through legislative hearings, appears to have ramped up its interest in water. Yet, year after year, the state's water plan continues to be woefully underfunded. Declines continue across the Ogallala. And the state has not faced a really severe drought, the likes of which focused attention on water issues in Kansas in 2011-2013.

When it comes to water, the only certainty is that dry times will come again, as they already have in much of the west. Is the state better prepared to face drought than it has been in the past? Stay tuned.

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AN AOK KEYSTONE EVENT: AOK's Celebration of Cranes 2021

Cindy Jeffrey, Chair and Organizer of CofC 2021



Rex Buchanan, Director Emeritus, Kansas Geological Survey. "Water and Geology at Quivira National Wildlife Refuge" at the 2019 Celebration of Cranes. Buchanan and Jim McCauley co-authored the book "Roadside Kansas," a guide to geological landmarks across the state. After 37 years with the Kansas Geological Survey, interim director Rex Buchanan retired in June 2016.

This is our fourth year for the Celebration of Cranes and each year has been different. The first, in 2018, was (as expected) a learning experience. It was very well received and attended, so much so, we were overwhelmed. The feedback was great – from “wonderful” to comments on how we could improve it—such as, guides should not be drivers. The guide needed to be able to concentrate on talking to the attendees in the van, and the driver needed to drive.

In 2019, we were more organized and started planning earlier. At the Quivira National Refuge Visitor's Center we had three expert speakers: Anne Lacy on Sandhill Cranes, Dr. Elizabeth Smith on Whooping Cranes, and Rex Buchanan on water. (See previous *Prairie Wings*). Because of the times of the tours, they each spoke both in the morning and the afternoon so that everyone had a chance to hear them no matter which tour they went on. And we had visitors just “drop in” as well.

In 2020, despite the Covid 19 restrictions, we still prevailed. While we could not take van tours on Quivira NWR and see the migration of the birds and meet for presentations, we could use technology to stream our speakers live and record their presentations and Q&A for posting on our website. If you missed 2020, go to our YouTube page to find the videos of each of last year's speakers. We greatly appreciate their willingness to do this. People are still finding them and watching them. Yet, we missed seeing the cranes; nothing is quite like being there.

In 2021, we were determined to have some kind of live event, the only way to fully appreciate the migration of the cranes (and all kinds of other birds). Precautions had to be taken due to the continued risk of Covid (Delta). We decided on a modified plan. Instead of vans we had “self-paced” tours, where participants checked in and picked up a passport, map, and information at our venue. They then proceeded through Quivira stopping at areas indicated on the map as most likely to have cranes. Some of our members “roamed” the areas to offer help and look for interesting birds.

Our venue was the Hudson Community Center (masks required). Here our five presenters gave a diverse view and broader understanding and appreciation of wetlands, as well as some practical tips. Presentations included:

- Dave Rintoul: KSU retired professor Biology, Tips for photographing birds,
- John Price, professor of English from UNO: “The Personal Prairie,”
- Dave Haukos, KSU, “The Beauty and Mystery of Wetlands”
- Irene Unger, from Baker University and Baker Wetlands: “Wetland Ecology: How plants cope with the unique conditions of Wetland soils.”
- Dennis Rogers, “A Native American Perspective.”
- And our Executive Director, Jackie Augustine, gave participants an orientation before beginning their self-paced tour.

Quivira National Wildlife Refuge is a Kansas treasure as well as an international one. We should never take it for granted. We will continue to have the Celebration of Cranes in whatever form is necessary, to encourage people to come, see, feel and appreciate the amazing experience of the crane migration in Kansas.



Celebration of Cranes organizer, Cindy Jeffrey, poses next to a life-sized Whooping Crane and Dennis Rogers. Dennis, a native Navajo speaker, gave an interesting presentation linking nature, Native American beliefs and dance, and contemporary music.



Point your smartphone's camera at this code or follow this link <https://www.youtube.com/channel/UCIvPE8-lyThxSqJx8USW6dA/> videos to see videos from the 2020 and 2021 Celebration of Cranes.

All photos in this article are by Dr. Jackie Augustine

PRAIRIE-CHICKENS: HOME ON THE RANGE

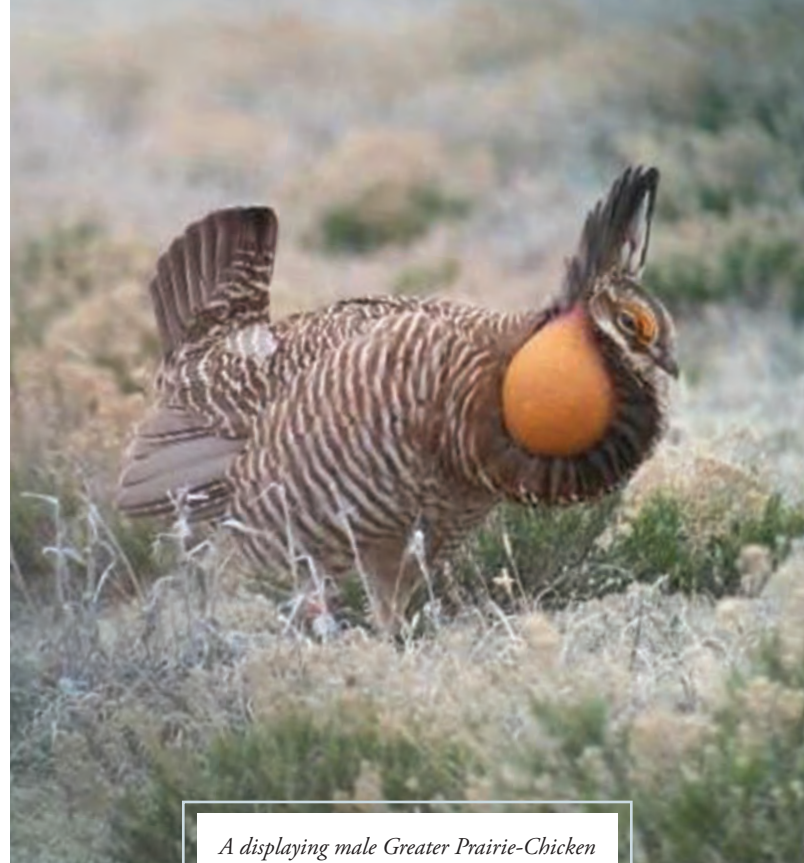
*Dr. Jackie Augustine,
Executive Director of AOK*

Everyone has that particular animal that makes them feel so grateful to be in nature. Hopefully for you it is something like a chickadee or goldfinch or something else that you have a reasonably good chance of seeing whenever you're outside. For many, it is a bald eagle that symbolizes freedom, or any hawk whose hunting prowess you have the privilege to witness. Maybe it is an owl that hoots outside your window at night that makes your skin tingle in excitement. For me, seeing grouse makes me feel like I am truly in someplace wild.

Grouse compose a relatively small group of birds and include prairie-chickens, sage-grouse, ptarmigan, and woodland grouse like Ruffed Grouse and Blue Grouse. What fascinates me most is their diversity of mating systems – roughly a third are monogamous (one male and one female raise offspring together) and two thirds are promiscuous (males and females may have multiple mates, female raises young on her own). This is contrary to most birds – of which 90% are socially monogamous (although the frequency of fooling around outside the male/female pair varies quite a bit depending on the species). Of the two thirds of grouse that are promiscuous, about half of those (or one third of all grouse) have a unusual mating system, called a lek mating system.

The word, 'lek,' is said to be of Swedish origin meaning 'to play,' and at first glance, males look like they are playing when they gather together in a relatively small area to display. The place where they display is the 'lek'. On these leks, males' mating displays appear comical: they vocalize, puff out their feathers, and perform ritualized behavioral displays. But it is not all fun and games. They also defend small territories through physical fights with their neighbors. The territories do not contain food or nesting sites; the males themselves are the prize that is defended. One reason why these leks are thought to have evolved is to allow females to inspect more males easily. Females are extremely choosy when picking a mate, and they tend to agree as to which male is best. A small minority of males win the majority of mating opportunities, leaving over half of the males never attracting a mate. Once they have mated, females raise the young entirely on their own.

Kansas is lucky to have two species of lek-mating grouse currently, Greater and Lesser Prairie-Chickens. Greater Prairie-Chickens occupy the eastern part of the state, and are associated with tallgrass prairie. Lesser Prairie-Chickens occupy western Kansas, and are associated with shortgrass prairie. The two species' ranges overlap in central and northwestern Kansas where mixed grass prairie occurs.



A displaying male Greater Prairie-Chicken

Greater and Lesser Prairie-Chickens share many components of their display. They both start by stomping their feet rapidly against the ground making a 'drumming' sound. As they stomp, their heads are pointed forward, their tails and 'pinnae' feathers behind the head are pointed up, and their wings are next to their bodies but are spread so that the wing tips are almost touching the ground. When the stomping stops, a vocalization is given while simultaneously inflating two fleshy air sacs in their throat, perhaps amplifying the sound. The vocalizations are vastly different between the species, with lessers giving a short, higher-pitched 'pop' and greater's producing a longer, low-frequency, three-noted 'boom' vocalization. Lesser Prairie-Chickens also have a unique display where males rapidly counter-sing, with each male alternating 'pop' vocalizations with the other.

Physically, Lesser Prairie-Chickens are 80% the size of a Greater Prairie-Chicken. At a distance, the species are hard to distinguish unless you can hear the vocalization or see how long the air sacs stay inflated (short 'pop' vs longer 'boom'). At close range, males can be distinguished by the color of their air sac. Lessers have a magenta-colored air sac; whereas greater's air sacs are orange. Females and non-displaying males are much harder to distinguish to species because you have to rely on overall plumage coloration. Greater Prairie-Chickens have bolder barred plumage with whiter whites and broad dark brown bars, whereas Lesser Prairie-Chickens have off-white whites and thinner, light brown barring. Additionally, the barring on the belly of Lesser Prairie-Chickens may be absent.

The barred plumage of prairie-chickens makes them virtually impossible to see when they are not on leks. The best time to see these birds is in spring. They display between mid-March and mid-May from a half hour before sunrise to about three hours after

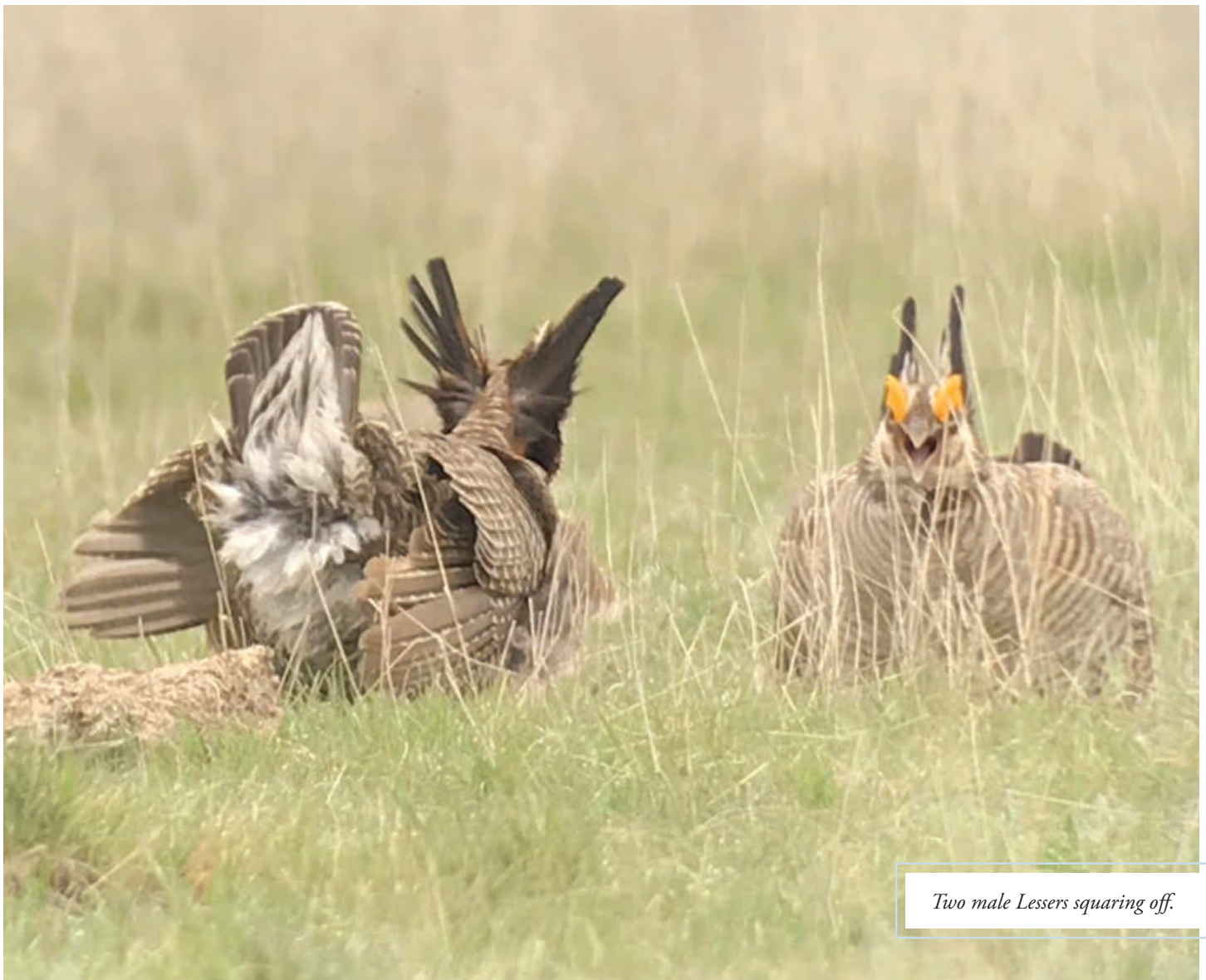
sunrise. When I try to find leks, I search from public roads, for you can hear an active lek of either species from about a mile away on a calm morning. After getting landowner permission, I walk to the area where I think they are displaying in the middle of the day so as not to disturb them. They generally display on an area that is a bit higher in elevation than the surrounding area and has sparse grass. This helps the vocalizations travel a long distance as well as allowing the birds to see predators approach. I know I have found the lek site when the ground is littered with feces and feathers plucked from fighting males. I then mark a site on the east side of the lek with a piece of rebar and reflective tape. The rebar marks the location for a blind, and the reflective tape allows me to find the rebar the next morning. The taller grass in this area and the lack of feathers and feces tell me that it would be a good place for a blind.

I choose the east side so that the rising sun will be at the back of the blind. This prevents the light from shining into the blind and revealing my location (not to mention that it also provides the best photography opportunities).

The next morning, I wake up several hours before sunrise to eat a good breakfast before heading out. I need to be at the lek site at least an hour before sunrise to set up the blind. Horned Larks are already singing at this time, and the sky is still black. If I have an extra couple of minutes, I gaze at the Milky Way, which I have never seen any brighter than at a lek site. I enter the blind when the meadowlarks start singing, about 45 minutes before sunrise. The birds show up about 30 minutes before sunrise (if it is cloudy or raining, they might sleep in a couple minutes). At first, you



A male Greater Prairie-Chicken checking out his competition at the lek. The grid stake was used to map the size of males' territories.



Two male Lessers squaring off.


hear them – a flutter of wings, a cackle. They can walk or fly to the lek. Then, you see dark shapes move in front of you. Finally, one displays. Soon, they are all displaying.

Females usually visit shortly after dawn. I can tell when one is present by the behavior of the males. There is an unmistakable increase in the intensity of males' display and aggression. Females often look as if they barely notice the males, preferring to munch on vegetation. When they are interested in a male, they seem to sit on a territory boundary watching the fight that ensues between the male and his neighbors. If there are multiple females on a lek, they fight with each other to gain first access to a male. Females fight in a similar way as the males – approaching each other with their pinnae pointing up and chasing each other. When a female is ready to mate, she bends down and forward and spreads her wings. The male steps on her back and grabs the feathers on the back of her neck with his beak while they copulate. The process only takes a couple seconds, but that is enough time for neighboring males to run at the happy couple and knock the male off her back. It often takes two or three attempts before a copulation is successful. Following successful copulations, females shake their wings and body vigorously – like a dog shaking water off its body. It is

believed that this behavior flings off ectoparasites that may have been transferred during the mating, but it has not been tested.

My spring is not complete without seeing this yearly ritual unfold in front of me from the quiet of a blind. It makes me feel connected with nature and gives me a glimpse of how the land might have been before European settlement.

There is often a bison wallow near a lek showing that the birds prefer virgin prairie, as plowing would have destroyed the historic wallow. If you have never seen prairie-chickens from a blind, and your body allows you to sit in the cold for four hours or more, I strongly encourage you to seek out the experience I have described. Even if you are only able to watch the saga unfold at a distance, viewing prairie-chickens is an opportunity you will never forget.



Greater Prairie-Chicken in the foreground with a Lesser Prairie-Chicken in the background at a territorial boundary. Photo by Jim McCormac.

KANSAS 'LEK TREKS' PRAIRIE-CHICKEN FESTIVAL

Audubon of Kansas will hold its first annual 'Lek Treks' Kansas Prairie-Chicken Festival April 7-10 in Hays, KS. The highlight of the festival will be viewing of both Greater and Lesser Prairie-Chickens. Nate Swick, Host of the American Birding Podcast, will be our speaker at the banquet Saturday evening. The festival will also include trips to Cheyenne Bottoms, Quivira National Wildlife Refuge, and The Nature Conservancy's Smoky Valley Ranch. All attendees will get access to behind-the-scenes tours of Sternberg Museum.

The reasons for hosting this festival are numerous. First, holding festivals like 'Lek Treks' and 'Celebration of Cranes' aligns with AOK's environmental education mission and our strategic plan to "support opportunities for the public to have positive interactions with nature." Secondly, the potential listing of Lesser Prairie-Chickens is bringing negative attention to this species, and this festival would provide some positive attention where Lesser Prairie-Chicken populations are stable. Thirdly, the Prairie-Chicken Festival in Oklahoma and the Kansas Birding Festival will

be discontinued, so there is 'space' for another birding festival in Kansas. Lastly, the opportunity to view both Greater and Lesser Prairie-Chickens in one trip, and possibly in one morning, is something unique to Kansas. We are advertising nationally so we expect that the festival will attract people from outside Kansas to view the unique mating behaviors of Greater and Lesser Prairie-Chickens.

In order to make this event a success, we will need volunteers to staff the registration station and to drive vans. If you are interested in helping out, contact Jackie at jackie@audubonofkansas.org or call 785-537-4385. If you would like to attend as a participant, get updates by signing up on our website (select 'Prairie-Chicken Festival' under 'Upcoming Events' in the lower right-hand corner of our website). You can also visit KansasLekTreks.org for more information.

LESSER PRAIRIE-CHICKEN LISTING

Dr. Jackie Augustine, Executive Director of AOK

The current consideration of Lesser Prairie-Chickens for protection under the Endangered Species Act is only the most recent drama in a soap opera over 25 years in the making. Following drastic population declines in the late 1980s and early 1990s, the Biodiversity Legal Foundation petitioned the US Fish and Wildlife Service to protect Lesser Prairie-Chickens under the Endangered Species Act in 1995. In 1998, the Department of the Interior added Lesser Prairie-Chickens to the list of 'candidate species' claiming that official listing was not warranted because there were species in greater need for protection. The status of candidate species are reviewed annually. In 2008, Lesser Prairie-Chickens moved up in the list of candidate species reflecting increasing threats to their habitat from moderate to high. In 2014, the Fish and Wildlife Service announced its decision to list the Lesser Prairie-Chicken as a threatened species. A federal court vacated the listing after a lawsuit by a Texas oil trade group in 2015, and Lesser Prairie-Chickens were removed as a threatened species in 2016.

After this delisting, oil and gas have expanded throughout the Lesser Prairie-Chicken's range including western Kansas. Farmers and ranchers, worried that Lesser Prairie-Chickens may be listed again, plowed prairie to avoid any potential federal restrictions on their land (See Evans M, Malcolm J (2021). "Lesser Prairie-Chicken habitat changes since court delisting." Center for Conservation Innovation, Defenders of Wildlife). These increasing threats have prompted the US Fish and Wildlife Service to once again consider Lesser Prairie-Chickens for listing under the Endangered Species Act – but this time, part of their population is proposed to be listed as 'endangered' – one step closer to extinction than 'threatened'. The endangered population is located in eastern New Mexico and western Texas. The population located in Kansas, Colorado, Oklahoma, and northern Texas is proposed to be listed as threatened. Public comments were due September 1, 2021, and we expect a final ruling some time in 2022.

Audubon of Kansas wrote a letter endorsing the listing which was co-signed by six of the seven active Audubon chapters in Kansas.

AOK supported the listing because despite nearly three decades of voluntary conservation and efforts by state and federal agencies, the birds' overall population numbers have not improved, and in fact have declined over much of their range.

Additionally, there is evidence that the birds are not able to bounce back as rapidly as they once did following severe drought or wildfire. Finally, the threats to Lesser Prairie-Chickens have increased from energy development (oil, gas, and wind) and agricultural conversion of prairie to row crop agriculture.

I have personally witnessed the demise of a large, active Lesser Prairie-Chicken display ground or lek following the drilling of oil wells and construction of associated infrastructure. In 2014, the lek was visible from Castle Rock in Gove County and had over 20 males displaying. After I had conducted research on that lek for several years, oil and gas exploration occurred and the following year, a new well was under construction over a half mile away, but visible from the lek. Well drilling is a loud process and occurs 24/7 until it is completed. The males were competing with the drilling to be heard by females. Even though the well drilling was completed the following year, males were still competing with increased traffic on the road from noisy oil tanker trucks retrieving 'black gold' from the oil silos. The number of birds on that lek slowly declined over the next couple years until the birds disappeared entirely in spring 2021.

Even though I bear witness to the decline of Lesser Prairie-Chickens, I am hopeful that the listing will spark new conservation efforts for this charismatic grassland bird.

TWO APPROACHES TO CONSERVING KANSAS LANDS: AOK Sanctuaries and Kansas Land Trust Conservation Easements



*Gary and Carolyn Haden,
owners of Far West Farm.
Photo by Kelley Hurst*

AOK SANCTUARIES SEEN FROM TWO PERSPECTIVES by Gary Haden

The author, Gary Haden, is Chair of the Audubon of Kansas Board of Trustees. Far West Farm, with a riparian corridor of bur oaks, sycamores, hackberries and walnuts dating back to the 1860s along Clark's Creek in western Morris County, is a prospective addition to AOK's planned archipelago of sanctuaries throughout the state.

Spring rains, excessive wind, winds from the wrong direction, and conflicts with the busy schedules of our tenant and myself led to a failure to complete planned burning at Far West Farm this past spring, so when I saw tree seedlings poking up through a filter strip holding dry grass from the previous year, I decided to undertake some tree control before new growth among the grasses hid the invaders.

Since we had burned the weedy filter strip a year earlier and I had done some preventive spraying after the burn, I thought I could handle the situation with one batch of broadleaf herbicide mix in my backpack sprayer. Three batches of spray later, I was tired of spraying and I was contemplating what it means when Audubon of Kansas makes a commitment to landowners to manage their property in perpetuity if the land is gifted or bequeathed to AOK.

My wife Carolyn and I have had our debates about what the best decision is for our land to assure that it is preserved as we like after we are gone.

Some landowners aren't concerned about the land's legacy: they may have purchased it solely for the purpose of "developing" it, or as an investment. Others are oblivious to the natural potential of their property or to the trees, flowers, grasses, and wild creatures that live on it. Some inhabit property only briefly, assuming as renters that the future of the property is someone else's responsibility.

Those described in the previous paragraph are not the ones who place a conservation easement on their land or offer their land as a valued sanctuary to be forever managed. The individuals who contact AOK about donating or bequeathing their property are unique; likewise, their ideas of how their farm, ranch or other land should be managed in perpetuity are highly individualized.

Each person or family that approaches AOK about possibly offering their land has idealized reasons for doing so. Some are interested in maintaining the property in something resembling its current condition. That might mean a pasture or prairie would never be developed, that the family name be retained, or that certain specific features be protected. In some instances, individuals have bought property with high natural values—old growth forests, virgin prairie, threatened wetlands—and have undertaken further efforts to enhance these natural features; they want to see their handiwork passed on undamaged to future visitors.

What is the best way for landowners to assure their property is managed in perpetuity as they would like it to be? Conservation easement? A donation or bequest to an organization? A combination of the two? The best answer is not the same for everyone, and like so much in life, there is probably no perfect solution.

In our case, Carolyn and I are most interested in preserving magnificent bur oak trees that apparently sprouted shortly after the trees along Clark's Creek were clear cut for lumber, railroad ties and firewood in the 1860s. Moreover, the property has historical significance for the family, as some of Far West Farm was homesteaded by Carolyn's great-great-grandfather after he had spent a couple of years as a wagon master for Seth Hayes on the

Santa Fe Trail. Carolyn and I did not have children, so there is no pressure to provide for our posterity.

We have chosen ownership by AOK, rather than donation of a conservation easement, because of the enhanced management AOK can provide.

Carolyn and I have thought long and hard about how AOK approaches the issue of sanctuary management and where we fit into the process. I'd like to share some of my thoughts on AOK's sanctuary management. Elsewhere in this issue of *Prairie Wings* is additional information from The Land Trust on the strategy of conservation easements (pp. 27-28).

AOK's promise to manage land in perpetuity is not one that is taken lightly. Discussion of sanctuary management is a constant within AOK—management strategies evolve within discussions among the Sanctuaries Committee and other trustees as issues arise. Fundamentally, sanctuary management is guided by agreements between donors and Audubon of Kansas, and those agreements have gotten more detailed as each property has been acquired. No matter how detailed an agreement is, however, no agreement can anticipate all of the necessary day-to-day tasks . . .

Audubon of Kansas first promise to manage property in perpetuity was made shortly after the turn of the century, when rancher Harold Hutton was looking for a permanent home for the 5,000-acre ranch he and his wife Lucille owned along the Niobrara River near Bassett, Nebraska. Harold approached several organizations to see whether they were interested in permanently owning the ranch. He was familiar with the National Audubon Society (NAS), which through its regional director Ron Klataske had been involved with efforts to secure National Wild and Scenic River status for the Niobrara River, which was under threat of being dammed.

None of the national or Nebraska organizations that Harold approached would promise "Never to sell the ranch." After the NAS closed its regional operation, the Kansas Audubon Council grew to form Audubon of Kansas, with Ron Klataske as its Executive Director. To the surprise of many, including the recently formed AOK, Harold Hutton offered his ranch to the fledgling nonprofit, but only with the provision that the ranch function in perpetuity as a working ranch and wildlife sanctuary.

Hutton Sanctuary came with a significant endowment, because managing a 5,000-acre ranch, especially one eight hours away from AOK's center of operations in Manhattan, requires a lot of hands-on effort. Eastern red cedar trees the scourge of Flint Hills ranches, are a persistent problem at the Hutton property. The ice jams and flooding on the Niobrara during the winter of 2019-2020 tore out fences. Managing rangeland for cattle and wildlife can produce conflicts, and poachers find the deer and turkeys on the sanctuary tempting. The Hutton ranch house and the adjacent Lazy Easy Ranch always have structural needs. Briefly stated, management is an ongoing, and evolving, process.



Gary contemplates one of the massive bur oaks on his property in western Morris County. Photo by Kelley Hurst

Managing the land also has its rewards. The Hutton sanctuary is now home to a resident pair (and two adolescent) Sandhill Cranes. Bobolinks are annual nesters. Elk have become regulars on the property. Trail cameras on the sanctuary have recorded a mountain lion and in 2020 the sanctuary was used as a release location for a bobcat that had been rehabilitated after being hit by a car. An ongoing major effort at Hutton will result in placement of a significant portion of a wetland along the Niobrara River in the federal Wetland Reserve Program.

AOK's second holding came to us as a result of an organization not planning for managing land in perpetuity. Early this century the Kansas State Historical Society concluded that it did not have the resources to manage all of the various properties that had been bequeathed to it over time. Among those properties was Mount Mitchell, a hilltop prairie a few miles south of Wamego that was deeded to the Kansas Historical Society in 1953 by the son of Beecher Bible and Rifle Colony leader Captain William Mitchell. Captain Mitchell's home, located a half mile from Mount Mitchell, was a stop on the Underground Railroad, which helped escaped slaves on their trek to freedom.

In 2006, the Kansas Legislature approved transfer of Mount Mitchell to Audubon of Kansas, as a 501 (c) (3) not-for-profit

organization. Since the 30-acre parcel did not come with an endowment, and AOK was operating with only one staff member, AOK welcomed the involvement of a local group, the Mount Mitchell Prairie Guards, which had recently organized, and the Kansas Hiking Association.

The Mount Mitchell Prairie Guards have done invaluable work over the years, but their primary interest is in history and for a prairie duplicating the condition of the land in the 1850s, with no hint of woody vegetation. AOK's traditional priorities have called for a more holistic approach that takes varied wildlife habitat into consideration. The only guidance in the legislation transferring the property from the Kansas Historical Society to AOK is that the land should be open as a public park. The lack of carefully considered, detailed management directives in the legislative transfer of ownership of this property has rendered the satisfactory resolution of differing ideas about what is to be done in management a recurring difficulty. The questions about how to manage the park put a spotlight on the need for carefully considered directives as donor and beneficiary plan for perpetual management.

AOK's third sanctuary is the Connie Achterberg Wildlife-Friendly Demonstration Farm in Lincoln County, a 240-acre working farm

that comes with farm neighbors and all the associations with state and federal agricultural agencies common to modern farming. The employees at the USDA's Farm Service Agency offices are extremely helpful to all farm owners and operators. AOK has increased its ties to the Natural Resources Conservation Service (NRCS) through planting of Conservation Reserve Program (CRP) plots and Pollinator Plots. AOK's management resulted in the return of Northern Bobwhite quail to the property while Connie Achterberg was still alive—particularly rewarding as they were Connie's favorite bird.

As one would suspect, there are rules to follow and a certain element of bureaucracy that AOK or anyone else dealing with USDA must meet. I thought of that while spraying unwanted trees in our filter strip when I came across three small wild plum trees at the intersection of tilled field and filter strip. I wondered whether NRCS would approve my allowing a plum thicket to develop in what appeared to be a perfect place to host a covey of bobwhites. At the Achterberg Sanctuary AOK has a filter strip purposely interspersed with shrub thickets, but when I had asked NRCS whether I could allow some black walnut trees to grow within the edge of the filter strip nearest the creek I was told that "NRCS is paying you to grow grass, not trees." I wondered: "Would a plum thicket pass muster when walnut trees wouldn't?"

The Achterberg Sanctuary operates like most other Kansas farms, which in this case means AOK works with a tenant, is involved with marketing the grain and soybeans grown on the property and juggles those responsibilities with efforts to make the property available to the public. One of the interesting management issues that has arisen is that AOK has a goal of developing a trail network that would make the Achterberg Sanctuary more accessible to the public, but NRCS rules do not allow construction of permanent trails across CRP plots. Clearly, only experience can produce awareness of all the additional considerations to address as we contemplate how to manage future sanctuaries.

We at AOK feel owning land is a responsibility.

Promising to manage land in accordance with someone else's ideas is by several orders of magnitude more difficult than temporarily owning land or monitoring it through a conservation easement. Ideas of what is natural for a particular piece of property vary greatly. Landscapes are constantly changing because of the natural forces affecting our environment: climate change, local weather events, ecological succession, events taking place on adjacent properties, insect pests, invasive weeds, and perhaps human population growth or decline in the immediate area or region.

A conservation easement can prevent a prairie from being ploughed, property from being subdivided or perhaps trees from being cut, but it offers no assurance that a pasture be kept free of *Sericea lespedeza*, that bush honeysuckle be kept out of a forest, or that hunting, trapping or other activities be allowed or precluded. As the owner of a sanctuary, AOK can do what is necessary to keep unwanted developments from happening. It also has the capacity to adapt to changing conditions.

Another consideration to gifting land to AOK or donating a conservation easement to another organization is that such an action comes with a price tag. Because of the costs associated with managing a property, AOK will typically seek establishment of an endowment to manage the land over the long term. The size of an endowment varies significantly for a variety of reasons: the size of the property, the complexity of habitats and uses of the property, and the proceeds generated from the crops, pasture rental, or other income-producing features of the property. AOK might also accept the responsibility for maintaining significant structures on the property. As a good-will gesture to neighbors and county ratepayers, AOK assumes responsibility for paying all taxes on its sanctuaries, even though as a nonprofit it would not be required to do so. A primary public benefit is that property owned by AOK can be accessed by the public for recreation or scientific research. Individuals who purchase land that comes with a conservation easement on it have no responsibility to make their property accessible to the public, though some do.

Any property offered to AOK is first evaluated by members of the Sanctuaries Committee. Priority is given to property with exceptional environmental values, such as the presence of important species, high quality natural habitat, recreational or educational attractions or other attractive qualities.

Once the Sanctuaries Committee has evaluated a property, AOK and the owners of property under consideration for the Sanctuaries program develop an agreement that defines how the property is to be managed in the future. At a minimum, the agreement covers such issues as any existing tenants, how any USDA program income should be shared with a tenant, and whether hunting, fishing, trapping, timber cutting, etc. would be allowed. The size of an appropriate endowment is discussed: properties with more complex management issues, such as maintenance of existing buildings or infestations of invasive plants like "old world" bluestems, *S. lespedeza*, etc., might necessitate a larger endowment. On the other hand, a property with higher management inputs might also generate more revenue from crops and grazing. While a home on a property might increase the necessary upkeep, it might also result in an opportunity to rent the home to an individual who could serve as a caretaker for the property. AOK recognizes that every property is unique and thus its management must be customized to fit. The final decision as to whether AOK will accept responsibility for permanent ownership and management of a property rests with the AOK Board of Trustees.

I know from personal experience that land management takes lots of planning and physical effort—something that has gotten more difficult as I have aged. AOK's commitment to manage our land as its sanctuary reassures Carolyn and me that the bur oaks and wildlife of Far West Farm will provide a habitat to be enjoyed by the descendants of the resident plants and creatures, as well as human visitors, long after we are gone.

Anyone interested in learning more about AOK's approach to gifting or bequeathing property to AOK under its Sanctuaries Initiative is encouraged to contact Jackie Augustine, AOK's Executive Director at jackie@audubonofkansas.org or 785-537-4385.



Abundant native wildflowers at a prairie remnant south of Topeka. Photo by Kathy R Denning

CONSERVATION EASEMENTS:

Kansas Land Trust's Legal Tool for Preservation of Landowner Wishes

by Liz Weslander, KLT Communications Specialist

The native prairies of Kansas are ecological treasures thousands of years in the making. In 1990, a single plow destroyed one of these treasures overnight.

The destruction of the 70-acre Elkins Prairie west of Lawrence was carried out by a new landowner who wanted to ensure that the land would be available for development. Ignoring requests from the county, city and local advocates to preserve the land, the owner plowed the prairie in the dark hours of an early November morning.

While the destruction of the Elkins Prairie was a tragic event, it was also a catalyst for positive change.

“Once the Elkins Prairie was plowed, all those ecological values of that particular prairie were gone forever,” said Kansas Land Trust Director Jerry Jost. “But the folks who loved that prairie got together and thought about what they could do to prevent other prairies like this from being destroyed in the future.”

The first action the group took was establishing the Kansas Land Trust. Recognizing the land trust needed a tool that would allow landowners to conserve their land, KLT worked in collaboration with a variety of agricultural and environmental organizations to

promote and bring about state legislation that authorized the use of conservation easements in Kansas.

A conservation easement is a recorded deed that a landowner can voluntarily place on a piece of property to specify the allowed land uses, and restrict future development on the land. These rights and restrictions stay with the land through all future landowners. Conservation easements are the central tool used by KLT, as well as other land conservation organizations in the state such as the Ranchland Trust of Kansas and The Nature Conservancy.

“A conservation easement locks in current land uses on a property for future generations,” said Jost. “It allows the farmer, rancher or landowner to continue farming the cropland or grazing the prairie, and it also allows that landowner, and all future landowners, the opportunity to improve and restore habitat. What the easement restricts is plowing prairies or clear-cutting woodlands. It also restricts residential development or non-ag commercial development. It’s really a tool to protect open space.”

Since its founding in 1990, the Kansas Land Trust has established 77 conservation easements across 22 counties in Kansas. The easements protect a total of nearly 40,000 acres of land -- a conservation footprint equal to the size of Topeka.

In contrast to Audubon of Kansas sanctuaries, KLT does not take on ownership or management of the land where it holds conservation easements. Instead, it works with the landowners by doing annual monitoring to make sure that the current land uses are in agreement with the easement donor's wishes to conserve the wildlife habitat and agricultural uses on that land.

"We work with voluntary landowners who want to leave a conservation legacy," said Jost.

"Our job is to enforce the conservation easement terms and thereby enforce the conservation of the natural heritage of that land for future generations."

Although their tools for land conservation differ, Jost said that KLT and AOK share a common interest in protecting the natural heritage and natural resource base in our state, which includes protecting habitat for wildlife, birds and insects.

While many of KLT's conservation easements protect important bird habitat, two conserved properties near Fort Riley in Manhattan are particularly significant because they provide habitat for bird species of concern in the northern Flint Hills. A 289-acre easement north of Manhattan donated by Jane Laman in 2006 protects native tallgrass prairies that are home to the threatened Greater Prairie-Chicken. The 261-acre Mohler easement near Milford Lake, established by Mark and Deborah Mohler in 2010, has a healthy population of the rare Henslow's Sparrow on its protected native tallgrass prairies.

Both of these protected properties are part of a conservation partnership between KLT and Fort Riley through the Army Compatible Use Buffer Program (ACUB). This program provides funding for KLT to work with voluntary landowners near Fort Riley who want to conserve their land. The Fort Riley military installation is the largest tract of federally owned tallgrass prairie in the U.S. and has been recognized by the American Bird Conservancy as a "Globally Important Bird Area."

While much of KLT-protected land is located on private property, a handful of the properties are open to the public. The 187-acre Willis Prairie at Prairiewood in Manhattan is open for limited hours each Sunday and the woodland trails at the Lawrence Nature Park in west Lawrence are open daily.

Landowners interested in leaving a conservation legacy are encouraged to contact Jerry Jost at the Kansas Land Trust. To learn about upcoming events and read stories about all the lands they conserve, visit www.klt.org and sign up for their monthly e-news.



Two-spotted longhorn bee (*Melissodes bimaculatus*) collecting pollen from purple poppymallow (*Callirhoe involucrata*) in the author's pollinator-friendly garden in Lenexa.
Photo by Kathy R. Denning

AUDUBON OF KANSAS Sanctuary Update

DR. JACKIE AUGUSTINE

HUTTON NIOBRARA RANCH WILDLIFE SANCTUARY

The Niobrara Sanctuary is a 5,000-acre ranch and wildlife sanctuary located along the Niobrara National Scenic River near Bassett, NE. It consists of spectacular scenery, including upland prairie, steep canyons, woodlands, and high bluffs that overlook meadows, marshes, and riparian forest along the river, which forms the Sanctuary's northern boundary. Two guesthouses provide opportunities for visitors to experience the diverse wildlife and dark skies.

So much is happening at Hutton that it is hard to know where to start. This spring, the Bassett and Newport Volunteer Fire Departments were able to burn almost 200 acres of prairie to manage cedar encroachment. Utilizing the Environmental Quality Incentives Program (EQIP), a cost-share agreement with the Natural Resources Conservation Service, we were able to remove cedar and sumac from an additional 50 heavily-infested acres. The same program supported the installation of a solar-powered well to provide water to cattle, instead of allowing them access to the river where they may damage the stream bank. A hail storm in July meant we had to replace the roofs on both the Hutton house and the Lazy Easy, the latter of which was not covered by insurance due to the advanced age of the roof. Half of the Hutton house's siding also had to be replaced. The National Park Service documented successful breeding of two species of birds federally listed under the Endangered Species Act: the endangered Interior Least Tern and the threatened Piping Plover. They both nested on sand bar islands in the Niobrara River. Finally, we are welcoming the local community to Hutton through inviting neighbors to an 'open house,' welcoming high school and middle school children as they visit the property, and providing a meeting venue for a civic leadership group that covers three counties. Although I could expound on any of these, one partnership with the Nebraska Game and Parks is a bit more unusual: the testing of a fish ladder. See the side box for more information.



Sunset over the Niobrara River as viewed from Hutton.
Photo by Dr. Jackie Augustine

We've all seen videos of salmon jumping out of the water to get over a small waterfall. They do this to get upstream to spawn. But have you ever wondered how small fish move upstream? Even though small fish do not make long-distance migrations like salmon, they do move up and down streams to take advantage of available food sources and access suitable habitats for various life stages. However, culverts that pass under roads can create a hindrance to their movements. As culverts age, a deep pool generally forms on the downstream side due to erosion, creating a drop in a couple inches to a couple feet of elevation between the drain and the surface of the pool. There is no way a fish a couple inches long could possibly climb if the distance was more than a couple inches.

But why would anyone care about such small fish? First, little fish are an important food source for larger fish, herons, and kingfishers. Second, they are an important component of a healthy stream ecosystem. Lastly, there are several unique species of fish found in Willow Creek which runs through Hutton. The cool water streams in the Sandhills of Nebraska support several species of fish whose nearest populations are in cooler climates of states such as Minnesota and Wisconsin. It is believed the species expanded their ranges to Nebraska as glaciers advanced south about 12,000 years ago. As glaciers retreated, small pockets of the fish remained where cool groundwater flows into the stream to counteract summer heating. Three fish occur in Willow Creek that are of particular interest to Nebraska Game and Parks. The blacknose dace (*Rhinichthys atratulus*) is a species of concern in Nebraska. Blacknose dace have one of the most specialized habitat requirements of all Nebraska fishes. They need clear, small streams with moderate to swift currents and gravel bottoms. A second fish of interest is the Finescale x Northern Redbelly Dace (*Phoxinus eos* x *Phoxinus neogaeus*) hybrid. Its coloration from top to bottom starts with brown-gray back, then an iridescent, silvery band, and lastly a dark, thick gold-orange stripe along its side. They have a unique method of breeding compared to other fish – they breed parthenogenetically where females produce only daughters (males are not needed to complete reproduction). Although considered secure in most of its range, Finescale x Northern Redbelly Dace is considered a threatened species in Nebraska. The Plains Topminnow (*Fundulus sciadicus*) is another species that was observed. They are invaluable to the functioning of healthy streams and upland habitats because they feed heavily on mosquito larvae. They are nearly endemic to Nebraska, meaning that the species is rarely found outside of Nebraska. Plains Topminnow are doing well in the Sandhills but suffering substantial declines elsewhere due to habitat loss and the introduction of *Gambusia* (mosquitofish) which outcompete Plains Topminnow for habitat and food.

To allow a path for little fish to move upstream, Nebraska Game and Parks tested 'fish ladders'. These structures



Hutton fish ladder. Photo by Nebraska Game and Parks

create a series of pools with 1-2 inch elevation changes between each pool. This allows little fish to move upstream. One of these fish ladders was tested on Willow Creek on the Hutton Niobrara Ranch Wildlife Sanctuary for one week in mid-June. Before installation, a crew from Nebraska Game and Parks surveyed the fish above and below the culvert to see what is currently present. When the fish ladder was installed, they also placed a trap at the top of the ladder to determine which fish used it. After the one week study, it was found that blacknose dace had used the fish ladder to travel upstream. The researchers from Nebraska Game and Parks were pleased, not only because the fish were able to use the ladder, but also that the ladder withstood a heavy rainfall event. AOK plans on working with Nebraska Game and Parks to install a permanent ladder in the future.

We are honored to host these small fish with large importance at the Hutton Niobrara Ranch Wildlife Sanctuary.



Two fish caught by Nebraska Game and Parks - Blacknose Dace (top) and Creek Chub (bottom).

ACHTERBERG WILDLIFE-FRIENDLY DEMONSTRATION FARM



Blazing star within a pollinator plot at Achterberg. Photo by Dr. Jackie Augustine

This 240-acre property is a special central-Kansas farm in Lincoln County. Creeks meander through substantial forest and diverse habitats that were once common on Kansas farms. AOK has planted filter strips of native grasses and wildflowers along the edge of every field. Pollinator habitat complements an eight-acre remnant prairie meadow. Brown thrashers, wild turkeys, kingbirds, woodpeckers, and wrens are among the regulars.

As with Hutton, the focus of our efforts on Achterberg include habitat management and connecting the sanctuary with the community. In spring, we burned prairie buffer strips that almost encircled the property. Unlike Hutton where cedars are a problem, the burns were conducted at Achterberg to remove an invasive elm. If left unchecked, these elms would crowd out and shade the wildflowers which butterflies and birds rely on for food. We are also increasing our community outreach by maintaining 0.6 miles of trails for the public to enjoy and meeting with local community leaders. We are exploring an opportunity to restore a post rock fence to the property. These fences, made out of native limestone, were popular in the region at the time of European settlement when very few trees were present on the landscape to make fence posts.

MOUNT MITCHELL HERITAGE PRAIRIE



Mount Mitchell in March.

The 47-acre Mount Mitchell Heritage Prairie is located approximately three miles south of Wamego, Kansas. This prairie remnant is associated with Captain William Mitchell, a key figure on the Underground Railroad prior to the Civil War. Changing arrays of wildflowers are in bloom throughout most of the growing season, and the historical nature of the property makes it a destination at any season. Trails extend to the summit of the prominent hill. The property was conveyed to Audubon of Kansas from the Kansas Historical Society via a legislative order, and is managed jointly with the Mount Mitchell Prairie Guards.

We have made a concerted effort to document the birds, wildflowers, and insects on all of AOK's properties this year. Birds are documented through breeding bird surveys conducted in June. Wildflowers and insects are documented through photography and identified by posting them to iNaturalist. This app and website allow others to comment and suggest



Whorled milkweed (*Asclepias verticillata*)



Flat tailed leafcutter (*Megachile mendica*) on sunflower.



Differential Grasshopper (*Melanoplus differentialis*)

identifications of species. If two people agree on an identification, it is considered a ‘research grade’ observation.

Although Mount Mitchell is the smallest property owned by AOK, it currently has the most species identified (188 species at Mount Mitchell vs 68 species at Achterberg and 94 at Hutton). A major reason why Mount Mitchell has the most species identified is that the property is heavily utilized by the public, whereas I am the primary observer on Achterberg (100% of observations) and Hutton (88% of observations). At Mount Mitchell, my observations only account for 69% of the total observations.

Of the 188 species identified, 53% are plants and 37% are insects. The rest are vertebrates, 2 species of spiders, and one fungus. Of the insects, butterflies or moths were the most common (27%), followed by grasshoppers and katydids (19%) and beetles (17%). I thought the grasshopper diversity on this site was remarkable given that grasshoppers, katydids, and crickets only make up 2.4% of the worldwide insect diversity (according to Wikipedia). I had to learn more about grasshoppers so I turned to a grasshopper expert with ties to Manhattan, Dr. Ellen Welti. See the side box for more information.

Dr. Ellen Welti received her PhD from Kansas State University in 2017. Her dissertation was entitled “Ecological networks of grassland plants and arthropods.” In 2020, part of her dissertation was published in the prestigious journal, *Proceedings of the National Academy of Science*. The manuscript provided one reason why we are seeing declines of insects throughout the planet: a phenomenon called the nutrient depletion hypothesis. As global climate change proceeds, more carbon dioxide is available in our atmosphere. Because plants use carbon dioxide to make sugars, additional carbon dioxide actually makes plants grow faster – but at a cost. The concentration of beneficial nutrients, namely nitrogen, phosphorus, potassium and sodium, goes down. Therefore, herbivores, like grasshoppers, are eating nutrient-poor diets, which in turn may limit reproduction. This finding is particularly troubling because “Unlike other potential drivers of insect declines—habitat loss, light and chemical pollution—nutrient depletion may be widespread in remaining natural areas” (quoted from the manuscript <https://www.pnas.org/content/117/13/7271>). Given her important work studying grasshoppers, I asked Dr. Welti some general questions about grasshoppers.

Why study grasshoppers?

Grasshoppers are a great taxonomic group to work on for several reasons. First, they are a key member of grassland systems. While they have likely existed on Earth for the last 300 million years, they became more dominant and diverse with the rise of grasslands around 60 million years ago. They are a dominant herbivore in grassland systems, and thus can have a big impact on the ecosystem. They are also a key food source for many other taxa including birds, reptiles, spiders, and mammals (small mammals but also larger ones like foxes and coyotes). Further, while there have not been that many studies on long-term trends in grasshoppers, the International Union for Conservation of Nature did red list about 25% of the European Orthopteran species so there is some evidence that grasshoppers are declining. There are also a number of practical reasons: they are easy to sample with minimal equipment (e.g. a sweep net), they are common and easy to find, and they are relatively non-diverse compared to other insect groups which makes them feasible to identify--there are roughly 50 species of short-horned grasshoppers that have been recorded on Konza Prairie, with about 30 of these commonly encountered. This is compared to likely thousands of species of some of the hyper-diverse groups of flies, wasps, beetles, and moths.



Spotted Bird Grasshopper
(*Schistocerca lineata*)



Admirable Grasshopper
(*Syrbula admirabilis*)



Two-striped Grasshopper (*Melanoplus bivittatus*) on sunflower.

Why are grasshoppers important to grasslands?

Grassland birds are a group that has been seeing some of the most severe declines in the past decades, and grasshoppers are a key food source for many of these species. There are also a number of parasitoid species which depend on grasshoppers, including some fly species which are important pollinators as adults (in the Flint Hills area, one example of this is the Nemestrinidae flies). Besides being a major source of protein for birds and other predators, grasshoppers play several key roles in grassland ecosystems. They contribute to nutrient cycling through herbivory and defecation, and also transport nutrients to different grassland areas. Different grasshopper species eat different plant species, and thus control plant community composition as well as alter plant biomass. Grasshopper species also compete with each other, so a diverse grasshopper community is less likely to produce a species that will swarm and be a pest.

Please describe the natural history of grasshoppers.

The short-horned grasshoppers are primarily herbivores, and can generally be grouped into species which primarily feed on grasses, those that feed on forbs, and mixed feeders. There are a few grasshopper species that tend to prefer a few host plant species (e.g. a large part of the diet of *Hypochlora alba*- the Cudweed grasshopper- is *Artemisia*, though even this species still eats a number of other forbs). Many species are fairly generalist in their diet and will regularly eat 20 or more plant species. Grasshoppers are often nutrient limited and will seek out plant species or parts of the plant that are more rich in particular nutrients like nitrogen and sodium. Other Orthoptera groups like katydids and crickets can be omnivores or scavengers, though some species are also primarily herbivores. Most grasshoppers overwinter as eggs underground, hatch in the spring, molt around five times- each time becoming a larger instar; then after the last molt they become an adult. In most species the adults have full-wings but several species remain short-winged. However, a number of species overwinter as nymphs. These species will be adults in late spring/early summer— if you see an adult grasshopper at this time of year, it likely overwintered as a nymph. While many species look quite different, there is one genus in this region with many similar looking species—this genus is *Melanoplus*. This is a confusing group that still needs taxonomic work for many “species” and often the best way to differentiate them is by male genitalia (sometimes it is nearly impossible to identify females). Differences in male genitalia are a key means of grasshopper speciation. Some species, most famously katydids and crickets, have unique songs which they can use to call mates of the same species. Probably the most important predators of grasshoppers in this region are wolf spiders and birds.

Anything else we should know about grasshoppers?

In the west, grasshoppers are often considered pests that eat crops and compete with cattle. Drought, a common phenomenon in the west in recent years, can increase grasshopper densities. This has led to large-scale aerial spraying efforts which have intensified in recent years, both by local land owners, and by government agencies. Large-scale aerial spraying may control grasshoppers in the short-term but it has many negative long-term effects. First, grasshopper species can compete with each other, which can keep individual species in check. Large-scale spraying selects for the few most robust species, which may cause larger outbreaks in later years. Spraying is indiscriminate and also can kill important invertebrates such as those that are predators and parasitoids of grasshoppers, as well as pollinators and seed dispersers. The loss of grasshoppers, an integral member of grassland ecosystems, will have strong repercussions up and down the food chain.

How We Got a Tallgrass Prairie National Preserve in the Flint Hills

by Dick Seaton

As early as 1832, artist George Catlin thought the Tallgrass Prairie should be preserved in a park. D.W. Wilder, editor of the *Hiawatha World*, wrote in 1884 that we “ought to have saved a...park in Kansas, thousand acres broad—the prairie as it came from the hand of God.” Walt Whitman said in 1889 that it is America’s “characteristic landscape.”

Since these early visionaries, many Kansans, including our own Ron Klataske, have lobbied for a Prairie Park in the Flint Hills. What we ended up with is the Tallgrass Prairie National Preserve near Strong City. It is not a national park, and is almost all privately owned by the Nature Conservancy. Established in 1996, it encompasses 10,894 acres of undeveloped prairie and is managed cooperatively by the National Park Service (NPS) and the Conservancy.

The back story is interesting, especially if you are a history buff.

Starting in the 1920’s midwestern scientists, concerned with loss of flora and fauna in the remaining prairie, began advocating for a national prairie park. The NPS initially took no interest, although National Grasslands, which are a different animal, came into existence under the U.S. Department of Agriculture’s Forest Service in the 30’s and 40’s.

However, in 1956 an Interior Department Advisory Board formally recommended studies for acquiring grasslands to be incorporated in the national park system. And gradually, the focus narrowed to a tallgrass prairie park.

In February 1958, a conference in Manhattan launched the first effort, to create a large park east of Tuttle Creek Reservoir, then under construction. Later that year NPS proposed a park of at least 30,000 acres somewhere in the prairie. By 1959, this proposal had crystallized to a 34,000-acre national park in Pottawatomie County. Two years later it had grown to 57,000 acres, and the Kansas congressional delegation introduced bills to create it. The Kansas legislature even appropriated \$100,000 to assist with the purchase.

But gradually, opponents began to organize. They made headlines in late 1961 when rancher Carl Bellinger confronted Interior Secretary Stewart Udall with a gun and ordered him back to his helicopter and off Bellinger’s land. After this so-called Twin Mound incident, the Pottawatomie County effort faded away.

Later in the 60’s NPS began restudying an earlier proposal to consider three possible Flint Hills sites, located in Elk County,

Chase County or Osage County, Oklahoma. In 1971 Congressman Larry Winn of Overland Park and Senator James Pearson introduced bills calling for a 60,000-acre park somewhere in Kansas. Then the lines of battle really began to form. Supporters came together in Save the Tallgrass Prairie (STP) and opponents countered with the Kansas Grassroots Association (KGA).

Winn introduced several more bills, but none succeeded. Then in 1975 NPS floated the idea of a “Flint Hills Agricultural Reserve.” Instead of a park, it would be made up of privately owned prairie under regional management, and would recognize the area’s local culture of ranching. By 1979 a coalition which included National Audubon, the National Parks Conservation Association, the Wilderness Society, Friends of the Earth, and the Izaak Walton League was promoting the idea of a “preserve.”

This represented the first major turn in the road, with support shifting toward something closer to what we now have in the Tallgrass Prairie National Preserve.

But a second major turn took place in 1988 when the Z Bar Ranch in Chase County came on the market, although legislative efforts went nowhere and support was quiet during the Reagan administration.

In June of 1988, National Audubon (NAS) acquired an option to purchase the ranch of almost 11,000 acres. Ron Klataske was regional vice president of NAS and was in charge of the effort to acquire it for a national park. He was opposed to condemnation, but suggested a purchase by the federal government, the state, or NAS, on a “willing seller” basis.

Editorial support came quickly from the *Wichita Eagle Beacon*, *The Emporia Gazette*, *The Topeka Capital Journal* and *The Manhattan Mercury*. The *Gazette* thought it “could be the opportunity of the century to preserve a bit of beautiful bluestem country.”

Proponents and opponents lined up once again. The idea of federal ownership seemed to be off the table. Even so, in April of 1991 the NPS actually came out against the proposal, on the ground it was too small. Both of our senators, Bob Dole and Nancy Kassebaum, declined their support.

But Kassebaum did not step away. Instead, she announced she would work for creation of a private foundation to purchase the ranch. With her well-known skills for consensus, she established



Spring sunset at Mount Mitchell. Photo by Dr. Jackie Augustine.

the “Kassebaum Commission,” which between 1991 and 1994 brought all the players together. A corporation, Spring Hill Z Bar Ranch, Inc., was created in 1992.

With Bill Clinton’s election in 1992 the NPS was again on board, and it signed a consent agreement with the corporation. NPS agreed to operate the ranch and the corporation committed to raise five million dollars within two years to buy the property.

Kassebaum’s intervention was the third major turn in the road, as it brought supporters together with the Kansas Farm Bureau and Kansas Livestock Association, both previous opponents.

Klataske then approached the National Park Trust, and on March 4, 1994 they announced an agreement to raise the \$4.7 million price and to keep the ranch in private ownership. By June the Trust had borrowed the money and purchased the ranch.

Meanwhile, NPS determined that it needed to own at least 180 acres in order to successfully manage the property as part of the national park system. Legislation was passed and signed by Clinton on November 12, 1996, creating the Tallgrass Prairie National Preserve. The “preserve” designation allows NPS more flexibility in managing the property than would a designation as a “national park”.

Along the way, the Trust was having trouble paying on the loan. Ed Bass of Texas came to their rescue with a \$1 million gift and \$2 million for a 35-year grazing lease. Then in April 2005 the Trust transferred title to the Nature Conservancy (TNC), through the Kansas Park Trust. So now we have the Preserve, operated under a cooperative agreement between NPS and TNC, which aims to preserve some prairie, while sharing the story of area ranching, Native American history of the region, and the diverse ecology of the Flint Hills.

Although we don’t have a real prairie national park in the Flint Hills, we have saved and preserved a tract “ten thousand acres broad,” as wished for by the Hiawatha editor. We also have many ranchers who continue their good stewardship of the land. In addition to the Tallgrass Prairie National Preserve, we also now have some 110,000 acres of Flint Hills prairie subject to conservation easements held by TNC, Kansas Land Trust, Ranchland Trust of Kansas and the U.S. Fish and Wildlife Service.



North American River Otter
(*Lontra canadensis*).
Photo by James Bresnahan

A RIPPLE OF FUR:

The Return of the North American River Otter

Elizabeth Dodd

When did river otters vanish from Kansas? Scientific literature, decades of it, suggests that the animals were extirpated more than a century ago. If we trace the currents of those studies to their headwaters, we find that the last official record consists of just two sentences, not even as many words as a person could count on the toes of an otter before the animal slipped from the bank and swam away. D. E. Lantz, from the US Department of Agriculture, consigned them to the past in his *List of Kansas Mammals*, published in 1904: “Formerly common, but now rare. One was captured near Manhattan in September, 1904.” The North American River Otter was, by that time, reduced to something less than a third of its historic range in the contiguous states. Despite legislation passed in 1911 prohibiting their hunting or trapping, water pollution and habitat loss, unaddressed for decades, ensured that Kansas saw no rebound in the animals’ population. In the years following WWII, as DDT and other agricultural pesticide use expanded, the concentration of contaminants at each step in the food chain would have posed a danger to any top predator, including the piscivorous, or fish-eating, otters. By the 1970s, the US Fish and Wildlife Service grouped Kansas among eleven states where the species was extirpated.

However, the 1970s were a time of engaged environmental awareness in the country and efforts to reverse decades of escalating

pollution and habitat destruction attracted widespread popularity and, critically, bipartisan political support. Following nearly a decade of public conversation spurred by the publication of *Silent Spring*, Rachel Carson’s denunciation of sweeping pesticide use, the Environmental Protection Agency was formed to establish and enforce standards for air and water quality. Congress approved the Endangered Species Act, giving an essential tool to environmental organizations and wildlife management agencies alike, to aid in preserving not just the DNA of a species residing in the bodies of individuals, as earlier hunting legislation had done, but as the continued presence of the species in intact ecosystems, as well.

In this new policy environment, a coordinated effort was launched to reintroduce river otters in sufficient numbers to establish viable breeding populations, with important benchmarks set in states surrounding Kansas. This “species restoration effort,” as the USFWS explained, would be “slow and expensive”—the estimated cost of capturing a single individual would be equivalent to \$1000 in today’s prices. From 1976 to 2010, more than 4100 otters were captured in areas of abundance and relocated across twenty-two states. The earliest releases took place in Colorado, eventually totaling eight-six individuals. The state of Missouri was a leader in both developing protocols and racking up numbers of animals imported—over eleven years, propelled by the personal charisma



and administrative ability of biologist Dave Erickson, the Missouri Department of Conservation Office relocated 845 individuals, close to twice as many as the next runner up (which was Tennessee) and published guidelines for future efforts. The biologists recommended a minimum of 20 individuals for any release site; they used a radio-implant tracking system recently developed by researchers in Idaho to follow the animals' dispersal after being released. Meanwhile, Nebraska received 159 individuals from a variety of locations—Alaska, British Columbia, Michigan, Louisiana, Idaho, Minnesota, and Ontario.

It's both sobering and encouraging to examine the records from what could be called a campaign to enable otters to retake their former territory. Globally, thirteen species evolved in nearly every continent (excepting Antarctica and Australia), although an aquatic rodent, the indigenous rakali, fills that habitat niche in Australia, and in New Zealand—the islands whose only native land mammals were bats—the *waitoreke*, an otter-like mammal, emerges occasionally from mysterious, rare 19th century reports. From the six-foot long Giant Otter (*Pteronura brasiliensis*) of South America (estimated at 5000 individuals) to the Asian Small-clawed Otter (*Aonyx cinereus*), which measures under two feet, the many forms that these water-weasels take have been in decline. The Hairy-nosed Otter from Southeast Asia was declared extinct in 1998 but they have subsequently been rediscovered in Vietnam, Sumatra, and Cambodia; the current population is estimated at fewer than three hundred individuals.

So often the stories about restoring wildlife populations balance on almost impossibly small numbers, located in isolated pockets—the single colony of Black-footed Ferrets rediscovered in dusty Wyoming; the 27 California Condors trapped from the Coastal Range and caged for breeding. A similar precipice, or bottleneck,

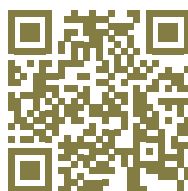
did not befall *Lontra canadensis*. The national recovery campaign involved more than forty source locations, generally grouped from the Northwest, the Great Lakes, the Mississippi Delta, and a few locations along the Eastern Seaboard.

Kansas joined this effort in 1983. The Kansas Fish and Game Commission's Research and Survey Office, located in Emporia, conducted extensive reviews of potential release sites. The commission's furbearer biologist at the time, Neil Johnson, assessed likely locations, based on the water quality and the fact that few people lived in the areas. The list was narrowed to two possibilities: Mill Creek in Wabaunsee County and the South Fork of the Cottonwood River in Chase County. Because of the proximity to the Emporia office, the latter was selected, and the team prepared a color-coded map indicating permission from local landowners to work on their property, as they had earlier with an initiative to release and study pronghorns. Gerald Horak, a wildlife biologist with the Fish and Game Commission, had also studied prairie-chickens in Chase County, and Lloyd Fox, retired Big Game Coordinator for Kansas, believes that the contacts made then were "extremely valuable. People knew [Horak] and liked him and therefore trusted things he supported," Fox recalled.

Soon the Kansas office contracted with the Minnesota Department of Natural Resources. Two former conservation officers, Ray Thorpe and Marvin Smith, were paid \$150 per animal to trap and transport otters, by commercial airline, to Kansas City. Seventeen individuals originated at Rainy Lake, in Voyageurs National Park; later, two additional otters arrived from Idaho. Local veterinarians surgically implanted transmitters to allow tracking of the animals. All the newly-arrived northerners were released onto a gravel bar of the South Fork of the Cottonwood River, not far from Sharps Creek.



Two North American River Otters (*Lontra canadensis*).
Photo by James Bresnahan



Point your smartphone's camera at this code or follow this link <https://youtu.be/ToFkk2RUR0k> to see video filmed by Don Eccles of River Otters in Southeast Kansas eating and socializing.

Don Eccles was an undergraduate student at Emporia State University when his professor, Dwight Spencer, asked him if he'd like to be involved in the state's reintroduction program. It would start as a summer job: helping to handle the animals from the time they arrived in Kansas City to their release on the river. Then he'd shift to monitoring and documenting the animals' dispersal. "One requirement of joining the project was completing a master's degree," he recalled. No question about it: Don said yes.

On a recent day in September, goldenrod-bright and warming towards ninety degrees, Don returned to find the release site, the first time back in about three decades. By then he, and the senior members of the release team, were all retired. Ownership of property had changed hands—the release site, and most of the initial home ranges the otters expanded into, was all private land. After a few false starts, and some suspicious questioning from a local landowner, three otter enthusiasts—photographer Dave Rintoul, Don himself, and I—found our way to the tree-lined banks. We looked for prints in the mud (raccoons, but no sign of otters that day), we watched the placid current, and Don recounted his work tracking the animals following their release.

For a couple of years, Don's day job was basically moving across the landscape, seeking out the otters. At first, the team relied on radiotelemetry—the implanted transmitter had an expected battery life of up to two years. Locating otters mostly meant hiking the riverbanks and canoeing the waterways carrying the radio receiver like a repurposed dowsing rod. "Ofentimes," Don later wrote, "no signal could be picked up unless the searcher was positioned over the otter with the antenna pointing down. Sometimes no signal could be picked up even this close when I knew an otter was in a den directly beneath me." Aerial monitoring, though both less romantically rustic and more expensive, allowed for greater distance of detection. By plane, the researchers could locate animals who

traveled surprising distances over land. The transmitter's detection distance on the ground was about a quarter of a mile, so it was important to follow the stream's every bend and turn. Canoeing the watershed became an old-tech augmentation of the high-tech pursuit.

"That's when I really came to love the Flint Hills," he said. I thought at first that must mean he'd grown up far from the area, but no—his family lived in rural Gridley, less than fifty miles from the unique Flint Hills landscape where his wildlife study drew him ever more deeply into a sense of place.

Throughout the summer of 1983 and into the school year, working weekends and during breaks, Don combed a sizeable part of the Cottonwood River watershed, recording each radio-signaled encounter. Only three times during the study period did he actually see one of the otters he was pursuing so intently. Twice, there were brief encounters. But on one occasion, for roughly half an hour, he watched the animal ice fishing—diving into a hole in the ice, remaining submerged for up to a minute or so, and then popping back out to eat its catch. "Sometimes," Don recalled, "the otter would climb completely out of the water to eat, and sometimes it would just hold onto the edge of the ice and gulp down its food."

Later, for his master's thesis, Don explored other surveying methods. Otters establish scent stations, where individuals with overlapping territories deposit feces, urine, and individual updates about health and fertility above the waterline. At these locations, also called "latrines," persistent researchers, as well as other otters, can keep updated about the population. Monitoring otters through their tracks in the mud is called a "sign survey." Outside the clear, instructive pages of a field guide, it can be hard to tell one riparian visitor from another, especially raccoons from otters. Don took a trip to the Sunset Zoo in Manhattan to study real otter footprints in real mud.

Overall, the nation's otter restoration effort is an encouraging story. The widespread reintroductions have been called "one of the most ambitious and extensive carnivore efforts in history." A team of researchers recently estimated that, across the contiguous US, the distribution of river otters increased by 13.7% since 2000 and the animal now occupies 90% of their former range. However, the campaign had many fatalities along the way. It's unclear from the national data how many of the 4100 individuals transported for reintroduction actually established a territory and became part of a breeding population. Otters—so ebullient and energetic if you can glimpse them without being seen yourself—seem to be mortally prone to stress in captivity. In his 1961 memoir, *Ring of Bright Water*, Gavin Maxwell described the otters he attempted to raise as pets entering what he called "a coma" as "a voluntary act independent of exhaustion"—something that sounds, in his description, like acute despair. Of the nineteen otters who touched down in Kansas City, six died while still in captivity; the cause of death was shock and bleeding ulcers. Two others died within days of release. This sensitivity led the Kansas team to quickly change their protocol. Instead of holding the animals a few days following the implantation for observation, as they'd planned, they drove straight from the vet's to the riverbank, so that as soon as the animals emerged from the anesthesia, they could, in their rumpling gait, scurry away. Meanwhile, the Minnesota team injected the captives with valium to help control their stress.

The Kansas reintroduction effort, initiated nearly forty years ago, racked up a 42% mortality rate. Much has been learned in the decades since those early days of capture and transportation. And sometimes the animals were the victims of bad luck. "There was a nonstop flight from International Falls, MN to Kansas City, but flights from Idaho required at least one transfer," remembered Fox. "One of the otters from Idaho died during transport because of a delay at an airport. The other was stressed and died shortly after arriving in Kansas. We never attempted to obtain additional otters from Idaho."

The number of otters who actually dispersed into the watershed to—potentially—establish a breeding population was roughly half the number recommended by the Missouri biologists. Some accounts of the national effort report nineteen releases in Kansas, but the true number, after deducting the deaths both before and just after the intended release, was just eleven individuals. Despite that low initial total, river otters are again a lithe and lively part of the river ecosystem throughout the eastern—and, to a lesser degree, the central—part of the state.

In the years following the release program, the Kansas Department of Wildlife and Parks sought to monitor the presence of otters in the state. When animals were found as roadkill, or what's called an incidental trapping—turning up, say, in a trap intended for muskrat—the agency took note. When the Department received an otter carcass, it would undergo a necropsy to examine the animal's state of reproductive and nutritional health when it died. But in addition to these studies of the dead, the database increasingly contained reports of live sightings. By 1995, people were seeing river otters at least annually on the Flint Hills National Wildlife Refuge, thought likely to be the descendants of the transplants from Rainy Lake because of their proximity to the South Fork, and in Cherokee and Crawford County, along the border with

Missouri. Two years later, occasional reports came in from other Kansas rivers: the Verdigris, the Marais des Cygnes, the Kaw, the Delaware, and the Republican. The increasing population led the state, in 2011, to establish a trapping season from mid-November through March. Historically, otters were found in the western part of the state, but the drawdown of the aquifer and reduced stream flows means the western waterways, curtailed to intermittent or ephemeral flow, cannot offer habitat to support the animals.

Nonetheless, in official statistics from the 2020-21 season, trappers were bagging otters in twenty-four counties in the state; over the last decade, an average of 148 animals have been trapped by licensed hunters. The reintroduction and management of otters in Kansas has been housed, from the start, in agencies dedicated to hunting and the statistics collected pertain to the "harvest" of the animals' fur under that state's hunting and trapping regulations. There is no official reporting system for community scientists, no way to tabulate the chance sightings that birdwatchers, canoeists, hikers, or other wildlife enthusiasts may have along Kansas' waterways as the animals expand throughout the state. Still, Matt Peek, a furbearer biologist with Kansas Department of Wildlife and Parks, says the office has documented sightings from Saline, Sedgwick, Trego, Republic, and Smith counties. Another, which he considers a good report, occurred on the Republican River in the far northwestern corner of the state.

Perhaps, though, the otters were never truly gone. It might be possible, with DNA study, to determine whether the animals encountered in the state today are descendants from the individuals imported from Minnesota, or from the hundreds brought to Missouri from Louisiana. However, no one is undertaking that kind of research. But Don believes a remnant population of river otters was still hanging on in eastern Kansas, even before the animals began to arrive from their northern homes. A man he knew found a carcass on the banks of Rock Creek, near where it empties into the Neosho River—that is, actually in the city limits of Burlington, Kansas. The man, a schoolteacher, made his find not long before the Kansas release program had begun. "He was pretty certain what he had, and he showed it to me. I think it was an otter," Don said. Others point out that it can be easy to mistake beaver, otter, and muskrat; and it appears the skull was disassociated from a full skeleton, further inviting skepticism about its provenance.

Whatever happened to the animal "captured near Manhattan" in 1904? If it became part of a collection at Kansas State University, I can't find a record saying so. The Dyche Museum in Lawrence has a specimen that was collected on Mill Creek, which, about twenty-five miles as the crow flies, could be considered "near." However, the record is incomplete—the name of whoever trapped or shot the animal isn't given, and neither is the date—both of which have long been standard practice for specimens intended for scientific collection—although the cataloguing sequence indicates it would have been before 1910. The skull was, says a brief note, "from a mount"—and, in the dearth of other information, I find myself wondering just what that meant. At the time, no legislation regulated the taking or sale of pelts; probably the "mount" had never been the full body, posed in some diorama with painted riffles and ambiguous trees. More likely, it had been just a skull-on-a-pike, one label in a display case of "Kansas Mammals" or



It's been a long day for this River Otter
Photo by James Bresnahan

"Members of the Weasel Family." Maybe it was a curio, sealed in a bell jar with that much-repeated tag line, "captured near Manhattan, 1904." Somehow, it seems a little melancholy for the evidence from history to be so displaced, fragmented, and uncertain.

I've made a few visits to places where friends report they have seen otters, hoping to see one myself. One morning, a small group bushwhacked along a stream not far from the Big Blue River, searching for fishbones and feces, hoping we might find a latrine site. We came away with an eruption of chigger bites but no sign of otters. Another time, we peered at the bank of a clear-running creek, wondering whether the prints—set deep into very soft mud—could possibly be the otter a neighbor had seen nearby. Too small, we decided, even for a young-of-the-year.

But it's good to know the animals are out there, each one a ripple of fur gliding under a bower of cottonwoods or loping along the bank. A few years ago, while out bow hunting, Don found a family group—probably siblings, not yet separated after leaving their mother—in a stream in Coffey County. Six wriggling otters hauled out on a fallen log, some of them crunching and swallowing whatever prey they'd caught, others snuggling and grooming one another, a roiling visitation of energy and whiskers, fur and busy feet. Only a few minutes, they played out their carnivorous, vigorous lives. Then, as if on a signal, they slipped past a sparse canopy of oak leaves the color of dried blood, leaving the water still enough to reflect the pale, clean turquoise of the sky.

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European Starling (*Sturnus vulgaris*). Photo by Don Marler

PHOTOGRAPHING KANSAS BIRDS DURING LOCKDOWN

Don Marler

FOREWORD BY MICHAEL DONNELLY, PRAIRIE WINGS EDITOR

2020 will be remembered as the year of the great pandemic. Covid-19 disrupted lives worldwide like a world war. People hunkered down at home, unwilling to risk seeing friends, grandchildren and grandparents, deprived of going to concerts or sporting events, discouraged or forbidden to drop by the neighborhood bar, or do anything with gatherings of other people. As many as could do so were forced to work from home; students had to attend classes remotely, and everyone spent even more hours than was the case in “normal” circumstances staring at a computer screen. The psychological stress of the virus and the measures that were necessary dealing with it have been blamed for increasing obesity, a rise in addiction, domestic violence, suicides and random shootings.

However, in the absence of customary social stimuli, we were driven to drop back and rely on our internal resources. Among the activities that it was possible to engage in alone or with immediate family, many people discovered, or rediscovered, observing and interacting with nature: taking long walks alone in the woods and

fields and marshes, observing and even photographing wildlife, keeping records of birds that visited backyard feeders. Just as there has been a plethora of opinion pieces and blogs about the devastating toll of the psychological and social consequences of the virus, there has been a perhaps smaller and less shrill outpouring of accounts of the positive effects of such novel or renewed interactions with the natural world—the natural world that has, in fact, been largely marginalized for so many of us by the pace of contemporary life.

In this issue of *Prairie Wings*, we want to highlight a personal narrative from a man who coped with the challenge of Covid-19 by engaging in ‘nature therapy’—a man who rediscovered a childhood fascination with birds and combined it with adult skills in photography. Don’s account is a paradigmatic instance of the value of getting back in touch with the rhythms of lives and networks that are not our own—testimony to values that AOK has always espoused: encouraging knowledge and appreciation of the natural world here in Kansas.

Left panel: Female Brown-headed Cowbird (*Molothrus ater*); upper right, female or juvenile House Sparrow (*Passer domesticus*); lower right, male Brown-headed Cowbird (*Molothrus ater*).

Photos by Don Marler



ARTICLE BY DON MARLER

At age five, during summer vacation, I spent my weekends on my parent's farm, where they would retire someday. Before dawn on Saturdays, we would drive from Wichita to a hundred year old farmhouse just nine miles southwest of Fredonia, Kansas. After working all day Saturday, on Sunday mornings I would wake up to the smell of Folgers coffee and sausage gravy coming upstairs from the downstairs kitchen.

The haunting call of an Eastern Whip-poor-will coming through the second story open bedroom window encouraged me to roll out of bed while it was still dark. I had learned that the forest of Black Jack trees that grew up on the hill above the farmhouse was a haven for birds. The mating calls of male Whippoorwills reverberating off the wooden lath board walls enticed me to hurry downstairs for coffee and hot biscuits covered in sausage gravy.

Some seventy-three years later, I can still recall the times after breakfast that I stumbled out toward the milk barn before first light. The mottled gray and brown male Whip-poor-will's coloring blended into the forest so well, that I couldn't see him. But my young ears heard his soulful call well.

From the darkness, he would entertain me as I started my day. I enjoyed mimicking his call. The delightful surprise of an identical answer coming back to me amazed and thrilled me. I didn't tell my parents for fear they would think me crazy. "Whip-poor-will... Whip-poor-will."

That was when I first knew that I loved interacting with birds. Not long after that, I bought my first camera. It cost fifty-cents and a Wheaties box top. Two weeks later it arrived in the mail and I began taking pictures. When I picked up the prints at the drug store the following week, I realized that I had captured a split instant in time that I could enjoy and share with others for a lifetime. That was when I knew photography was going to play an important role in my life.

Not long after that, my life events put photography and birds on the back burner for the next seventy-one years. After I retired from practicing dentistry, things slowed down for me, so I accepted a wonderful job taking pictures for the Wichita Wings Indoor Soccer team.

But when the coronavirus broke out in Wichita, Kansas around February of 2020, the soccer season was cancelled and I lost my job as a high-action sports photographer. I was forced to stay at home to avoid catching the virus, but the new specialized camera with a long telephoto lens I had bought for indoor soccer offered an opportunity to capture images of the wild birds of Kansas. I knew I had to keep my anticipation skills and shutter finger ready for when we got back to normal and I was shooting fast soccer action.

Knowing that I was old school and behind the times in keeping up with the development of digital cameras and photographic editing software, I began to carefully study the capabilities of my new digital, telephoto camera and Exposure 6 photographic editing software. I exposed thousands of images of European Starlings, woodpeckers, Dark-eyed Juncos, Northern Cardinals, American Robins that came to my backyard. Suddenly I realized that my knowledge and appreciation for birds had grown.

Watching them interact through the telephoto lens of my camera, I could hardly believe the things I had been missing just looking with my naked eyes.

I watched as one bird stood watch for predators while numerous others gobbled down food. Then they would switch and let the lookout eat while a different bird stood watch.

The capabilities of the small, light, digital camera I recently purchased were unimaginable when I was a boy. With a 600mm focal length lens, I could take a close up of a tiny House Finch one hundred feet away, captured through my kitchen window. With the ability to take twenty two frames a second, I could capture an European Starling coming in for a landing and have fifty images to choose from. The possibilities were endless.

The power of modern digital photographic software was even more impressive. I learned how to improve an image that was too dark and had distracting elements in it making it unusable in the days of film. With today's technological advances, I could lighten or sharpen an image and crop out distractions on my computer to make an image ready to be published.

The Covid lockdown had provided an opportunity to concentrate on the things in life that are truly important, but often overlooked like, for me, wild birds and modern digital photography. The lockdown played an important part in restoring my love of birds and photography that I had once enjoyed as a boy.

European Starling (*Sturnus vulgaris*) at the feeder



Don Marler
Photography

A DIFFERENT TYPE OF PRAIRIE WINGS:

Protecting Insect Pollinators in Tallgrass Prairies and Beyond

Kathy Roccaforte Denning, University of Kansas

If you are a baseball fan, I'm guessing that one of the highlights of your summer was Major League Baseball's "Field of Dreams" game, played on a baseball diamond surrounded by cornfields in tiny Dyersville, IA, just steps from where the iconic movie was filmed. For the uninitiated, the famous 1989 movie follows a farmer, played by Kevin Costner, who hears a mysterious voice whisper, "If you build it, they will come" while walking through his cornfield. Trusting the voice and his intuition, he plows the field and builds a baseball diamond—and lo and behold, Shoeless Joe Jackson and the infamous 1919 Chicago Black Sox emerge from the surrounding corn to play ball. I don't know how many conservation practitioners and enthusiasts are baseball fans, but I'm guessing this story resonates with many of us. As a graduate student studying the effects of prairie restoration on pollinators, I had many such "Field of Dreams" moments—standing in the middle of former crop fields in eastern Kansas that were now beautifully reconstructed prairies, wondering, "if we build it (and seed it and hay it and burn it and spot-spray the *Sericea*!), will the pollinators come?". And more broadly, what are our massive alterations to natural ecosystems doing to pollinators, and what can we do to help them?

Questions regarding the status, conservation and restoration of pollinators are not merely academic. Pollinators, most of which are insects, are critical to the functioning of Earth's ecosystems. About 90% of flowering plant species are animal pollinated, meaning that the biodiversity of plants and all other organisms that rely on plants depends on pollinators. Pollinators are integral to global food security because of the pollination services they provide to key food crops. In fact, a high-profile scholarly article published by ecologist David Kleijn and colleagues demonstrated that about 35% of global crop production, by volume, depends on animal pollination. We have pollinators to thank for some of our most delicious and nutrient-rich foods, including tomatoes, strawberries, peaches, blueberries and almonds.

So who are these insect pollinators? When I give outreach presentations about the importance of pollinators, I often ask the audience to close their eyes, think about the word "pollinator" and tell me the first thing that comes to mind. About 90% of the time, the first response I hear is "honeybees," which is not surprising at all. Honeybees are incredibly important to our industrialized agricultural systems, and commercial honeybee pollination services are a huge business (if you're interested in learning more about it, NPR's *Planet Money* has an excellent podcast episode called "The Bees Go to California"). Despite their current importance to American agriculture, honeybees (scientific name *Apis mellifera*)

are actually relative newcomers to North America, having been introduced to the US by European settlers. Most people are surprised to learn that there are at least 20,000 species of bees worldwide, including about 4000 species in the United States and perhaps 400 species in Kansas alone.

Compared to other flower visiting vertebrates and invertebrates, bees are widely considered to be the most important pollinator group.

Bees are highly efficient foragers, collecting pollen and nectar to provision their nests and unintentionally effecting pollination as they move from flower to flower across a landscape. Bees' bodies are very well-adapted for this task. If you ever get a chance to see a bee under a magnifying glass or stereomicroscope, you will notice that certain areas of their bodies are covered with thick, branched hairs, which are perfect for picking up and transporting pollen.

Aside from bees, many other insect groups perform the important work of pollination. Flies, especially hoverflies (Family Syrphidae) are important pollinators across many ecosystems and for many crops. Insects including beetles, ants, moths and butterflies, as well as vertebrates such as bats and birds, can also be important pollinators in a number of natural and agricultural contexts, and many non-bee pollinators are particularly important in tropical ecosystems. Indeed, a recent study by Australian ecologist Romina Rader and colleagues suggests that what these non-bee insect pollinators lack in individual efficiency of pollen transfer, they often make up for in sheer number of flower visits.

Despite their ecological and economic importance, pollinators worldwide are at serious risk of population decline and extinction. The threats to pollinators are largely human-induced, and include climate change, widespread pesticide use and the introduction of non-native diseases. By far, however, the greatest threats to pollinators are habitat degradation and destruction. The tallgrass prairie ecosystem, where I conducted my pollinator research, has been largely decimated by agricultural conversion, with some states retaining < 1% of the original, pre-EuroAmerican settlement tallgrass prairie. Today, the remaining tallgrass prairie largely exists as relatively small islands, isolated from one another by large expanses of monoculture crop fields which are largely unsuitable for pollinator foraging and nesting.



Syrphid fly hovering near yarrow (*Achillea millefolium*) in a remnant prairie near Lawrence, KS. Photo by Kathy R. Denning

The goal of my research was to investigate whether “reconstructing” tallgrass prairie on former croplands could reinstate diverse communities of native pollinators. To do this, I surveyed flowering plant (forb) and insect pollinator species at reconstructed tallgrass prairies in northeastern Kansas and compared those communities to communities of remnant, never plowed prairies in the same region. Over three summers, I recorded about 6700 individual insects as they were visiting flowers of 127 different forb species. About one-third of these flower-visiting insects were bees and another third were beetles. Most of the remainder were butterflies and flies. Not surprisingly, I found that forb communities greatly differed between remnant prairies and prairies reconstructed on former crop fields; anyone who has been involved in prairie restoration knows how difficult it is to reinstate the diversity of native forb species found on intact, never plowed prairies. I anticipated that the pollinator communities would mirror these differences, but surprisingly, my predictions were wrong.

I ended up finding quite a bit of site-to-site variability in the pollinator communities on these remnant and reconstructed prairies. In a follow-up study, I ultimately found that these communities of insect pollinators were likely being more strongly affected by what was going on in the landscapes surrounding these relatively small prairie “islands”. For example, the diversity of bee and hoverfly communities was higher on prairies that were surrounded by a greater extent of grasslands, regardless of whether the focal prairie itself was remnant or reconstructed. This highlights the need for scientists and practitioners to focus not just on focal remnant or restoration sites, but to consider the structure of the landscape more broadly when planning and implementing conservation and restoration projects targeted towards highly mobile species like insect pollinators.

Studies like mine are certainly important for protecting and restoring pollinator communities, but effective pollinator conservation will ultimately depend on the efforts of governmental bodies, non-governmental conservation organizations, corporations,

and private citizens. Although not explicitly centered on insect pollinator conservation, AOK’s commitment to establishing and maintaining wildlife sanctuaries will provide critical foraging resources and nesting habitats for insect pollinators. In addition, AOK’s multifaceted advocacy work in Kansas undoubtedly has helped insect pollinators survive in our highly human-modified landscapes. There are many things that individuals can do as well to promote pollinator health and conservation. Pollinator-friendly gardens, which are pesticide-free and are composed of native plant species, can function like mini oases in urban and suburban settings. My own small pollinator garden in suburban Lenexa has attracted a surprisingly large number of pollinator species, and it has also served as a great conversation starter for friends and neighbors.

Advocating and voting for pollinator-friendly laws in local and state elections is absolutely critical for the long-term protection of insect pollinators. For anyone who is interested in learning more about how they can help protect pollinators, I highly recommend checking out the website of The Xerces Society for Invertebrate Conservation (www.xerces.org). The Xerces Society has a wide range of resources centered on promoting pollinator conservation, education and advocacy. Ultimately, as human activities continue to place pressure on Earth’s ecosystems, the need to both understand and protect pollinator communities will become ever more important.

Notes on Lucas Bessire, *Running Out: in search of water on the high plains*

(PRINCETON UNIVERSITY PRESS, 2021). XIV + 246 PP.

Lucas Bessire's *Running Out* is, like more and more books today, a mixture of genres: a record of hydrological facts and statistics concerning depletion of the Ogallala aquifer in southwestern Kansas, an *exposé* of wrong-headed political and administrative regulations and permissions, a compendium of sociological observations on a local population that happens to include the author's relatives and ancestors, a selective catalogue of irrationalities—cockamamie schemes to get rich, failed impractical dreams of magically transforming stubborn facts, slaughters of wildlife, massacres—and a kind of *Bildungsroman* outlining the author's attempt to come to terms with his own alienation, complicity, former failures, the gap between his childhood and youth as the offspring of struggling ranchers, and his current professional role as an Associate Professor of Anthropology at the University of Oklahoma.

In the aftermath of the Dust Bowl crisis to agriculture in the High Plains, Bessire's great grandfather was a pioneer in using pump irrigation of crops in the Cimarron River Valley. Two generations later, Lucas Bessire grew up estranged from his father, who had essentially abandoned his family, and conscious of a divide between Roman Catholic relatives and the fundamentalist Christian sect which split his family. He escaped his family and heritage at the earliest opportunity, went to college and trained as an anthropologist. He researched the impact of industrial-scale agriculture on native populations in the Gran Chaco region of Bolivia and Paraguay, people who were displaced from their homelands when governments and corporations cleared their forests. In his research, he discovered parallels between the peoples he studied and the plight of their environment, and his own background among the people and grasslands of the arid High Plains.

In 2016, he made the pilgrimage back to his roots, in an effort both to heal his personal scars and estrangement, and to try to understand and address the analogies he had glimpsed between the native peoples and environmental destruction he had studied in South America, and the people among whom he had grown up in southwestern Kansas.

The book deals intensively with groundwater management and depletion in one district in southwestern Kansas, site of his family's farm through five generations, but his study, analysis, and self-examination have wider implications. At the outset, Bessire observes that "Aquifers around the world are vanishing. Their disappearance often goes unnoticed or unmourned. Many will never return" (4). In an Afterword, he warns that "Depletion is not

limited to the details of aquifer loss in southwest Kansas. As the planet warms and droughts spread, similar dramas of aquifer loss are unfolding in dry areas around the world. The extreme losses of the High Plains are mirrored in the North China Plain, the Indus Basin of northern India and Pakistan, central Mexico, the Arabian aquifer system in Saudi Arabia and Yemen, the Murzuk-Djado Basin in northern Africa, and California's Central Valley. These foreshadow the declines underway elsewhere, including parts of Australia, Israel, Jordan, Syria, South Africa, Namibia, Turkey, Bangladesh, Nepal, Chile, and Argentina" (176-177).

Five critical elements, he argues, have created the problem of groundwater depletion and contribute resistance to its solution in southwest Kansas. They are 1) in the past, the lack of sound understanding of the hydrology and stratigraphy of the aquifer itself which is being exploited; 2) application of seemingly promising technology without understanding or concern for long-term consequences; 3) misconceived approaches to governance and administration of the water, often based on faulty and interested definitions characterizing the problem and misdirecting proposed solutions; 4) the power of the cash nexus—the drive for profit, among both locals and outside operators; 5) the obstructions and resistances of human attitudes. The book explores all five, but for reasons of space I'll focus on the final three. After all, as Rex Buchanan, Director Emeritus of the Kansas Geological Survey asserts, "we've known enough to make decisions for a long time. If we wait to know everything there is to know about the Ogallala, it'll be dry long before we act" (personal communication to the writer, October 4, 2021).

Misconceived approaches to governance and administration of the water resource inflict harm through the very practices they were intended to mitigate and redress. The State of Kansas established five GMDs (Groundwater Management Districts) "to conserve groundwater, stabilize agriculture, and allow western Kansas water users to determine their own future destiny. The state ceded much, but not all, aquifer governance to the GMDs" (11). These administrative units have great powers, including selling water rights, monitoring use, permitting or restricting pumping, and granting waivers to exceed legal allotments [Groundwater Management District Act, Legislative Declaration, KSA § 82a-1020, § 821-1022 (1972)]. Membership can be restrictive: the Southwest GMD, which governs Bessire's family farm, restricts membership to owners of at least forty acres of land or water rights to one acre-foot (about 325,000 gallons), and only members can vote on policies (of which more later).

That might seem fair enough—after all, it is the farmers and ranchers who are going to utilize the water under their land—but when the larger picture of the dependency of the economy of the whole region on the continued viability of the aquifer as a resource for agriculture is taken into account, it is apparent that townspeople, shopkeepers, teachers and ministers, and laborers and workers in related industries—meatpacking plants, dairies, hog farms, poultry factory farms—are stakeholders, too, dependent on the aquifer as the basis for the continued economic viability of the region. Nearly all local irrigators are white descendants of early settlers. Most ethnic minorities are laborers, working in the toxic agriculture and the big meat-packing plants, and consequently vulnerable to greater harms. “These working classes will face harsher consequences of aquifer decline” (148-149).

Here the issue of definitions of terms comes into play. One Southwest GMD official quoted by Bessire stated that “the resource has been dedicated by the state legislature *to the people, so the people of Kansas* can use the resource subject to a process of application and the putting of water *to use for the public interest*” (italics mine). “So how do we define public interest? It is commerce” (13). The Southwest GMD’s mission was, in the words of one official, “to conserve and develop the water supply to grow the social, economic, and natural-resource well-being for current and future generations in the public interest.” And for the district, “public interest was the same as economic growth” (108). But clearly, this is double-talk; development erodes conservation, and the goals of economic well-being (as currently pursued) and “natural-resource well-being” (currently an afterthought, if that) are in practice often diametrically opposed. The economic flourishing generated by current practices to the benefit of “the current generations” guarantees the eventual dispossession of those “future generations.” “Economic growth” in more than one instance benefits a few and marginalizes many—and the beneficiaries are often outsiders, while it is locals who are further and further impoverished. Who are the stakeholders? Whose interests are “the public interest”? “In its current form, regional water governance is a form of pay-to-play democracy, reserved for the already privileged. Only those who already own water rights can participate in meetings and vote in elections. That gives corporate water users outsized influence,” while “the vast majority of citizens in southwest Kansas . . . are excluded from the decision-making processes that will determine the fate of the aquifer upon which their lands and livelihoods depend” (172).

GMD management set goals that would ensure depletion of the resource. Before 2004, new wells were permitted if they were predicted to deplete 40 per cent or less of the groundwater, based on estimates of how much of the aquifer would be lost over a twenty-five year period, though that estimate would have been based largely on guesswork as to the actual contents of the aquifer (111). As one local quoted by Bessire opines: “it is like those old mining towns you see up in the mountains. They took what they want and when it ran out they left. The water is going to run out and there is nothing we can do about it. There’s no utopia out here” (44).

Other management practices by the GMDs further guaranteed more and more rapid exhaustion of the resource. It was only in 2012

that the Southwest GMD stopped the practice of docking farmers who did not use their full annual allotment of groundwater—two acre-feet of water, or roughly 651,000 gallons per acre—cutting back their allotment for the next year. Given that penalty for conservation in any given year, it only made pragmatic sense to use up your entire allotment in any given year, whether you needed it for your crop, or not. And the state kept granting more farmers the right to pump more water (the Southwest GMD was only closed to new allotments in 2015) (13-14). The Southwest GMD permitted 3.6 million acre-feet of aquifer to be pumped per year. Compare the City of New York, which consumed less than a third of that amount for domestic and industrial use in 2018 (14).

“*Radix malorum est cupiditas*,” was the text Chaucer’s cupidinous Pardoner preached on: “The love of money is the root of all evil.” Desire of gain, sometimes merely the seemingly-innocent pursuit of making a living, can be seen as a component in some of the other four critical elements that have created the problem of groundwater depletion, and contribute resistance to its solution. For the independent farmer, there is the struggle to make ends meet and keep the farm another year, against the odds of weather, markets, mortgages and loans, and the larger economy. In the face of drought and debt, the temptation is immense to pump as much prehistoric water as they can from the aquifer, regardless of their rights allotment, in the hope of bringing in a harvest.

The scramble for government largesse is yet another crucial factor in the depletion crisis in the High Plains. In the crisis of the Dust Bowl, Agricultural Adjustment Administration payments were established by the federal government to pay farmers for failed crops and reduced plowed acreage. Thus farmers were assured of a fixed income whether a crop was harvested or not. In 1936, 90 percent of farm operators in [Haskell County] received benefit payments (87).

Like the federal government, insurance companies, banks, and local businesses are also complicit in the draining of the aquifer. “Loan counselors do not tell farmers what to do. But they often encourage farmers to follow the lowest risk option and assess their loan applications accordingly.” The result: the bank is encouraging farmers to raise irrigated corn, the most costly crop in terms of water use, but the most profitable at harvest (39). But because of the cost of inputs—seed, fertilizer, herbicides, pesticides, natural gas for irrigation motors, insurance, taxes, etc. —“debts grow alongside the water-thirsty corn. In 2018, a quarter of all Plains farms reported being indebted”—and the rate was highest for Kansas corn farms (39-40). But debts keep farmers coming back to the bank even as they are over-pumping the aquifer in a desperate effort to make ends meet, and “federal farm insurance subsidizes this debt-waste cycle,” preventing “devastating loss” to all involved (42). As one observer remarked to Bessire, “Until they quit insuring corn, . . . people will water it to grow insurance money” (43-44).

A local informant reported to Bessire that “it was common for folks to plant irrigated crops they know will fail in order to receive insurance payments. . . . The insurance companies . . . don’t seem to mind paying with federal dollars. . . . Under certain conditions, it

meant a failed irrigated crop was worth more than a successful one” (43). Until 2018, the only two options for Kansas crop insurance policies were irrigated crop insurance, and dryland crop insurance. Nonirrigated crops were considered lower value and higher risk, so they were far more expensive to insure. On the other hand, “if farmers pumped water for an irrigated crop, they spent less on the premium and made more money in reimbursements if it failed” (43). Well-intentioned interventions by banks and government created a collection of perverse incentives. Over the decade between 2008 and 2018, roughly 520 farms in two counties in southwest Kansas received around \$155 million in indemnities to offset lost crop values.

While individual land owners abetted by local business loans and government subsidies contribute their share to the irrationally rationalized system that is deepwater well irrigation in the High Plains, their impact is dwarfed by that of corporate interests.

Some of the largest corporate feedlots, meat-packing plants, slaughterhouses, dairies, milk-drying plants, and hog farms in the country are located in southwest Kansas. “There is a multibillion dollar corporate interest to prevent regulation and to pump the water until it’s gone” (78). Bessire cites investigative reporter Karen Dillon, who accessed open records of yearly water usage in 2018, and found that between 2005 and 2017, the top two percent of water users consumed 22 percent of the groundwater that was pumped statewide. And those top users were those big agribusiness operations and their tenant farmers (78-9). Kansas law since 1931 was supposed to prevent corporations from owning agricultural land, but the law has been steadily watered down until giant hog farms, feedlots, and dairies can not only acquire agricultural land, but also appeal county efforts to oppose their expansion (79-80). Bessire speculates that what he calls “suitcase farmers”—absentee landlords, whether corporate interests or wealthy outsiders—are responsible for a major portion of aquifer use (80).

Not only are the only people represented on the board of the typical GMD white landowners, that already limited and unrepresentative body is dominated by the largest users and those most closely tied to corporate interests. According to the *Kansas City Journal’s* research,

over the twelve-year period from 2005 to 2017, the operation run by one board member pumped 41,700 acre-feet. That is more than 13,588,000,000 gallons. Another board member’s family used more than 56,000 acre-feet. Another, who served on the board for twenty-five years, took more than 57,400 acre-feet. That meant one advisor to the board ran an operation responsible for using more than 52,820,517,100 gallons of water over twelve years. That is roughly equivalent to a column of water covering one acre and stretching thirty-one miles into the air (112).

Given the domination of these boards by the biggest consumers of water, it should be no surprise that dissenting voices from smaller operators are ignored or dismissed out of hand (113).

Corporate interests have successfully masked their role by trumpeting the bucolic ideal of the independent family farm as a cornerstone of American hard work, self-reliance, and traditional virtues. Large agribusiness interests recast criticism of rampant depletion as an attack on the family farm and traditional values of moral rectitude, independence, and local community. This omnipresent corporate propaganda “obfuscates the complicated ties that link depletion to the financial operations of farmers, banks, government programs, and corporate profits. And it smears any critique of overuse as an attack on community values and small farmers” (79).

Bessire’s final category of his five critical elements that contribute to the aquifer depletion crisis we face today, the obstructions and resistances put up by human attitudes, constitutes the most original factor in his analysis. This is the element he is peculiarly equipped to see because of his dual perspective as an heir of High Plains farmers five generations deep, and at the same time a trained scholarly anthropologist. He brings to the examination of his own rural society and attitudes the perspectives he has gained in his field work among marginalized rural and indigenous communities in Bolivia and Paraguay, displaced from their native forests by industrial-scale agriculture abetted by government interventions. Nevertheless, Bessire confesses that human motives, interests, and delusions were aspects of the problem that initially, he did not fully appreciate. “At the beginning, I could not see how . . . the drive for profit, the conceit of control, or the self-absorbed individualism that artificially divides the aquifer into parcels of private property and allows a few to drain it at the expense of many” were central to the problem, and how his own family’s history, and his own assumptions and collusions were implicated in the crisis he had tried originally to approach “objectively” (169).

Bessire reaches back to the work of anthropologist Earl Bell and sociologist A. D. Edwards in the 1930s, documenting the social attitudes that emerged from the devastation of the Dust Bowl years. He finds the peculiar social attitudes they documented ninety years ago reflected in widespread attitudes among deepwell irrigation farmers today. The problems they identified echo Bessire’s analysis of the complex of attitudes, interventions, technical innovations and “fixes,” and investment in myths in the face of recalcitrant facts that underpin today’s doomed, losing game.

Edwards and Bell found “a social psychology peculiar to the area,” marked by “speculative ambition, willingness to gamble, and a fanciful optimism that they found nearly unbelievable. ‘The faith in luck is reflected in their entire personality organization,’ Bell wrote, ‘and is indicative of their inability to develop a method of agriculture adapted to the environment’” (88). A couple of quotations from 1940 and 1941 exemplify these attitudes: “This is good country. All it needs is water and it will produce better than any land in the world.” “We know our land is still a garden spot if there’s water” (cited in Bessire, 88-89). When sociologist William Mays revisited Haskell County in 1965 to update Bell’s work, he found that the rise of irrigation was the biggest difference, and he agreed with the residents that “irrigation offset uncertainties of the environment and market.” “The population now accepts as their

ideal-type the farmer-capitalist, or agri-businessman, who has won out against great odds” (89).

Such desperate optimism and investment in myth feed the fantasies of technological miracles that are a recurrent feature of schemes to deal with the intractable problems posed by the inadequacy of available water resources in the region. Bessire notes salvation schemes as far back as 1896, when a former immigration agent touting development of the area for the Santa Fe Railroad proposed creating huge underground reservoirs to irrigate all the arable lands in the arid West. In 1894, the South Fork Irrigation Corporation was formed to divert forty cubic feet of water per second from the Cimarron River. The Chivington Canal Company drained Sand Creek’s waters in 1908 (115). More recently, in 1967, two schemes were floated: the Army Corps of Engineers explored a plan to pipe water from the Canadian Rockies to the Plains, and “the so-called Beck Plan proposed diverting water from the Missouri River to a canal that would stretch from Nebraska to Texas.” Numerous other schemes were noted; all failed. However, even in 2013, like a zombie boondoggle that refuses to stay buried, the Missouri River scheme resurfaced. Recognizing that “available water supplies were inadequate to develop the area’s production potential,” the Southwest GMD commissioned a study that showed that the projected losses from depletion of the water supply over the fifty years from the date of the study, 2013, would be “exactly the same amount that it would cost to build the aqueduct now”—that is, to realize the pipe dream of an aqueduct to draw water from the Missouri River in northeastern Kansas all the way diagonally across the state (uphill all the way, incidentally) to supply agribusiness in southwest Kansas when the aquifer had been used up (109-110).

It is easy for outsiders, who have no skin in the game, to blame the denizens of the High Plains for willful blindness to obvious facts on the ground, for “me-first” disregard of community good, for entertaining fantasies of magical salvation by unheard-of technology, for looking to the government for rescue, for obsession with near-term profits without regard for assured long-term prospects of disaster, or just for stubborn, selfish “cussedness.” Such a blame-game disregards entirely the very human tendencies to surrender to the inertia of custom and inherited ways of doing things, rather than face the terror of a leap into the unknown; the powerful impulse, when faced with an overwhelming problem, to look away or distract oneself with minor fixes; the immense pressure to go on as one always has, owing to cultural inheritance and social connections; the risks run by any member of a beleaguered group who attempts to break ranks and challenge the group’s ways of doing things, even when those ways are manifestly not succeeding.

Let alone the question of curbing corporate greed and outsider profiteering, can these very human traits among the population who are the victims of the depletion game be somehow addressed and corrected? Bessire’s analysis of the magnitude and social complexity of the problem is daunting. Understanding the limits of technological fixes, and their unintended consequences, might arrest investment in some fantasies of magical solutions, while calling out wrong-headed, counterproductive administrative

and political regulations might focus regulatory reform, if the obstructive opposition of powerful interests could be overcome. But the rooted human attitudes and refusal of many of the victims of the crisis to face unwelcome facts and make hard changes in behaviors and practices will perhaps be the hardest challenge to overcome.

Bessire does provide a few glimmers of hope. He cites one prominent farmer who faced financial ruin and social ostracism from his neighbors’ outrage over his attempts to champion conservation measures, but managed to save his family farm by switching from intensive deepwell irrigation of corn to raising hemp for oil, a crop much more adapted to arid conditions, and with all expenses considered, more profitable. He contrasts the Northwest Kansas GMD with the Southwest GMD on which his research has focused. For the former, the first step was getting two proconservation farmers elected to the GMD. Then, working with local farmers, the Northwest GMD developed a LEMA (Local Enhanced Management Area) to reduce extraction rates and extend the life of the entire area’s aquifer. They divided the entire LEMA into zones based on the rate of decline. Through careful research on net irrigation requirements for crops and average past usage, they calculated a five-year total allocation for each farmer, specific to calculated rates of decline for their zone. The plan survived a legal challenge, and constitutes “an important start” in approaching zero-loss agriculture. Bessire opines that the difference between the approach of the Northwest LEMA and the Southwest GMD “may correlate with corporate ties and influence” (241). Wider knowledge of the success of the Northwest LEMA might attract imitators. However, “even the best of existing policy solutions do not call for democratizing groundwater management or address the indirect injuries of depletion. They do not question how the pursuit of profit seems to hold an overwhelming allure; one that exceeds its actual conditions of possibility on the Plains” (174).

This review presents a very selective extract from the many narratives that make up *Running Out*—the elements that seem to me pertinent to the conservation concerns likely to be shared by readers of *Prairie Wings*. I have not touched on the intimate family history that has been a crucial formative influence on Bessire’s understanding of the deep social roots of the beliefs, hopes, and attitudes of his family and neighbors. But I recommend that readers who want more consult the book, hard going as it occasionally is when anthropological theory guides the narrative, painful to read at other times, when the historical destruction of the buffalo and the native peoples, analogous to the contemporary rampant depletion of the water resource, are uppermost in Bessire’s agenda. It is a timely, indeed essential contribution to the urgent discourse of conservation and the preservation and management of a shrinking resource in a time of climate crisis.

THE BIRDS OF AMERICA

by Elizabeth Dodd

After the photograph fixes the image
in stasis, the mind keeps wheeling back. What

does it feel like, this hovering memory—
a flavor from childhood, a word the tongue

can't quite call forth. The heirloom pear's crisp,
pre-war tang, discovered in a farmer's market far

from home, *la poire, le marché*, their rhotic rr
a bur in the throat—but why these thoughts

incongruous in time and distance? Unpack
the century's texture: the ribbed spiral of the live wires,

the insulator's unfocused globe. The bird's neck arcs,
a dancer's head flung back, beak rising in the ecru

air and there—the flash of apricot beneath the
scissor-tail's wing recalls the water-colored throat,

la gorge, of Audubon's *Columba migratoria*,
the Passenger Pigeon. From a lichen-speckled

branch the female reaches, arabesque, to feed her mate.
"The tenderness and affection displayed by these birds,"

he wrote, "are in the highest degree, striking."
But these flycatchers only mimic, in my eye-rhyme

of their forms, extinction's apparition assembled
from the Haitian's paintings of some buckshot skins.

Now, let your eye lift from the crouched male's echo
of a vanished dance, to where, along a road in rural

Kansas, the other male, wings and tail akimbo, feet
clenched like fists beneath the body, hangs

—momentarily medieval—like a morning star,
a flail, before the blow.



Scissor-tailed Flycatcher. Photo by David Rintoul



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