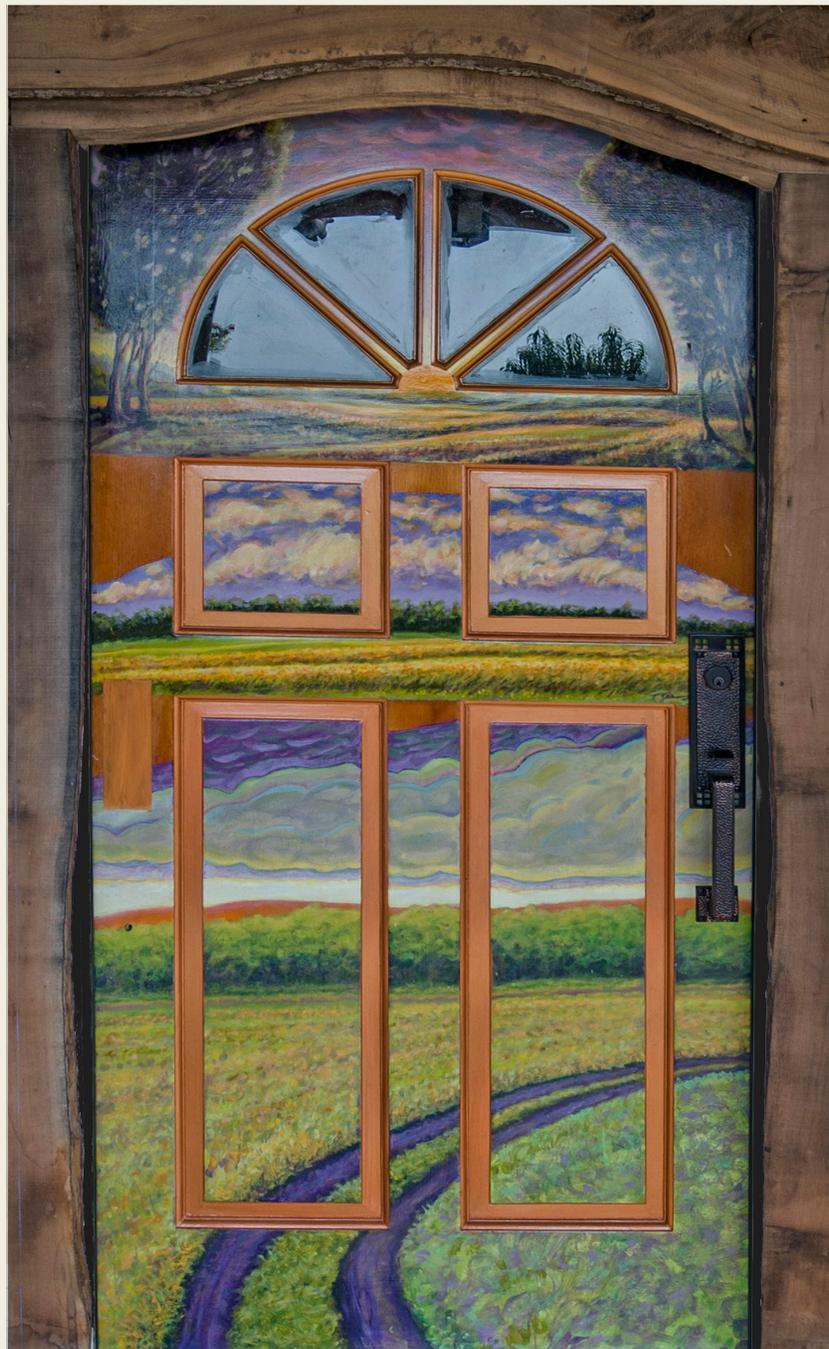


VOLUME IV, ISSUE 1, FALL 2017



Rootstalk, Fall 2017

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A note on this issue's multimedia features: In order to access all the media in this latest issue of *Rootstalk*—including content featuring embedded sound and video files—you'll need to download the interactive PDF version (approximately 241 MB) and, once you've done so, open it using the Adobe Acrobat Reader. If you don't already have the Adobe Acrobat Reader installed on your computer, you can download a free copy from www.adobe.com.

Tony Stenger, who painted the door on the cover of this issue, lives and paints in a cabin tucked away on Hickory Highlands Farm near Fairfield, Iowa. In addition to being an artist trained at the Art Academy of Cincinnati (<http://www.artacademy.edu>), he is (according to farm-owner John Freeberg) "a singer and songwriter, landscaper and hardscaper, philosopher and roustabout." About his work on the door, which Hickory Highlands Farm owner John Freeberg says is of wood and was found on the side of the road, Stenger says: "I see the FarmHouse door as an entryway to a world apart—a sanctuary, a deep relaxation, a coming home. I tried to allow the door's imagery to reflect this experience—the colors of nature, experiences of living on the farm, the clouds in the sky on the day that I picked up the brush, and memories of my life growing up in the Midwest. All of it coalesced into what the door became."

Cover design: Mark Baechtel, Jonathan Andelson

Table of contents image: Jun Taek Lee

Layout: Jonathan Andelson, Mark Baechtel



"BURIAL," ACRYLIC ON CANVAS, 6' x 6', BY THOMAS AGRAN, 2016

Publisher's Note



PHOTO COURTESY OF JON ANDELSON

Jon Andelson is the publisher of *Rootstalk*. He is Rosenfield Professor of Social Science (Anthropology; <http://www.grinnell.edu/academics/areas/anthropology>) at Grinnell College (<http://www.grinnell.edu>), where he also serves as director of the Center for Prairie Studies (<https://www.grinnell.edu/academics/centers/prairie-studies>).

The Community in the Garden

JON ANDELSON

In the last ten months I have devoted countless hours of my time to a tiny piece of real estate on the southeast edge of the Grinnell College campus. There was not much there ten months ago: a few crab apple trees on the south side, a few pines on the north side, a large walnut tree on the west side, and a forlorn looking lawn in the middle, about six-tenths of an acre. There had been a house there once. But if one looked at the space with imagination one could see wonderful possibilities. And that's how I had to look at it because it was the space the college said the Center for Prairie Studies could use for the new college garden. The old garden site had served us reasonably well since 2001. We had numerous garden beds, a shed and a greenhouse, a barrel to catch rain water off the roof of an adjacent college house, and a sentimental attachment to the location by way of the sweat equity that a series of student summer interns and I had put into it. But the site was being repurposed, and we had to relocate the garden.

Fast forward ten months and be amazed, as I have been, at what we have accomplished. The operative word in the preceding sentence is "we." So many people have helped. The parents of two current students from Minnesota donated two inch thick white oak lumber for building raised beds. A local farmer donated impossibly rich compost with which we filled the beds. Seed Savers Exchange (<https://www.seedsavers.org>) in Decorah, Iowa, donated vegetable seeds and starts. Other farmers from east central Iowa donated more starts. The college's Facilities Management department donated a

hoop house frame. The college's wonderfully talented environmental research station technician designed and led the installation of a drip irrigation system and, as I write, is organizing us to finish the hoop house. Current students (a few of them paid assistants), alumni, faculty, staff, and community members contributed time and energy to build twenty-one raised beds (three of them in compliance with the Americans with Disabilities Act), plant 30 varieties of produce, and weed, water, and harvest. Neighbors have come by to chat or to deliver their own food waste to our compost bins.

Creating the garden has involved an inspiring display of community spirit. Community is one of the trio of concepts at the core of the Center for Prairie Studies' mission. The others are sustainability and place. Our vision for the garden is to create a place where we can nurture community around sustainably produced food. In the just-completed first growing season, we harvested over 700 pounds of produce, most of which went to the college's Dining Services for many more people to enjoy. 🌿



GRINNELL COLLEGE'S COMMUNITY GARDEN. PHOTO COURTESY OF JON ANDELSON.

Associate Editor's Note



PHOTO COURTESY OF EMILY MAMRAK

Emily Mamrak is a third year at Grinnell College, double majoring in Chemistry and Studio Art. When not working for Rootstalk or studying, she can be found building sets for the Theatre Department, watching the clouds, dancing with her friends, or reading in a comfy chair.

EMILY MAMRAK

I've always felt that cities were too crowded. They have too much cement, too many cars and horns and sirens. They're never truly dark. During my first week here in Iowa, I attended a bonfire out in the prairie. It felt so calm, so quiet. Beyond the welcoming glow of the campfire, I was surrounded by proper darkness, full of rustling prairie grasses, crickets, and, beyond the smaller noises, silence.

And then I looked up.

In the city, no one looks up anymore. You don't miss much, maybe three to five stars if you're lucky. Here it was different. I had never seen so many stars in my life. I could even see the Milky Way stretching itself across the sky. It's hard to truly grasp how large the sky is. What you see is nothing, an insignificant fraction of a whole that could quite possibly go on forever.

I will keep the memory of that night's sky in the prairie with me for the rest of my life. It felt impossibly large, and in turn I felt impossibly small. It also felt like it was welcoming me home, to this place where I was meant to be. As I made friends and ate s'mores around the fire, the sky twinkled up above, much more breathtaking than the glow-in-the-dark stickers on my bedroom ceiling. Whenever I walk places at night now, I always look up.

The stars will never cease to impress me. 🌿



PHOTOGRAPH BY JUSTIN HAYWORTH

ASSOCIATE EDITOR



PHOTO COURTESY OF RACHEL EBER

Rachel Eber grew up just outside of Boston, Massachusetts. She enjoys riding her bike, growing vegetables, writing and playing guitar. This is her first year living in Grinnell, and she is looking forward to spending more time exploring Iowa and the prairie region.

EDITOR-IN-CHIEF



PHOTO COURTESY OF MARK BAECHTEL

Mark Baechtel received his B.A. with honors in print journalism from The American University (<https://www.american.edu>) in Washington, DC, and his M.F.A. in fiction-writing from the Iowa Writers' Workshop (<https://writersworkshop.uiowa.edu>), where he was selected as an Iowa Arts Fellow and a Summer Teaching/Writing Fellow. He has nearly 30 years of publishing experience behind him., and is the author of *Shaping the Story*, a textbook guide to short-story writing (Longman, 2003; <https://www.amazon.com/Shaping-Story-Step-Step-Writing/dp/0205337198>) and has taught writing and publishing classes at the University of Iowa, Grinnell College and various art centers, as well as working as a professional book editor. His writing has appeared internationally in newspapers, magazines, journals and anthologies, and he has been a regular book reviewer for *The Washington Post*. He is currently polishing the stories in a collection of short fiction, titled *What Moves and What Is Still*, and is at work on a novel titled *Renovation*.



"ROCK CREEK LAKE, WINTER AND SUMMER." PHOTOGRAPHS BY OLIVER MUÑOZ, TAKEN IN JASPER COUNTY, IOWA, 2017

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PHOTO COURTESY OF KEN SAUNDERS II, TAKEN MARCH 21, 2011, AT HENDRICKSON MARSH ON THE BOUNDARY BETWEEN MARSHALL AND STORY COUNTIES, IOWA

Song: Male and female belted kingfishers give strident, mechanical rattles in response to the slightest disturbance. When threatened they may give screams, which males sometimes combine with harsh calls. (Description adapted from text created by the Cornell Lab of Ornithology, <http://www.birds.cornell.edu>).

To hear an audio recording of the Belted Kingfisher, captured by Jonathan Jongsma at Lake Bemidji State Park (http://www.dnr.state.mn.us/state_parks/lake_bemidji/index.html), Beltrami, Minnesota, visit Xeno-canto (<http://www.xeno-canto.org>), or download the fully interactive PDF of this issue's Birds of the Prairie feature using the hyperlink at the bottom of the web page.

Birds of the Prairie: Belted Kingfisher

Megaceryle alcyon

The **Belted Kingfisher** is a year-round resident of the prairie region, although it ranges to the north well into Canada during the summer and breeds there, and many kingfishers overwinter in Mexico and Central America. They generally live near water, since their principal diet is small fish and crayfish. They nest in burrows that they dig into earthen banks by water. They must winter where the water does not freeze so they can continue to feed on aquatic life, which they take by diving into the water. The birds are stocky with a distinctive large and crested head, short legs, and medium length tails.





PHOTO BY WERNER ELMKER

John Freeberg has been a home builder since adolescence, and **Susan Walch** has been involved in building for almost as long. They say that they have nurtured a vision for a dozen years of a home birthed from the earth on which it sits, and they find the reality—which they’ve dubbed *The FarmHouse at Hickory Highlands*—to be “more enchanting than [they] imagined.” John’s daughter Ami, from Grinnell College’s class of 2010, received a grant through the Center for Prairie Studies for an internship at Cultivate Kansas City (<http://www.cultivatekc.org>).

Growing A House in Fairfield

BY JOHN FREEBERG

“The world is not a rectilinear world, it is a curvilinear world. The heavenly bodies go in a curve because that is the natural way.”

George Bernard Shaw

As a teenager, I served a reluctant apprenticeship to my father in his mid-life career change from farm equipment salesman to home builder. I learned the use of tools and materials on dozens of simple ranch homes, using plans drafted by dad on spiral notebook pages. This led me organically, as a young adult, to pursue building and remodeling in Chicago. On weekends, I toured and studied the homes and public buildings designed by Frank Lloyd Wright and his mentor, Louis Sullivan. I was inspired by their freeing of architectural design in this country from its European roots, creating a uniquely American aesthetic which was a synthesis of steel, brick, and stone underpinned by the lines and forms of nature. During the week, I would put these lessons into practice.

Fast forward 40 years. My partner, Susan Walch, and I bought a brick bungalow in Fairfield, Iowa. We spent vast amounts of time renewing the home’s century-old Art and Crafts glory. It was a lovely place, but we often found ourselves in the evenings looking over magazine pictures that inspired us, dreaming of a home that we would someday build.

Then one day, while we were working out of town, we received a phone call telling us that our lovely house was on fire. After we’d made the four-hour drive home, we found a smoldering, total loss. We didn’t know it then, of course, but looking back on this disaster now, I can see that those ashes were the crucible of a boundary-breaking house.

When we decided, after the fire, to build the house we’d been dreaming of, we came to our task with many

questions, and few answers: How can a house honor and celebrate Mother Nature's living presence, we asked? And how would we build such a house? Would building with materials that were more natural and less processed, bring the dweller closer to the heart of nature? What if the materials—to take a cue from the food movement's "eat local" slogan—were drawn from our determination that we "build local"? Would the look or feel of local materials make a difference, or be noticeable? And, of course, would the work entailed in sourcing these materials be worth the effort?

It's been six years now since Susan and I began building what we eventually called the FarmHouse at Hickory Highlands, outside of Fairfield, Iowa, and I can honestly say that we have found answers to those questions and more. In the process, we have hosted over a thousand visitors, from a diverse array of states, nations, ages, occupations, and education levels. These visitors have expressed wonder, appreciation and joy as they've visited the house. I believe they've been responding to the materials, the design, the artistry, the comfort, and the uplifting feeling the space conveys. We did not intend to create a magical place but, magically, that is what happened.

Our journey began with a search for the right

building site. We had already begun looking at numerous parcels of land before the fire, but that event gave us new focus. Eventually, we found an overworked 54-acre livestock and grain farm outside of Fairfield that had woods, a pond, and a rise on which to situate the house, which would provide us with an unobstructed view of the horizon, as well as a slight southerly slope which would allow the north wall to be bermed (tucked into the hill) reducing the house's visual intrusion into the landscape, and providing shelter from the winter winds. It was perfect for our needs.

Now that we had a place to put the house, we began to look at the other features of the acreage. There were stands of timber with hardwood trees of a dozen species. A few of these would be harvested and sawn into boards at a nearby mill, to become the house's trim, cabinets, doors, and furniture. There was also a pond which would provide water storage for domestic and agricultural use. As we considered these bounties, the floor plan of the FarmHouse began to come into focus.

The house length would be oriented east-west. It would turn its back on the winter wind, and its south wall, with its large windows, would offer a view of the pond and the woods, as well as collect heat on sunny winter days. We decided the entry to the home would



THE FARMHOUSE AT HICKORY HIGHLANDS. PHOTO BY WERNER ELMKER

be via a stone-floored west porch. Anyone entering the snug foyer would get a glimpse of the gracious living-space within. We wanted a pathway of limestone flagstones which would lead from this beginning, through the house, past the living room, kitchen and out the east door to a screened porch. Along the north wall, we would put a guest nook, a mechanical room, a bathroom and, on the northeast, the master bedroom.

There were other, less obvious decisions we made as well—features of the house which wouldn't immediately be evident to the eye, but which would reflect our values and our concern with sustainability.

Susan brought a particular set of skills to the creation of FarmHouse's structure. While I had been a builder by profession, Susan had had numerous careers. None had been as fulfilling for her as house carpentry, or building exterior walls with straw bales and covering and protecting the bales with earthen plaster. She had also taught the building of benches and ovens with a mixture of sand, straw bales, and clay from the nearby ground—a combination known as "cob".

For straw for our east and west exterior walls we turned to a neighboring organic farmer who supplied us with wheat straw bales. Straw bales have been used as building blocks since 1896 in Nebraska; they hold heat well in the winter and coolness in the summer. They resist penetration by wind, resist combustion and are a readily available local resource. Beyond these obvious advantages and their value as insulation, though, we love the look and feel of walls which are two feet thick, covered with earthen plaster and decorated with curved window wells.

To add to our knowledge of and experience with

building with bales and earth, we attended workshops with Bill and Athena Steen, the founders of the Canelo Project in southern Arizona. (<http://www.caneloproject.com>) They increased our knowledge-base many-fold during these events, and this knowledge enhanced both the structure and beauty of our FarmHouse.

For the clay to cover our straw bales, we knew we could turn to our own land. A foot beneath the topsoil

was a layer of clay subsoil whose properties make it an excellent building material. It is sticky, it combines well with sand (to resist cracking) and straw (to provide a matrix which holds together on walls). Its resistance to moisture makes it usable as a plaster, a floor finish, and a material which is excellent for sculpting benches, earth ovens, even walls. The corner of the sunroom in the photo on p. 16 features a bench of cob.

As we continued to develop our vision, one of the greatest sources of support, in both the figurative and literal sense, came from the farm's hickory trees. Their beauty and abundance at the farm's higher elevations gave rise to the name Hickory Highlands. The idea of employing trees as structural members had first occurred to us during a day of scouring magazines years before. In several of the magazine features

which caught our eyes, we saw photos of houses that had been designed by Roald Gunderson of Wisconsin, who was practicing what he called "whole-trees architecture" (<http://www.wholetrees.com>). Typically, trees are sawn into timbers, lumber, or boards to be used for construction. Gunderson's idea was to use trees that are unmilled—or "whole"—as posts, beams and rafters, i.e. the frame. After we visited several homes he designed in Wisconsin, we decided to follow his system and use whole trees as the frame for our living room. We



THE VIEW FROM THE FARMHOUSE'S FRONT DOOR TO THE SCREENED PORCH. PHOTO BY EMILY MAMRAK

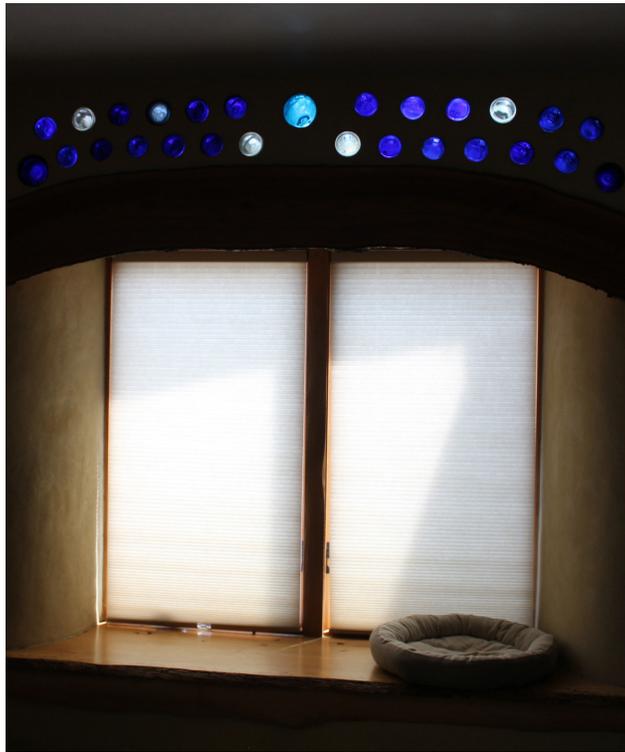
forwarded him the floor plan we had designed to that point, and commissioned him to create two exterior elevations which reflected his whole-tree aesthetic. Those drawings remained a source of inspiration for us during the years of construction. Gunderson has stopped by to visit several times when he has been in the area.

Susan and I determined that one of the most important features we wanted the house to have was a living room with a barrel vault (curved) ceiling. Hickory trees mostly grow straight and tall, but in our stand of timber there were two hickories which had matching, curved trunks. This was only one of many such serendipitous occurrences which helped us in our building of the FarmHouse. These trees provide the defining ceiling/roof beams which made the barrel vault we wanted possible. The eight- to eleven-inch diameters of these trees determined the nine- to ten-inch diameters of the supporting posts and the six- to seven-inch rafters. Consulting with Roald Gunderson, we learned that harvesting trees in the spring, when the sap is running, would allow the thick bark to peel off easily. When we had harvested our hickories and debarking was completed, it revealed a shimmering sapwood of surreal beauty, which has been a source of continuing amazement for our visitors.

We completed other architectural elements in the FarmHouse without considering, “How long will this take?” Our friend Dennis Kossow, working an hour or two a day for many weeks, built our hearth using stones from my grandfather’s Wisconsin farm, and I think the finished product conveys strength with an air of whimsy. Our rainbow-colored soffit boards are made of cottonwood sawn at the nearby mill. The honey locust

boards which face the kitchen cabinets were sanded at a diesel-powered Amish shop. Susan laid the flagstone path leading through the house using limestone from the quarry in Anamosa, Iowa. It’s likely that the same quarry provided limestone for the Sullivan-designed jewel box bank in Grinnell and the Wright-designed Miller home in Charles City.

Susan and I did most of the work on the FarmHouse.



“STAINED GLASS”—MADE FROM BLUE BOTTLES—IN THE BEDROOM. PHOTO BY EMILY MAMRAK

As artisan-builders we had lots of support in our desire to build with local materials: our friend Lou Bolster brought us a case of blue bottles for the “stained glass window” in the bedroom. Neighbors with fallen-down barns allowed us to salvage weathered siding for wall coverings and rusted, corrugated roofing for ceiling material. We found a double drainboard cast-iron sink on Craigslist and made the trip from Des Moines to Fairfield with it strapped to the top of our car. Windows and doors came from the ReStore, and even from the roadside. We found resources as we needed them.

These included “human resources.” We had a few interns along the way—our first interns being Joshua Vojtisek, Emily Breffle, and Jacob Roberts—from the Maharishi University of Management Sustainable Living Program (<https://www.mum.edu/academic-departments/sustainable-living>), who worked alongside us on the first six, very hot weeks of construction, raising the FarmHouse from bare earth and seeing it through until we had a roof which would shed water. They have all been back to visit and view the project as a significant chapter in their lives.

We also depended on the skilled work of a number of sub-contractors. I did a work-trade with a friend,

Eric Hoffman, helping him install siding on his house and then he helped shingle the walls of our house. Tony Stenger, who has a painting studio in one of the four “tiny home” structures which are also on the farm, built the rustic, undulating urbanite retaining walls around the FarmHouse, and he painted a pastoral scene on our salvaged front door (see this issue's front cover).

We've also hosted occasional work parties. We are grateful for all this assistance.

The FarmHouse could not have been completed without it. Along with our vision, our connection with the land and the materials, it was a big part of what kept us going for six years.

Our years of building experience allowed us to make design decisions as we built. I made mockups and drew sketches to communicate ideas for solutions to design issues. To work out every detail of construction

before building would have been tedious, cumbersome, and unnecessary.

That being said, we carefully designed FarmHouse's numerous support systems—heating, cooling, water, black water, and electric—with an eye toward sustainability and redundancy. Take cooling, for example: there are abundant operable windows, allowing for good ventilation.

Transoms above the bedroom and bathroom doors allow for air movement even

when the doors are closed. In the summer, windows are open at night to allow the cool air to flow into the house, then are closed in the morning to keep the coolness in and warmth out. Porches to the east and west combine with eave overhangs to keep the sun from overheating the house. Sun shades on the east bedroom window and the east bump-out window keep the summer morning sun out while allowing a dif-

We have enjoyed living in the house for two years. In fact, we have a hard time leaving, even to make the two-mile trip to town.... It has a casual, pleasing feel, like a favorite shirt or song.



THE FARMHOUSE'S GREAT ROOM, FEATURING THE BARREL-VAULT CREATED WITH HICKORY LOGS HARVESTED ON THE PROPERTY. PHOTO BY WERNER ELMKER



DETAIL OF THE SOUTH-FACING WINDOW IN THE FARMHOUSE'S GREAT ROOM. PHOTO BY EMILY MAMRAK

fused light in. A ceiling fan in the living room gently moves air around the entire house. We also installed two 100-foot-long, six-inch tubes eight feet deep in the earth. A fan drives filtered outdoor air slowly through the tubes, where it picks up the earth's latent 58-degree temperature and delivers the chilled air into the house. Finally, on sunny summer days, when extra coolness is welcome, there is enough solar electricity generated by our off-grid system to run a small window air conditioner.

How much did the FarmHouse cost to build? Materials, subcontractors and tool rental totaled \$155,000, not including land. Susan and I spent approximately 24,500 hours over six years. At one dollar per hour, that's \$24,500. Add in the hundreds of hours of service friends and interns put in—hours which were great fun, but impossible to put a price-tag on—and the cost—and the value delivered—quickly becomes incalculable.

We have enjoyed living in the house for two years. In fact, we have a hard time leaving, even to make the

two-mile trip to town. We love that it looks as if it has emerged from the earth, just like the trees which make its frame. It has a casual, pleasing feel, like a favorite shirt or song. Tucked into its site, its west entrance is partially concealed by raised gardens along the curving entry walk which feature an eclectic mix of annuals and perennials, flowers and trees, weeds and edibles. Buffering the winter winds is a row of conifers 70 feet north-west of the house.

Once a year now, we host an open house to expose visitors to new possibilities in home design and to show them that it's possible to build with natural, recycled or upcycled materials obtained from close by. We occasionally hold a house concert, preceding it with a potluck meal. These events are unique in that some people come only for the potluck, some only for the music, although most come for both. If we move some furniture out to the porch and bring in folding chairs, we can seat up to 50 people.

Once visitors had begun coming through the FarmHouse, we found that in building with natural materials

and methods we had unintentionally evoked a multitude of traditions which spelled “home” for people from many different places. One visitor commented that the Dutch door between the kitchen and the screened porch reminded her of doors in her native Hungary. A woman from Venezuela put her hands on an earth plaster wall saying it reminded her of home. Another visitor, from Siberia, expressed happiness that we had included cow manure in our plaster mixes, just as her family did back in Russia. A professor from India said our three-part south window was reminiscent of windows in Rajasthan. Numerous visitors have commented that our adobe floors and round wood rafters—vigas—have the flavor of the American Indian and Spanish architecture of the Southwest. And earthen roofs like ours are used in many places in the world, including Scandinavia, where my own ethnic roots lie.

Guests and visitors enjoy the views from the FarmHouse. The porches, the windows, and the seating provide inspiring vistas of sunsets, mists over the forests, creek valley, pond and fields. But more significant than the views are the abundant beauty, silence, comfort,

charm, and joy which are native, embedded qualities of the land. These characteristics were not inherent in our plan and elevations, nor were they even our intention as owner-builders. Rather, they were embodied, I think, in the local materials, whose living essence flowed from them as they were lovingly harvested from field or quarry or woodland, installed, and appreciated. Paying attention to their silent language has yielded a home which, like the forest itself, is pleasing, peaceful, and lively.

What would our advice be for a person wanting to live in a home like the FarmHouse? Practice swinging a hammer, wielding a chainsaw or using whatever tools you need to accomplish your goal. Take workshops focusing on your favorite materials or techniques—straw bales, cord wood or earth plaster. Build something small and useful—a greenhouse, a tool shed or an animal shelter. Volunteer to work for people who are doing what you wish to do. Pick your place to build. Spend time there, and the place will speak to you. 🌿



THE VIEW WEST FROM THE FARMHOUSE'S DOORYARD. PHOTO BY MARY ROSE BERNAL



PHOTO BY EMILY MAMRAK

RootsTalk! Episode 2: A Podcast Interview with Writer Cornelia Mutel

For the Fall 2017 podcast, *Rootstalk* editors Marie Kolaric and Sonia Chulaki, assisted by audio producer Noah Herbin, interviewed **Cornelia Mutel**, a Senior Science Writer at the University of Iowa’s Iowa Institute of Hydraulic Research—Hydroscience & Engineering (<http://www.iihr.uiowa.edu>). Mutel has written and lectured extensively on Midwestern natural history and environmental issues. Her books include *The Emerald Horizon: The History of Nature in Iowa* (<https://www.uiopress.uiowa.edu/books/2008-spring/mutelemerald.htm>), *Fragile Giants: A Natural History of the Loess Hills* (<https://www.uiopress.uiowa.edu/books/pre-2002/mutfragia.htm>), and *The Tallgrass Restoration Handbook for Prairies, Savannas, and Woodlands* (editor, with Stephen Packard, <https://islandpress.org/book/the-tallgrass-restoration-handbook>). *Rootstalk*’s Fall 2016 issue featured her essay, “The Stories We Live by: Writing Climate Change” (<https://rootstalk.grinnell.edu/article/stories-we-live-writing-climate-change>), and Liz Queathem reviewed Mutel’s most recent book, *A Sugar Creek Chronicle: Observing Climate Change from a Midwestern Woodland* (University of Iowa Press, 2016; <https://www.uiopress.uiowa.edu/books/2016-spring/sugar-creek-chronicle.htm>) in Volume III, Issue 1 (<https://rootstalk.grinnell.edu/article/confronting-climate-change-love-review-cornelia-mutelels-sugar-creek-chronicle>). 🌿



“NEW STREAM,” ACRYLIC ON CANVAS, 5' x 6', BY THOMAS AGRAN, 2016



To hear an audio recording, of this issue’s podcast, use the link at the bottom of the web page to download the fully interactive PDF of Episode 2 of RootsTalk!, then click the audio link.



PHOTO COURTESY OF HANNAH CLARK

Hannah Clark has been previously published in such journals as Tenth Street Miscellany (<https://tenth-streetmiscellany.wordpress.com>), Cahoodaloodaling (<http://cahoodaloodaling.com>), and The Great Plains: A Collection. She enjoys hiking and playing D&D with her husband. She is currently an MFA candidate at Creighton University (<https://www.creighton.edu/program/creative-writing-mfa>).

Two Poems

BY HANNAH CLARK

THE EDGE OF THE WORLD

I live now at the edge of town, a wild concept to my city friends,
and to myself, until I moved here, hung laundry on a line
for the first time, and walked by staring dogs tied up in yards.

I walk from town; the edges make a mood.
The air, tip of November, and the blurry, quilted sky,
stained with sunlight, is my only question

and it too has a border line. I walk and know
where all things start and end. My shoes crackle
on the gravel and I step off the trail to

trace the rusted train tracks' flow.
The lines, god, the lines. They drape along the shouldered poles
and past a wire cow-fence. Girdled silos

dot the infinite design of cornfield rows.
I tell my old friends in the city: there really is a place
beyond where dirt, tracks, grass, and sky

convince the stranger into highest company.
My eye reaches to the oldest edge,
the gravity of spaces larger than myself.
A distant dog howls with the wind and I,
framed by all horizons, lose my end.

THERE WON'T BE MUCH TO SAY

“And afterwards there won't be much to say.”
Burrage pulled the glove off of his hand.
He always did that: butchered meat “in-glove”
as mother put it, when the elk was bare
across the table, her secret places
open to the world. Burrage said his
palms would keep the scent if he skinned a kill
without them on. “Who cares?” I asked. He rolled
his eyes, and then told me all the things
that you could miss if girls said that you smelled.

I listened and wondered how a man

could tell which woman he would want to love.
I thought it came upon you, like a train,
the tickets handed out most every year.
You waited on the platform for a sign
of someone in the car you wished to see.
A wide-brimmed hat would pass you in the crowd.
A handkerchief would wave outside the glass,
and you would board to do these things, which he
thought worthy of the gloves he wore. I asked,
“What happens after?”
“After's when you pay.”
I looked up to this man, and he at me.
“And afterwards there won't be much to say.”



PHOTO COURTESY OF DAVID OTTENSTEIN



PHOTO COURTESY OF ABIGAIL EVANS

Abigail Evans is a junior at the University of Iowa (<https://uiowa.edu>), majoring in English and Creative Writing and minoring in music. She hails from Tama, Iowa, where she grew up with three wonderful brothers and loving parents. Last year Evans was awarded the University of Iowa's Writers Gone Public award and was asked to read her work at Prairie Lights Bookstore (<http://www.prairielights.com>) in downtown Iowa City. In her free time, Evans participates in the Hawkeye Marching Band (<https://uiowa.edu/hmb>), volunteers for the Englert Theatre (<http://www.englert.org>), and is sitting University of Iowa Chapter President of Young Americans for Liberty (<https://yaliberty.org>).

Live Theatre and the Life of A Community:

Restoring Toledo, Iowa's Wieting Theatre Opera House

ABIGAIL EVANS

Toledo, Iowa's Wieting Theatre Opera House (<http://wieting.tamatoledo.com>) opened for the first time in September of 1912. It measured just 50 by 100 feet and had elaborate murals on the walls to the left and right of the grand stage. The stage was masked by a hand-painted tapestry that hung down and brushed the wood floor beneath it. The building itself has seen many changes during the century since its opening, but throughout its history it has provided Toledo with a warm environment where the community has been able to experience the arts and enjoy time spent with one another.

History

The Wieting was named for the family of Dr. P. G. Wieting and his wife, Helen, who moved to Toledo, Iowa, in 1867 from Worchester, New York. Dr. Wieting was a practicing dentist and later a successful bank owner with his father-in-law, N. H. Wilder. They opened the bank together and called it the Toledo City Bank.

Later the Wietings would move back to New York, this time to Syracuse, where they once again found success. The Wietings never forgot Toledo, though, and later, after Dr. Wieting passed away, Helen decided to honor her late husband by donating money from his estate for a good cause. Helen bequeathed money to build a theatre in each of the three towns where they had resided, one theatre in Worchester, New York, one in Syracuse, and one in Toledo. The theatres were dedicated to the memory of Dr. Wieting and also served to celebrate Mrs. Wieting's passion for the arts.

After Helen Wieting made a \$20,000 donation from her husband's estate, construction of the Wieting Theatre began swiftly. The project was started in March of 1912 and completed by September of that same year. The Wieting Theatre Opera House was ready to open its doors.

In its original grandeur, the theatre contained 650 seats and was equipped with a stage, an orchestra pit, a box office, bathrooms, a balcony, and dressing rooms. The building had a red brick exterior, with stately, white pillars framing the front door.

Although the Wieting Theatre began as an opera house, it was host to various events since its inception. The opening night event was Verdi's "II Trovatore." Joseph Sheehan was a famous tenor at the time and the star of the show. At that time the venue was used to host traveling shows and musicians, graduations, high school and college plays and productions, political conventions, and minstrel shows. The Wieting has always been a resource to everyone in the community—even for those that its supporters disagree with. As noted in the history hall, there was once a Ku Klux Klan gathering held at the theatre, an occurrence that is an outlier from the otherwise inclusive community that the theatre now condones. And within a year of the doors opening, the Wieting began to show films. The films were silent, and local talents were hired to accompany the films on piano. Twenty years later, the silent films turned into "talking picture" shows.

By the late 1950's, the Wieting began to experience competition for film showings from the opening of other movie houses in the Toledo area. Additionally, the rise of television drove down demand for theatre movie showings. Eventually the Wieting was barely staying open, running only on a part-time schedule until the fall of 1958, when the theatre's management decided that it was no longer feasible to keep the Wieting operating, and it was shut down. A layer of dust formed over the seats, the stage curtains stayed in place, and the doors remained locked.

Resurrected by volunteers

The Wieting's closure left a hole in the community. No other venue was home to the arts like the Wieting

had been for 56 years. After a year and half, though, community members began to gather and talk about the possibility of reopening the theatre. A group of women gathered to discuss its importance in the community and, shortly after, convened to seriously evaluate the building's fate. That day in April of 1960, 40 people gathered to create a vision for the future of the theatre. That became the first of many recurring meetings that still happen today. These community members turned into a guild of regular volunteers for the theatre and, a month after their first meeting, they wrote a constitution to guide their efforts, and immediately set to work to restore and reopen the Wieting Theatre.

The volunteers did not waste time, spending the whole summer working to learn the ins and outs of running the theatre as a business. If they were going to reopen the Wieting successfully, they reasoned, they wanted to know how to keep it in operation long-term. An executive committee was set up to spearhead the reopening, consisting of members Leo Benda, Dallas

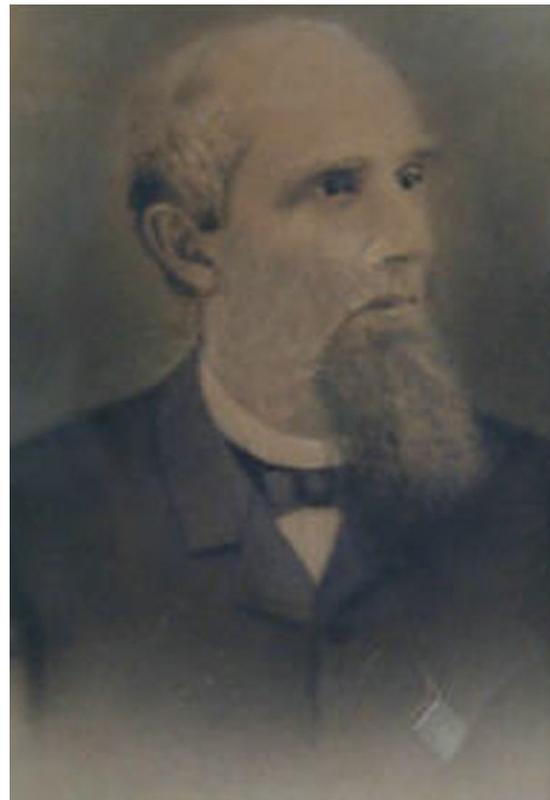


PHOTO OF P. G. WIETING, DDS, COURTESY OF ABIGAIL EVANS



EARLY PHOTO OF WIETING THEATRE OPERA HOUSE, COURTESY OF ABIGAIL EVANS

Sloan, Mrs. Willard Beadle, Mrs. Virgil Wulff, and Mrs. Charles Maplethorpe Jr. These five guild executives were active members of the community. For example, Leo Benda worked as a manager at the local post office and later became a Tama County Supervisor and Helen Beadle owned her own fabric store in Toledo called “Sunrise Sotique.”

To prepare for the reopening, these executive members, as well as other guild volunteers, spent many hours restoring the theatre. Volunteers painted the lobby, the front doors and the pillars that framed them. They installed a new movie screen, box office, and carpeting. In addition to overseeing this work, the guild also took in monetary donations. One business bought \$60 worth of tickets which, at that time, covered the cost of 200 children’s tickets to see a show.

When reopening day came on September 16th of 1960, the Wieting was filled to capacity. That night two movies were shown, “The Boy and the Pirates” and Disney’s “White Wilderness.” The Wieting began selling family season tickets. Each of the five executive members bought season tickets, and their combined purchase totaled \$100. Soon, 100 more family season tickets were sold, bringing in money to help the theatre get

back on its feet. In attendance at the reopening event were Dr. and Mrs. Knight Fee, who also attended the original opening in 1912. While there were some community members who were able to experience both of these opening events, others experienced the Wieting for the first time that night.

This success story could never have come to be without the count-

less volunteer efforts and the drive to keep the Wieting a home to the arts in the Tama-Toledo community. The volunteers were vital to the theatre’s reopening in 1960, and still continue to be essential to the Wieting’s success.

Today, the theatre stays open thanks to nearly 150 community members who regularly volunteer their time for the Wieting. The volunteers attend meetings, run concessions, collect tickets, greet guests and work behind-the-scenes to keep the theatre operating smoothly. The current support staff, consisting of the guild President and a few dedicated members who oversee daily operations, volunteer a combined 25-40 hours per week for the theatre.

It should be no surprise to learn that many of today’s guild of Wieting Theatre volunteers are highly involved in many aspects of the community. Denise Fletcher, a dedicated volunteer and the current guild President, is a retired fourth-grade teacher who is highly regarded in the South Tama school district. About her volunteer work, Fletcher says, “Life can be broken down into three stages. As a child you receive the benefit of other people’s experience and wisdom. In the second

stage you begin to give to your family and career. Now as a retiree I feel I have the privilege to give back to my community. I choose to spend my time serving on the Wieting Theatre Guild. I feel that I continue to grow as a person by learning new things, meeting new people and striving to meet the needs of our community.”

The commitment demonstrated by volunteers like Fletcher would be necessary again in the early 2000s, when the Wieting faced challenges similar to those it faced in 1958. With movie rentals on the rise, families were opting to stay at home to watch movies rather than attending showings at the theatre. Additionally, many of the theatre seats were broken and the film equipment would often break down during movie showings. Volunteer projectionists would scamper to try to splice the films quickly to get them running again before guests would leave. It was very challenging to keep the theatre in the black during this time, and some of the guild members even paid the Wieting’s bills with their own money. Despite these hardships, the volunteers were determined to keep the theatre open and were hopeful that the community would support their efforts.

Renovations

Once again, a group of guild members got together and started planning the salvation of Toledo’s cherished community resource. The volunteers imagined a renovated theatre with new seats and better lighting. The community ultimately supported the decision to fund this \$1.4 million-dollar renovation project.

In addition to holding special fundraising events—including raffles, trivia nights, and themed dinners—businesses and residents were solicited for cash donations. Grant applications were submitted and awarded by Vision Iowa (<https://www.legis.iowa.gov/docs/publications/IR/867.pdf>), Iowa Great Places (<https://iowa-culture.gov/about-us/about/grants/iowa-great-places>), and the Mansfield Foundation, to name a few.

The plans for the first renovation included air conditioning, a new ticket office, new seats, digital movie equipment and surround sound, and a new addition to the theatre which would include handicapped-accessible restrooms, a family restroom, and a “history hall.” The history hall contains historical information about

the theatre, lists of donor’s names, and many pictures of past events. This hall is an important timeline for the theatre and also serves to thank the community and show appreciation for the Wieting’s generous donors.

A sponsorship program was put in place to help reduce the overall costs of renovations. Donors were able to sponsor individual theatre seats, or more than one if they were inclined, for the price of \$375 per seat. After they did so, their names were placed on a plaque that honored all of the donors, and was placed in the history hall.

After volunteers worked tirelessly to plan and host fundraising events, and with overwhelming help from grants and donations, the Wieting reached its fundraising goals. The theatre was shut down for a year in 2011 to complete the renovations. Beside the new additions to the theatre, the murals on either side of the stage were restored. The original hand-painted tapestry, which had hung over the stage since the Wieting opened, was kept in place.



PHOTO OF HELEN WIETING, COURTESY OF ABIGAIL EVANS



THE WIETING THEATRE OPERA HOUSE AFTER PHASE I OF RENOVATION. PHOTO COURTESY OF ABIGAIL EVANS

The Wieting's reopening was a marvelous success, with the average attendance for events more than doubling over the following year. Before renovations, average attendance had been in the low 20s. After, the average climbed to 56 people per night. The average income two years after the reopening was triple what it had been before the renovations. The theatre continued to be a place where community members could gather to watch movies and enjoy events. Even after these extensive renovations, the volunteer-run aspect of the theatre currently allows it to show movies for \$3 for 2-D movies and \$4 for movies shown in 3-D, with recent releases playing every weekend, Friday through Sunday and Thursday through Sunday in the summer months.

Looking ahead, the volunteers are now focused on planning and fundraising for a second phase of renovations to the theatre. The upcoming phase will focus on improvements to the theatre which are more behind-the-scenes than the previous renovations were. The goal of this phase is to restore live theatre performances to the Wieting's stage. One of the main facets of the renovation is installing completely new lighting and rigging to make the space better equipped to host theatre performances. To complete these lighting renovations, improvements to the Wieting's roof

structure will be necessary. Improvements to the base-ment are also planned, to repair existing water damage.

The renovation also calls for upgrades to the back-stage areas including the green room, restrooms, and make-up and storage areas. Additions for these areas will be built on the south side of the theatre and will be one story tall, making them handicapped accessible. The addition will also have space for a workshop for building sets and for a dining and event space that will seat up to 80 people.

The community will once again be crucial to the success of this project. Past and present community members have made contributions to the Wieting, ranging from people who are behind-the-scenes to a famous actor who grew up in the community. Michael Emerson (https://en.wikipedia.org/wiki/Michael_Emerson), renowned for his role as Benjamin Linus in the American drama series "Lost," graduated from South Tama and performed at the Wieting during high school. He has supported both phases of renovations by writing letters of support as well as making financial contributions.

In 2010, before the first phase of renovations were underway, Emerson made a visit to the theatre. An article titled "Michael Emerson at the Wieting," published in the *Toledo Chronicle*, quotes Emerson the night he

visited. Emerson stated, “We need to go that extra step to save this old-time theatre. A lot of us have histories here.” The article also mentions teachers who were particularly influential for Emerson during high school, including a community member and former teacher who is still helping the theatre today.

Anne Michael was Emerson’s English teacher and also directed high school plays during her career at South Tama. For a re-

cent fundraiser Michael co-wrote a reader’s theatre piece with another former English teacher, Mary Fasse-Shaw. The humorous performance of this murder mystery piece titled “Mysterious, Gruesome, Yet Morbidly Fascinating Murder at the Wieting,” filled the house. The audience roared with laughter throughout the performance. The fundraiser was co-hosted with another local group, the Kiwanis Club. The event itself was free to attend, but free-will donations totaled over \$2,200, bringing in about \$1,100 for each organization, with the Wieting’s portion going towards the second phase of renovations.

For the first phase of renovations, donors were able to sponsor individual theatre seats. For the upcoming phase, a similar sponsorship will be available, but this time with stage lighting fixtures. Each light fixture costs \$425. The sponsors will once again help reduce the overall cost of this new phase of renovations and they will be honored with their name on a plaque. If the theatre reaches its fundraising goals, it is likely that the second phase of renovations could begin as early as February 2018.

Community Life

The completion of the first phase of renovations brought with it a new wave of activity, sparking many new traditions at the

theatre. Camp Creamery and the Fine Arts Performance Series are two wonderful examples of this activity.

Camp Creamery is a theatre camp that has been put on by the Wieting every summer since 2013. It is a week-long camp featuring actors from the Old Creamery Theatre Company (<http://www.oldcreamery.com>), a

I hold my memories of dancing at the Wieting close to my heart. I have many fond recollections of both performing and being an audience member at the theatre.

not-for-profit professional theatre troupe founded in 1971 in Garrison, Iowa. Usually three actors from the troupe come to teach about 60 elementary and mid-

dle school students. When camp is in session, kids come to the Wieting every day to learn a musical, which they then perform for the community at week’s end. Parents and community members alike are more than happy to buy tickets to see the musical put on at the end of camp, and so the event also serves as a fundraising opportunity.

Many of the same students return for the program year after year. It is a wonderful way to get young students involved with the Wieting and with the art of theatre.

The Fine Arts Performance Series is another new Wieting tradition. The series, which started in 2014, honors all types of performing artists that travel to the



THE INTERIOR OF THE WIETING THEATRE OPERA HOUSE, POST-RENOVATION. PHOTO COURTESY OF ABIGAIL EVANS



YOUNG THESPIANS, TRAINED AT CAMP CREAMERY, ASSEMBLED ON THE WIETING'S STAGE. PHOTO COURTESY OF ABIGAIL EVANS

community from one of the public universities in Iowa. Each season is comprised of four or five different shows, and in the past performers from both the University of Iowa and the University of Northern Iowa (<https://uni.edu>) have gladly shared their talents with the community. The Fine Arts Performance Series has hosted musicians, dancers, singers, and musical theatre. Not only does the series create connections within the community and the state, but it also inspires high school students who are interested in pursuing the arts as part of their post-secondary education.

I hold my memories of dancing at the Wieting close to my heart. I have many fond recollections of both performing and being an audience member at the theatre. From kindergarten through my senior year of high school I took dance lessons at the community center next door to the theatre. Up until the Wieting was shut down for the first phase of renovations in 2011, our yearly dance recitals were held at the Wieting. During my middle and elementary school years, my classmates and I would get changed into our costumes, slip on our ballet shoes and tiptoe to a small side door of the theatre that led directly backstage. We would huddle close together, waiting. I was always filled with such unequivocal

excitement, sometimes peeking out from the sides of the stage to search for familiar faces. I remember watching the older girls dance their routine before we were able to take our places on center stage.

In 2014 a group of dancers, called Dancers in Company (<https://dance.uiowa.edu/performance-opportunities/dancers-company>), came from the University of Iowa to perform at the Wieting for the Fine Arts Performance Series. The theatre decided to host a master class ahead of their performance to teach a dance to interested students. I signed up and attended the master class, which took place during March of my junior year of high school. We learned "modern" dance, which was quite different in style from the ballet moves to which

I was accustomed. I was amused that we were directed to keep our feet flat and told that our arms could form any shape we desired; we were not restricted to rounded arms and pointed feet. It was an entirely new dance experience for me. This class gave me the courage to enroll in a modern dance course during my second semester at the University of Iowa.

Because our high school lacked a full-size auditorium, the Wieting was always a place for my classmates and me to pursue the arts. The Wieting is central to the



PERFORMERS FROM A MASTER CLASS IN DANCE, HOSTED AT THE WIETING. PHOTO COURTESY OF ABIGAIL EVANS

community's expression of the full range of its cultural life. Our local schools bring the students to the theatre for movie viewings that are often educational or relevant to topics which they are learning in class.

Additionally, the high school often holds events at the Wieting at which students are congratulated on their achievements, including the induction ceremony for the National Honor Society and the Senior Honors Exhibition—a town tradition which honors seniors who excel in the arts, whether that is theatre, vocal or instrumental music, dance, photography, or other forms of visual expression.

During my senior year of high school, I was able to perform a piece that I had written for a speech competition at the Senior Honors Exhibition. I stood alone on the stage, looking out at the same community members, students, and friends whose support had given me the opportunity to be standing where I was.

My senior year of high school I also used the Wieting's stage to choreograph and rehearse a solo dance piece. I remember being all alone in the building, surrounded by silence and empty chairs. I felt as though

those grand walls were reaching up with me as I began to move and turn to my song. My movements were slow and deliberate, the stage was smooth and cold. I leapt and I breathed and I spun and at the end of the song, I took a bow. That was the last time I danced on that beautiful, timeless stage.

The Wieting's stage is made for dancing, but it is also made for theatre performances, for singing, for live music, and for celebrations of every kind. It has been serving the community for 105 years as a welcoming place for artistic expression.

I am not unique in my fond experiences of the theatre. One recent grad from South Tama, Sadie Kavalier, speaks of it with reverence.

“In my personal life the Wieting has always been a major force in my family,” she says. “The environment [there] is unheard of for other communities of our size. When I was a kid, I would often go with my family to watch movies there. Throughout my childhood, I performed there for dance, and later for speech and talent shows.”

Kavalier believes that part of the charm of the



A WALL IN THE WIETING'S BASEMENT IS DEVOTED TO THE THEATRE'S HISTORY. PHOTO COURTESY OF ABIGAIL EVANS

theatre are volunteers who always greet guests with a smile on their faces. “Many of the volunteers are people I knew from church or others who were active in the community. It’s great to see familiar faces and know that those people are there because they want the Wieting to continue to be a part of the community.”

Through past and upcoming renovations, the Wieting will always to be a place to gather, to perform, to laugh and cry, or to sit back and watch a movie. Most importantly, it will continue to serve as a space to bring the local community together and to take a few moments to enjoy the beauty of the theatre and the company of one another.

With the upcoming renovations, the theatre will continue to have an impact on the lives of students and

community members. When performers step on that stage, glowing under the new lights, they will feel the excitement that performers have felt for over one hundred years. When the lights go dark and the curtain closes, the audience will applaud passionately, for the theatre, for the performers, for the donors, and for the volunteers. The audience and performers alike will leave the theatre feeling that undeniable sense of community that the Wieting creates. 



THE WIETING THEATRE ADDITION
WEST ELEVATION SCHEME - 1
SHIFFLER ASSOCIATES ARCHITECTS, P.L.C.



PHOTO COURTESY OF KEN SAUNDERS II, TAKEN APRIL 12, 2015, AT THE SUGAR CREEK AUDUBON NATURE SANCTUARY IN RURAL JASPER COUNTY, IOWA

all across the country and is also the state bird of New Jersey and Washington.

Song: Males sing a long and variable series of twitters and warbles that can be several seconds long. The notes and phrases are variable and repeated in a seemingly random order. Birds continue to learn song patterns throughout life. (Description adapted from text created by the Cornell Lab of Ornithology, <http://www.birds.cornell.edu>).

To hear an audio recording of the American Goldfinch, captured by Greg Irving at Nelson Lake Marsh Reserve (<https://www.dnr.illinois.gov/INPC/Pages/Area2KaneNelsonLakeMarsh.aspx>), Kane County, Illinois, visit Xeno-canto (<http://www.xeno-canto.org>), or download the fully interactive PDF of this issue's Birds of the Prairie feature using the hyperlink at the bottom of the web page.

Birds of the Prairie: American Goldfinch

Spinus tristis

The state bird of Iowa, the American Goldfinch, is a small bird with a conical bill, a short, notched tail, and a long wingspan. It feeds on sunflower and nyjer seed, and often flocks with Common Redpolls during the winter months. In the spring, males are bright yellow with a black forehead, while females are olive colored above their tail and pale yellow beneath. In the winter, these finches turn a dull brown with black wings. Their call is high pitched, and often given during flight. The American Goldfinch lives in fields and floodplains, especially around plants such as asters and thistles, as well as in orchards and backyards. While common in the prairie region, it can be found





PHOTO COURTESY OF ART DUNHAM, DVM

Arthur Grinnell Dunham, DVM, graduated from Iowa State University (<https://www.iastate.edu>) in 1974. He and his partner practice large animal medicine in the small community of Ryan in northeast Iowa. Dunham has always been interested in nutrition and does nutritional analysis, and he started to develop concerns about the overuse and abuse of glyphosate-based herbicides a few years after Roundup Ready soybeans and corn were introduced.

Animal, Vegetable, Human: Glyphosate's Effects in Ag and Beyond

INTERVIEW with Art Dunham, DVM
CONDUCTED BY JON ANDELSON AND
MARY ROSE BERNAL

The Monsanto Corporation (<https://monsanto.com>), a multinational agrochemical and agricultural biotechnology corporation headquartered in St. Louis, Missouri, is a looming presence on the American industrial landscape. Since its founding as a pharmaceutical firm in 1901, Monsanto has had a hand in many advances which have literally shaped the modern world. Among the products Monsanto or its subsidiaries have developed or produced are the artificial sweetener saccharin, vanillin, aspirin (and its raw ingredient salicylic acid), and such basic industrial chemicals such as sulfuric acid and PCBs. Its research labs helped with the Manhattan Project and later became involved in the development of DDT, "All" fabric detergent, Agent Orange, AstroTurf, L-Dopa, and light-emitting diodes. The company was one of the first to genetically modify a plant cell, and in more recent years, through its patents, strategic mergers, and acquisitions of the seed businesses of such companies as Dekalb, Cargill, and Seminis, Inc., the company has become the world's largest seed company, parlaying its GMO patents into vastly profitable product lines.

All of this has made Monsanto one of the biggest and perhaps the best-known of the companies one thinks of when the phrase "Big Ag" is spoken. Among the many, many profitable products the company has fielded, one of the most prominent is the herbicide Roundup.

If that name has not become familiar through the company's advertising, you have only to stroll down the gardening aisle of just about any home center or hardware store in America, and you will find shelf after shelf filled with jugs of the weed-killer whose patent Monsanto has owned since 1974.

There is major disagreement about how Roundup—generically known as glyphosate—works. However, there is general consensus that the chemical’s effects often come not from toxicity, per se, but from the way it interferes with the plant’s metabolism, and its relationship with the soil in which it grows. According to curricular materials available at Indiana University/Purdue University Indianapolis:

Glyphosate is quickly absorbed by leaves and shoots of plants. Once absorbed into the leaves, glyphosate cannot be broken down. The glyphosate moves quickly through the plant and accumulates in areas of active growth called meristems. Spraying a plant [which has not been genetically modified to resist it] with Roundup results in a lack of protein synthesis in that plant.... Within a week or so, many plant tissues and parts slowly degrade due to lack of proteins. Death of the weed ultimately results from lack of nutrients and dehydration a week or so later.¹

Alternatively, the work of Johal and Huber² suggests that glyphosate takes plants down by obstructing their

formation of compounds which protect them from pathogens normally present in the soil, which then kill them. In their experiments in sterile greenhouse soil which lacked those pathogens, glyphosate-treated plants were stunted for a short time, but then bounced back.

*Whatever the mechanism, there is no doubt that in the real-world environment of the farm field, glyphosate works. In recent years, Monsanto has also begun marketing glyphosate to farmers as a way of “finishing” their crops—that is, killing and drying out the plants to make harvesting the grain quicker and easier. This use, and the ubiquity of “Roundup Ready” soybeans and corn—which have been genetically modified to fend off the herbicide’s effects while the weeds in the fields around them die—have resulted in huge increases in Roundup’s sales: according to a 2011 EPA report³ quoted by the Pesticide Action Network (PAN; <http://www.panna.org>), between 2001 and 2007, use of glyphosate more than doubled, growing from 85-90 million pounds to 180-185 million pounds. Another report, published in the journal *Environmental Sciences Europe* (<https://enveurope.springeropen.com>), lends more historical context to this increase:*

Since 1974 in the U.S., over 1.6 billion kilograms of



PHOTO COURTESY OF JON ANDELSON.

glyphosate's active ingredient have been applied, or 19 percent of estimated global use of glyphosate (8.6 billion kilograms). Globally, glyphosate use has risen almost 15-fold since so-called "Roundup Ready," genetically engineered glyphosate-tolerant crops were introduced in 1996. Two-thirds of the total volume of glyphosate applied in the U.S. from 1974 to 2014 has been sprayed in just the last 10 years.⁴

In 2013, 210 million pounds of glyphosate were sprayed on corn and soybean fields, and the total used for agricultural purposes was 295 million pounds in the U.S. alone.⁵ In 2014, farmers sprayed enough glyphosate to apply ~1.0 kg/ha (0.8 pound/acre) on every hectare of U.S.-cultivated cropland and nearly 0.53 kg/ha (0.47 pounds/acre) on all cropland worldwide.⁶

This translates into big profits for Monsanto. In 2015

alone, the company notched nearly \$5 billion in sales, with nearly \$2 billion in gross profits from herbicide products, mostly Roundup.⁷

But while use of glyphosate has killed farmers' weeds and boosted Monsanto's bottom line, a growing chorus of voices has begun questioning whether the increase in harvests and Monsanto profits is coming at the expense of our collective health.

In late August of 2017, Rootstalk publisher Jon Andelson and Associate Editor Mary Rose Bernal had a long discussion with someone who has been asking these questions: large-animal veterinarian Arthur Dunham, whose practice is in northeastern Iowa, in the small town of Ryan. Dunham's medical training has enabled him to do a deep dive into the science surrounding glyphosate, and he has had a ground-level view of the compound's effects on the animals he has encountered in his prac-



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tice. As he educated himself on the subject, what he found at first intrigued, then ultimately alarmed him. He has become convinced that glyphosate has deeply penetrated too much of our food supply and some of our water supply, and that it is causing both short- and long-term damage to our ecosystem, as well as to the health of both livestock and humans.

Rootstalk: Can you tell us a bit about the history of glyphosate?

Dunham: Glyphosate is the active ingredient of Roundup, really the most popular herbicide in the world. It's N-phosphonomethyl glycine... a phosphonate chemical [that] was patented first by Stauffer Chemical company in 1964 as a descaler for metal pipes. It was then patented in 1974 [by Monsanto] as a herbicide. And in 2010, it was patented as a human antibiotic and parasite control agent [because] it has activity against gonorrhea and malaria.

Rootstalk: Is glyphosate being used as an antibiotic today?

Dunham: Glyphosate has [never actually been] used as an antibiotic. [Monsanto] applied for the patent in 2002 and they got it in 2010, but they've never [sold it as such]. [Glyphosate's] main use is as a herbicide and a drying agent. By drying agent, I mean that [farmers] are using it pre-harvest to dry down the crop, to kill it.

Rootstalk: Why has Roundup/glyphosate become the most widely used herbicide?

Dunham: Well, number one, it's cheap. And the other thing is, it's been super-effective. It's let farmers farm more acres with less labor. One farmer can handle way more ground.

Rootstalk: How did you become interested in it?

Dunham: I got more interested in this whole thing as a veterinarian in 2005-2006, [when] I had five different dairies where I had stillborn, aborted calves. I sent in their livers to Iowa State University after reading my Dairy NRC [Nutrient Requirements for Cattle], and I had them check them for [the mineral] manganese. Their machine couldn't even find any.

Rootstalk: And manganese is necessary for normal fetal development....

I got interested in this whole thing as a veterinarian in 2005-2006, [when] I had five different dairies where I had stillborn, aborted calves.

Dunham: [Right.] So then, I talked to the fellow that wrote the mineral section of the Dairy NRC and he said, "Well Art, there's plenty of manganese in No. 2 Yellow Corn. There's plenty of manganese in soybeans and there's plenty of manganese in haylage [livestock feed made from perennial forages such as grasses and legumes] and corn silage." I kept saying, "Well, how come the machine at Iowa State [can't find the nutrient in the calves' livers]?" And the guy I talked to didn't have a good answer.

One of the dairymen [whose calves I was looking at] was mad at my two partners and me because we weren't really helping him. Our vaccine program wasn't working that good. He had John Deere tractors, so he had a copy of the [company's magazine], *John Deere Furrow*, (www.johndeerefurrow.com) for the spring of 2007. The client put me onto it; he [understood what was going on] before I did. He shoved the issue in front of my face, and he said, "Art, maybe you'll be interested in this." Well, I sure was!

In that issue, there was an article by this Purdue University (<http://www.purdue>.

edu) professor named Don Huber (<https://geneticliteracyproject.org/glp-facts/don-huber-science-still-looking-for-purdue-professors-gmo-pathogen-time-bomb>), [who was] talking about glyphosate tying up manganese, and maybe we should start looking for an alternative. I tried to get the experts at Iowa State University to phone him up. They wouldn't do it, so I did. And then, see, that's where we developed that relationship, in 2007. He's retired now but still living in Idaho. He's originally from out there. And when I say he's retired, he's still working. He's [consulting] in Australia right now. He's 82, and he's still working on this.

[H u b e r] worked at [the United States Army Medical Command (<http://mrmc.amedd.army.mil>) installation at] Fort Detrick [Maryland] on biological warfare agents, so he's an expert on ricin and Agent Orange.

He was the head of our government's Plant Pathogen Threat Committee for 25 years.... He has consulted [on crops] on every continent but Antarctica. [So] I really got onto [glyphosate after I talked to him]. I still remember the phone call. [I had] called him up two weeks before [this], and I didn't hear from him and I didn't hear from him, and I thought he'd just blown me off because I tend to ask questions

and then see if people can answer them, and then I never hear from them. But he phoned me and apologized for taking so long to get back to me. He said: "I've been in Russia on government business."

Anyway, in that conversation I [brought up] the article he wrote in the *John Deere Furrow*, and I said, "You're from Purdue. It's a land grant college like Iowa State, isn't it? It's pretty brave to come right out and say 'We ought to be looking for an alternative to glyphosate!' How could you write that in there? How do you get any grant money? How can you do any studies?"

Rootstalk: How did he answer?

Dunham: He's a little bitty guy, but he has a real deep bass voice. He went, "Heh, heh, heh, Art; I'm 72 years old, and I'm supposedly retired. I don't have to [publish] or apply for grant money anymore, and I can call it like I see it."

Rootstalk: And this was when he said glyphosate might be the issue?

Dunham: Yeah. [In] his article, he talks about the fusarium mycotoxins [fungal contaminants of food and animal feed] that I'm seeing, and that [he said] glyphosate helps increase the risk of. So, everything just.... It just made sense....

Rootstalk: How did Don Huber get interested in gly-



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phosate?

Dunham: He did the half-life studies for Monsanto in the early 70s, to get it approved as a herbicide. [Later], he realized that his science was flawed. So now he's trying to make amends for that by getting the word out.

Rootstalk: The science was flawed? How?

Dunham: Glyphosate [concentrates at the plant's growth points—the joints of the stalk, the root-tips, and the grain]. When [Monsanto] did the studies on corn to determine the half-life [of the chemical], they did it after they'd sold the corn grains, so they got rid of a third of it there. Then they sold the corn [stalks for] fodder, and because [glyphosate concentrates] in the joints of the stalk, they got rid of another third of it there. So that just left the third that went to the root tips to study. But [when they tested it] they didn't do the studies in soil. They did the studies in beakers of solution at room temperature.

Rootstalk: So, they weren't measuring the full concentration of glyphosate in the environment.

Dunham: [There are only] certain bacteria and fungi that can break [glyphosate] down. The more bacteria you have in your soil, the more diversity you have, [and the shorter the period of time] you've used [glyphosate], the faster it will break down. So now they're figuring out that [glyphosate's] half-life can be as long as 11 years. So, [over time] it's [been] building up. That's why, as a veterinarian, I didn't really start seeing issues

with it—let's see, we started using it in '74, and then we didn't start using it big-time until 1996 when we had Roundup Ready soybeans and in 1998 with Roundup Ready corn.

Rootstalk: And one of the selling-points of Roundup-Ready crops was that farmers wouldn't have to use as much herbicide for it to be effective....

Dunham: Remember, our whole ag business industry [said]: "Oh, we've got to have GMO because we're going to use less chemical." [So, with Roundup Ready crops] we maybe used fewer of the other herbicides that we said were more risky—which, actually, when we knew they were risky, we handled them more carefully. We couldn't put them on indiscriminately after the crop was alive and growing, and we didn't have to worry about near as much carry-over because they rinsed off. And there's nothing in the Roundup Ready plant that breaks down glyphosate for you.

Rootstalk: So, glyphosate was building up in the soil because farmers were using more of it.

Dunham: Yes. It's just the opposite of what we hear. When we drove the corn price up and really started pushing [corn-based] ethanol, wheat wasn't priced that good. So, Kansas farmers, Nebraska farmers, Oklahoma farmers, that had center pivot irrigation and had enough well water...switched to corn, and it was Roundup corn. Then, when things got a little bit cheaper on the corn they tried switching back to wheat. Guess what? You've got enough [glyphosate] carry-over, and unless you're getting lots of feedlot manure and you're doing some other things that have some bacterial action to break down [the

glyphosate], when you plant your wheat, you've got a pitiful stand.

Rootstalk: Because the glyphosate is still in the soil.

Dunham: [Yes.] And Monsanto has paid out considerable amounts of money [in legal settlements] without anybody knowing about it, because the way our court system works, see, when the farmer gets paid, he has to sign, "I can't say anything." And, again, only because of the group of other concerned people I'm working with, do I know anything about that.

Rootstalk: So, what would you say are your main concerns about glyphosate?

Dunham: My main concerns are human. And soil.

Dunham explained that glyphosate's impact on livestock and humanity stems from a cascade effect: when glyphosate is applied to a crop in the field, in addition to killing undesirable plants, its antibiotic properties damage the soil bacteria which normally add to soil tilth and organic matter. This—along with the heavier application of glyphosate to fields in which Roundup Ready crops are growing—leads to a concentration of glyphosate in the soil itself, as well as percolation of the chemical into groundwater. With glyphosate remnant in the soil, unless the farmer continues to plant glyphosate-resistant crops, yields in treated fields can fall.

Then there are the chemical's negative effects on livestock. When animals consume Roundup-treated plant material, it causes an impoverishment of the animals' gut-biome, making it harder for the animal to absorb micronutrients—including the manganese whose absence

Dunham noted in the fetal calves of his clients' dairy herds. This leads to animals which, when they don't die in utero, often suffer health problems before they reach market.

Researchers have begun to look into whether these effects are also passing up the food-chain to humans. The thinking is that, with glyphosate accumulating in plant tissues and (in smaller amounts) in the animal protein we consume, as well as in some of the water we drink, the chemical has begun accumulating also in the tissues of the human population, leading to a host of medical problems.

Rootstalk: So, you've talked about glyphosate's effect on fetal dairy cattle—their inability to absorb manganese. Can you describe some of the other

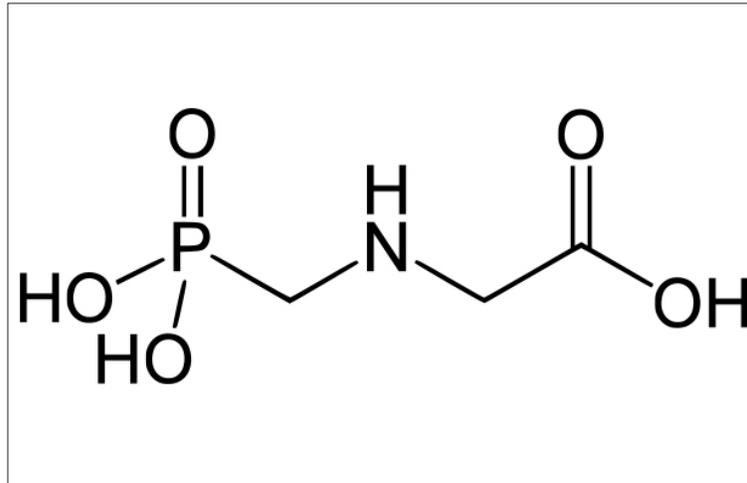
effects on the animal and human populations which some researchers are linking to this growing concentration of glyphosate?

Dunham: Well, [one effect is from Vitamin] B-12 deficiency [which leads to] demyelination. This is the degrading of the myelin sheath covering

the nerve cells—just like having electrical wires that don't have good insulation. So, it could be your spinal cord. It can be peripheral nerves. And animals and people have all sorts of demyelinating disease processes.

Rootstalk: Can you cite any instances in which you've seen this problem crop up?

Dunham: Probably in 2010 or 2009—it was after I met Huber—there was another person, Dr. Mike Sheridan, a world-wide known swine consultant from western Canada. who had been working with these big farrowing set-ups in Manito-



ba and Saskatchewan, for a great big Hutterite colony, and they're kicking out 130,000 hogs a year, farrow-to-finish.. [This vet had] run into a bunch of animals he called "squatter pigs" because they're going down in the rear end. Three percent of these 130,000 hogs are going down in the rear end. Well, [in this operation they didn't] feed corn. They [fed the pigs] barley, wheat, and rye [which had been dried down with Roundup]. They fed that to the sows. And the best way for a baby to be Vitamin B-12 deficient is

if the mother is deficient. So, they were feeding [Roundup-finished] grain to both the sows and the [juvenile] pigs.

This guy ended up sending tissue [from these "squatter" pigs] to two vet schools. He cut into their spinal columns and sent them in.... And they looked at it and they told him that it was Vitamin B-12 deficiency causing this. Well, then, he knew he really had something problematic, so they sent it to a human medical school and they told him the same thing. So... he de-



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cided to put in 10x Vitamin B-12 in the feed. It isn't that expensive. And he put in more [Vitamin B-9], too. [This] only lowered the incidence maybe in half.

This vet was on the American Association of Swine Veterinarians (<https://www.aasv.org>) listserv, so he puts a question on there either in 2009 or 2010 and he says, "Can somebody help me? What the heck's going on?"

Rootstalk: Because the B-12 supplements should have taken care of the deficiency....

Dunham: It should have. So, he had his phone number on [his email]. So, I phoned him up, and I said "Mike, is there any chance that Hutterite colony quit windrowing their barley, wheat, and rye and they started spraying it dead with glyphosate?" And he says—I still really remember this conversation too—he says, "WHAT? What are you talking about?" And I told him "You'd better check it out."

So, he checked it out. [The Hutterite operation was] big enough, so they were buying some of their feed, too. So... they went back to [drying their grain in windrows]. And guess what? Their problem disappeared.

Too much of [the grain crop is desiccated using glyphosate]. I'm not saying all [of it]—but a lot of it is. And so, [glyphosate acts as an antibiotic] when you eat the wheat. [This is where] I get arguments from my veterinary colleagues because they say, "Oh, it's too low a

dose. It's too low a dose."

And yet [look at what we're doing] in hog practice.... [We're] trying to cut back on low levels of feed-grade antibiotics so we don't create resistance. And we're trying to be more responsible. [But at the same time] we're using [glyphosate] as a herbicide and throwing it at everything. What I'm trying to tell you is that, in parts per million—when you're dealing with an aminoglycoside antibiotic, like Neomycin or Gentamicin, Amikacin, and if you are trying to kill off E. coli in the gut of a pig with post-weaning scours—you don't have to

dose him at one milligram per pound of bodyweight, or two or three. You can [get that effect with] a real small [dose]—just in parts per million in the animal's gastrointestinal tract. With the glyphosate [antibiotic] patent, they come right out and say one to two parts per million is an adequate dose. And then we're spraying half a part per million or better. And then we've got carry over....

Rootstalk: Any other researchers whose work supports these conclusions?

Dunham: Dr. Monika Krüger⁸ is another real important [person]. Huber got invited to talk at a conference in Europe, and she got invited to the same conference. That's how they got together. She's a veterinarian, but she never was a practicing veterinarian. She's a researcher. She's retired now, too. She was at Leipzig, Germany, at the University of Leipzig. In northeast Germany. She was behind the Iron Curtain, and Monsanto and agribusiness knew nothing of her. I met her in China in 2014. Then I saw her again, [when] she testified [in October 2016] at The Hague



PHOTO COURTESY OF JON ANDELSON

[concerning glyphosate]⁹.

She's got a Ph.D. in microbiology, a Ph.D. in mycology (the study of fungus), a Ph.D. in veterinary pathology, and she worked at a human hospital before she retired. Her field of expertise is Sudden Infant Death Syndrome. And she's a botulism expert.

So... anyway, she's shown that at one tenth of one part per million in the gut, that's a high enough level of glyphosate that it kills off *Enterococcus faecalis* and *faecium* that somehow produce bacteriocins [toxins produced by bacteria which inhibit the growth of similar or closely related bacterial strain(s)], which normally keep *Clostridium botulinum*, *Clostridium butyricum*, *Clostridium novyi* and *Clostridium haemolyticum* from producing botulism neurotoxin.

For botulism [to form], you have to make a couple of mistakes. You've got to make your haylage a little too wet, [which causes] *Clostridium butyricum* [to] come in. If you're feeding all sorts of Roundup corn and Roundup silage, well then, "Boom." You get this toxico-infectious botulism. It's even worse than the old botulism that our experts know about, [which happens] when you have a dead critter in the pit silo and you grind it up in the feed and you lose half your herd all at once. That's not what I'm seeing. What I'm seeing is a few dying, just picking at them. It's an ongoing problem because they're producing the neurotoxin in their intestinal tract.

Monika Krüger developed some test kits [which would detect this problem] that I tried to get over here. She was willing to get them over here. Because [currently] in the U.S., the only way we have to diagnose botulism is you send

your tissues [to a vet school for forwarding to a laboratory. Here, we send tissues to] Iowa State or the University of Wisconsin vet school (<https://www.vetmed.wisc.edu>) and then they send [the samples] up to Metabiologics (<http://www.metabiologics.com>) in Madison, Wisconsin, that makes botox, because they have a mouse colony and they inject the mice. If the mice die, you have it. Well, the problem is that the cattle, horses, pigs, wild pigeons that I've seen it in—they are all more sensitive than mice. So, when we get this real low level, we can't confirm it. And in modern medicine.... [when you diagnose lockjaw in livestock, it's caused by] *Clostridium*

tetani, they get stiff as a board after a castration infection. Nobody ever diagnoses [that] by culturing *Clostridium tetani*, though. It's next to impossible to grow. Nobody diagnoses it by finding the neurotoxins, because it's in parts per trillion, and they can't find it. Well, botulism is the same way, basically. And yet, you can send them pictures of the cows with their tongues hanging out and drinking like cats. So, I can diagnose it clinically, but I can't prove it in a lab. And in modern veterinary medicine and in modern human medicine, if you can't prove it in a lab, it doesn't exist.

[And here's another thing]: it only takes maybe one tenth of one part per million [of glyphosate] to kill *Lactobacillus acidophilus* and *Bifidobacterium bifidum*, two real important bugs in the bee's crop. I'm so disgusted there, because everybody's leaving glyphosate out of [the colony collapse conversation]. They're talking about the [neonicotinoid pesticides] that are coating the seeds—yes, they're part of it. But, if you throw glyphosate into the mix, the bees basically are getting these mites and this Colony Collapse Disorder because they're starving to death.

See, they're like a cow. The cow's rumen

If you get involved in medicine, the pharmaceutical companies and the ag chemical companies, everybody is all hooked up together. And it's just hard to do any out-of-the-box thinking.

is kind of like the community of soil organisms around a plant's roots—a big fermentation vat. And so, [when glyphosate is] in there, it's like any other antibiotic, it sort of screws things up! And we're trying to ignore it. [The] GMO people are saying "Art, oh, you're full of [it] because we've been feeding it and we see nothing." Well, that isn't really science. They've never done any side-by-side comparisons.

Rootstalk: So, let's go back to the effects on humans. Can you talk about the linkage between glyphosate and human disorders?

Dunham: Well, here's [a little background first.] If you get involved in medicine, the pharmaceutical companies and the ag chemical companies, everybody is all hooked up together. And it's just hard to do any out-of-the-box thinking. Dr. Stephanie Seneff¹⁰—she just retired, but she was the head of the artificial intelligence division at MIT. I think she's got a grandchild or somebody with autism. She got all these biology degrees before she went into artificial intelligence.

So, anyway...Huber got invited to talk at the same meeting that Dr. Seneff got invited to talk at. And she's known for a long time that there had to be something that we're eating or that is in our environment that's helping cause autism. And she listened to Huber and it's just "Ding-ding-ding-ding-ding!!"

[Then there's] Nancy Swanson¹¹; she was a biophysicist for our Navy. She lives in the state of Washington. She's part of a lawsuit¹² out there. Monsanto labeled her, "just a kook." [That's] far from true. [If] you look at things that are connected with the science that we know about glyphosate, and [in addition to the disorders already mentioned], look at Type Two Diabetes, it fits in there. Alzheimer's, Parkinsonism, pancreatic cancer—some fit and some of them don't. Anyway, when Nancy Swanson gets all the [Centers for Disease Control] data and then looks at these correlations¹³, and the increase in glyphosate use since 1996 and '98? Most of them are 97 percent plus! And, if you look at low-density lipoprotein or bad cholesterol supposedly, and Coronary Arterial Disease, I think



"SHOW ME," OIL ON CANVAS, 12" x 60," BY JANE PRONKO, 1987

the correlation is 62 percent. Yes, we need more science, but we've refused to even look at it!

Rootstalk: And Monsanto's doing whatever they can to stop the research?

Dunham: Sure, they are! They bought up most of the bee research firms that back up what I said about bees¹⁴....

[Then there's] gluten intolerance. [By continuing to use glyphosate on crops] we're changing the bacterial flora in our gut, and then we get leaky bowel. Then the gluten, instead of getting digested in your intestine, it leaks into your system. So, it's like a kid that gets stung by a bunch of bees when he's little. Then he gets allergic. See, you want the wheat to get digested in your bowel and not get into your system. Once it leaks into your system, even if you get the glyphosate out of your diet, if you stimulate your immune system enough and get allergic to it, you're going to be allergic to it forever!

While glyphosate's alleged effects on plants and animals take center stage in many minds, there are also concerns about the chemical's possible effects—through its antibiotic action—on the health of the soil's biome. There are fears that long-term application of glyphosate to croplands is leading to the degradation of soil's load of organic matter, its susceptibility to erosion, and its ability to store carbon. If the soil's ability to sequester carbon is degraded, this in turn contributes to the worsening of global warming. Art Dunham spoke about these effects at length.

Rootstalk: You mentioned soil effects earlier. Could you say more about that?

Dunham: Today...we've got everybody believing that no-till and minimum-till agriculture are way better for soil. And [it's true that], now that farms are bigger, you can't mold board plow 640 acres, [because] you'd have all sorts of erosion. [But] of course, everybody that no-tills and minimum-tills has to use glyphosate [to keep the

weeds down]. And so, remember that glyphosate is an antibiotic—it's breaking down the soil organisms that form the aggregation [clumps of soil particles that are held together by moist clay, organic matter (like roots), gums (from bacteria and fungi) and by (fungus filaments)]¹⁵, [and that means our] soil organic matter levels are going in the toilet. They're going down to two percent.

Francis Thicke¹⁶. He knows what he's talking about. I got this from him first.

Rootstalk: He's a dairy farmer in Fairfield.

Dunham: But he's also a Ph.D. and was a USDA soil scientist. So, I got this from him and then I double checked it. I'm sure it's correct. In Iowa, we've got all sorts of soil, but [in aggregate] it's the best soil in the world, and we're down to three [percent organic matter] and under. If it's two percent or under it can only hold a half inch of rain an hour. If you gain two percent on that, you can hold another 6 to 8 inches an hour! If every farmer in the world... would raise their soil organic matter by two percent...

Rootstalk: ...that would have a positive effect on soil loss and erosion.

Dunham: [With Roundup Ready seed and the attendant application of glyphosate] you don't get to store that much carbon below the ground, so you're lucky if you hold your organic matter and keep from losing it. [If you were growing] non-treated corn [and not applying glyphosate and killing the microbes in the soil], you could raise your soil organic matter by 30 tons [per acre] below the ground. [You could] raise your organic matter by half a percent per year. And, if every farmer in the world raised their organic matter by two percent, you not only hold more water for both flood situations and drought, you would store an amount of carbon equivalent to all the carbon dioxide generated by mankind in

the last one hundred years.

Rootstalk: The implication is that glyphosate is playing a part in climate change. One last question: Are there any countries which haven't approved glyphosate for agricultural use?

Dunham: Uh, practically everybody's approved it at one time or another. [But] Sri Lanka has outlawed it because they've had so many people with renal failure—people in their 20s and 30s, and they don't have hospitalization as adequate as us and they have no money, so they're dying. So, Sri Lanka is the bravest country in the world right now

And then there's Germany. Germany [was] the first major nation [to put restrictions in place]. [Because] Germany outlawed [glyphosate's use in] all spray-drying of crops for human and animal use.

Rootstalk: What moved them to do that?

Dunham: Well, the main reason they did it is because, well, you can't efficiently brew beer [with glyphosate-finished grain]. See, the barley farmers started to spray-dry the crop [with glyphosate] and then they didn't tell the breweries they were doing that. And then the breweries were having a harder time brewing their beer. [They decided the antibiotic effect is] for real, so they've got to go back to windrowing [the barley crop] and letting it sun-dry.

In recent years, mounting evidence like that which Art Dunham related above has begun to provoke widespread resistance to glyphosate use. Belgium, Malta, the Netherlands and (as Art Dunham mentioned) Sri Lanka have all banned the chemical's use within their borders¹⁷, and French President Emmanuel Macron has signaled France's intention to follow suit within the next three years.¹⁸ How many other countries will join in this ban remains an open question, but in 2015, the International Agency for Research on Cancer (IARC; <https://www.iarc>.

fr) ruled that glyphosate was "probably carcinogenic,"¹⁹ and in the spring of 2017, the State of California's Environmental Protection Agency put glyphosate on the list of known cancer-causing agents.²⁰

In the wake of the IARC's finding, the matter began appearing on court dockets. Over 1,100 lawsuits have been filed against Monsanto in the U.S., with claimants alleging that glyphosate caused their non-Hodgkin's lymphoma, a type of blood cancer²¹. Monsanto is facing another class-action lawsuit in Wisconsin²², where claimants are saying the company falsely said Roundup was safe, when it actually adversely affects human gut bacteria.

News accounts during 2017 which detailed the unfolding glyphosate drama paint starkly different pictures of the issue. For instance, one New York Times article²³, published in March, detailed what appears to be an organized Monsanto effort to manipulate research and orchestrate a public relations assault on Roundup's critics. Another pair of articles, published a few months apart by Reuters, suggested that glyphosate's carcinogenic properties are based on flawed science²⁴, and that the IARC's report "edited out" evidence that glyphosate was non-cancer-causing.²⁵ The truth or falsity of these claims has yet to be definitively established.

There has also been strong pushback coming directly from organized ag and industry. On November 27, 2017, despite having received a Greenpeace petition signed by 1.3 million in favor of the glyphosate ban²⁶, the European Union Commission's Appeal Committee voted to approve Monsanto's and other glyphosate makers' license to sell the chemical in Europe. Germany's Agricultural Minister Christian Schmidt provided the controversial swing vote in the EU's decision²⁷, reportedly defying the orders of the German Environment Minister Barbara Hendricks—and of German Chancellor Angela Merkel²⁸—when he voted in favor of the glyphosate reprieve. However, the license will be in force for only five years—a period far short of the 15 years which proponents of the chemical had sought²⁹.

Amid all this back-and-forth, one thing seems clear: the glyphosate battle will continue to be fought out in the world's legislatures and courtrooms, as well as in the court of public opinion. And it seems equally clear that glyphosate's status in agriculture won't be a settled matter for a long time to come. 

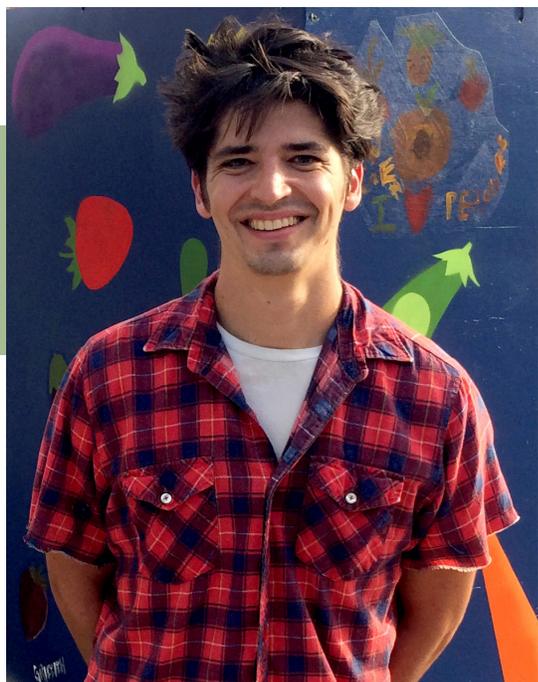


PHOTO COURTESY OF THOMAS AGRAN

Closeup: Thomas Agran

Thomas Agran (<http://thomasagran.com/home.html>) was born in Stanford, Kentucky, but grew up across the river in Cincinnati, Ohio. He fell for Iowa while studying art at Grinnell College (<https://www.grinnell.edu>), before later attending Indiana University to pursue an MFA in Painting (<https://soaad.indiana.edu/academics/graduate/mfa.html>). Agran lives with his family in Iowa City, Iowa, working as a practicing artist, a teacher, and Director of Public Art for the Iowa City Downtown District (<http://downtowniowacity.com>).

Concerning the work in his “Development Potential” series, which we’re featuring in this issue, Agran says: “Commuting back and forth to Cedar Rapids, I often turned off the interstate in North Liberty to take a quick spin through farmland on my way back to Iowa City. A new high school condemned that last patch of farmland to development—the definition of “pioneering sprawl”—and I watched as a favorite farmstead was razed to the ground. The subsequent reformatting of the land has been seductively dramatic, and this fall I created work responding to the uncompromising destruction and contextless reconstruction of Scanlon

Farm into Scanlon Farms North Ridge. The land was ripped open, pushed around, rebuilt, and then sutured together with black erosion fence, creating a sterilized and entirely unrecognizable topography.

“I approached my work with a similar mindset, creating paintings and drawings with a process informed by the same forceful and aggressive handling of the landscape. Working on site, I sought to capture the expansive and spectacular landscapes that would often appear and disappear in the course of an afternoon. I approached larger studio works with the same kind of additive and subtractive energy and force [which] I watched edit that once-pastoral part of my drive. The resulting drawings and paintings depict a dramatic, transitional landscape of false geologic scale, scattered with the arbitrary punctuations of surveying flags and sewage mains.” 



"OPENING," OIL ON CANVAS, 6' x 6', BY THOMAS AGRAN, 2016



"FRIEZE I," OIL ON CANVAS, 24" X 30," BY THOMAS AGRAN, 2016



“FOXHOLE” (STUDY), GRAPHITE, 26” x 15,” BY THOMAS AGRAN, 2016



“SUTURE” (STUDY) GRAPHITE, 14” x 5,” BY THOMAS AGRAN, 2016



PHOTO COURTESY OF MIKE LEWIS-BECK

Mike Lewis-Beck, a PhD from the University of Michigan, writes and works in Iowa City. He has pieces in *Alexandria Quarterly* (<http://www.alexandriaquarterlymag.com>), *Apalachee Review* (<http://apalacheereview.org>), *Cortland Review* (<http://www.cortlandreview.com>), *Chariton Review* (<http://charitonreview.truman.edu>), *Pilgrimage* (<http://www.pilgrimagepress.org>), *Iowa Review* (<https://iowareview.org>), *Seminary Ridge Review* (<http://seminaryridgereview.org>), *Taos Journal of International Poetry and Art* (<http://www.taosjournalofpoetry.com>), and *Wapsipinicon Almanac* (<http://www.wapsipinicon.com>), among other venues. His short story, "Delivery in Göteborg," received a Finalist prize from *Chariton Review*, 2015. His essay, "My Cherry Orchard in Iowa," received recognition as one of the 'Notable Essays' in *Best American Essays* of 2011. His poetry book manuscript, *Wry Encounters*, was a Finalist for the 42 Miles Press (<https://42milespress.com>) Poetry Award 2016.

Two Poems

BY MIKE LEWIS-BECK

SPRING SALAD

First shoots—
backyard weeds & flowers

of April. Headless dandelions with sweet quill greens,
chives spiking through a broken pot.

Garlic tops tassel from the wintered patch,
light like feathers, with a light taste.

Chervil, hidden in the rock garden,
under the dauntless sorrel

sorrel, so sour,
softened by chervil's licorice lace.

Violets everywhere, reigning purple,
divine jewels in the salad crown—

I put a white one in the center,
taste the earth's promise.

WARRIOR BUFFALO

I know a buffalo, this buffalo
I smell, his body standing close,
a cowbird perched atop his towered back
just so, grubbing bugs. He's heaving,
his scat's not right, there's blood.
A second shot from my Henry rifle
rends his chest, a bone dangles

from this 2,000 pounds of thunder,
weaving through prairie gulches
for water to stave the thirst, for mud
to staunch the bullet hole.
Two days galloping, a storm gallop,
but my pinto has closed on him.
He smells the pony, hears the spur jangle.

*My guts drag. I can't stop
the bleeding.
With my good hoof I X this spot.
Myself I measure
by heart.
I must remain
still, unheeding.
When the cowboy
comes for me
I will gore him
in the throat.
The horn will leave
his neck and pierce his ear.*



PHOTO COURTESY OF JON ANDELSON



PHOTO COURTESY OF LAURA JACKSON

Laura Jackson is Director of the Tallgrass Prairie Center (<https://tallgrass-prairiecenter.org>) and Professor of Biology at the University of Northern Iowa (<https://uni.edu>). She received her bachelor's degree in Biology from Grinnell College and a Ph.D. in Ecology from Cornell University (<http://ecologyandevolution.cornell.edu>). Her research has focused on the conservation of biological diversity in agriculture landscapes and processes governing seedling establishment in tallgrass prairie restoration. In 2002, she and coeditor Dana Jackson brought out *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystem* (<https://islandpress.org/book/the-farm-as-natural-habitat>), published by Island Press. The Tallgrass Prairie Center restores prairie for the benefit of society and the environment through research, education, and technology transfer.

Saving the Monarch Means Saving the Prairie—and Agriculture

LAURA J. JACKSON

In the winter of 1995-1996 the overwintering colonies of monarch butterflies in the Oyamel fir forests of Michoacan, Mexico, measured almost 20 hectares. On almost 50 acres of forest, each branch of each tree was loaded with layer upon layer of butterflies. Over the next 20 years, the size of the overwintering colonies fluctuated widely around a mean of six hectares. Then in the mid-2000s the colonies began to shrink, hitting an all-time low of 0.67 hectare (1.6 acres, less than the size of a city block) in the winter of 2013-14.

The subsequent summers in the Midwest have been full of watchful anxiety, as people in the prairie states—the monarch's summer breeding ground—waited for the first sightings of migrants flying north from Oklahoma and Texas in late May to lay eggs on wild milkweed plants. Here generations two and three would quickly grow, mate, lay eggs and die within six to ten weeks, building up population numbers. The fourth generation—dubbed the “supergeneration” for its nine-month lifespan and enormous feats of migration, would delay sex, fatten up on nectar from late summer wildflowers, and fly to Mexico. Then in spring, the survivors of that journey would return to Texas to mate and lay eggs.

There were several hypotheses concerning the causes of monarch decline, including bad weather, habitat loss in the Mexican highlands where they overwinter, exposure to pesticides, natural diseases, and habitat loss in the breeding range of the upper Midwestern U.S. Pleasants and Oberhauser (2013) published a paper regarded as providing “smoking gun” evidence linking the monarch population decline to increased adoption of herbicide-tolerant varieties of corn and soybeans. The

data from 1999 showed abundant common milkweed (*Asclepias syriaca*, the monarch butterfly larva's obligate food) in the 73 million acres of U.S. corn and soybean fields, and virtually none ten years later. A subsequent paper by Thogmartin et al. (2017a) came to the same conclusion, using different

methods.

Although a few studies have disput-

ed this conclusion (e.g. Inamine et al. 2016), their methods have been convincingly challenged (Pleasant et al. 2017).

Those 73 million acres of fields had once made an excellent nursery for monarch caterpillars. Widespread concern arose that eliminating milkweed would greatly reduce the monarch population. It's a concern that has been borne out. At first, declines in monarch numbers were met with a wait-and-see attitude, since in the past the monarch had bounced back as much as 500 percent from years of poor weather to average years. However, in the winter of 2012-13, wildlife biologists finally stopped watching and sounded the alarm when the number of monarchs overwintering in Mexico reached an all-time low, with the entire population fitting into fewer than two acres. A simple winter storm that year could have wiped out every monarch in eastern North America.

Today, broad-scale efforts to protect the iconic monarch are being undertaken by numerous state and federal agencies, agribusiness corporations, private citizen groups, and nongovernmental organizations. Can these efforts succeed? The stakes are high: the loss of a beautiful and utterly harmless creature whose compelling, near-miraculous migration story is familiar to millions of Americans. Along with this catastrophe would go the loss of

uncounted other vulnerable insect species as well.

The fight to ensure the monarch's future raises fundamental questions about the history and the future of the tallgrass prairie region. Will our agricultural system allow this native species to persist as a wild, self-repro-

ducing population? Or, will monarchs follow the many other spe-

A simple winter storm that year could have wiped out every monarch in eastern North America

cies in the prairie region which have fallen under the shadow of extinction or disappeared entirely into it—the passenger pigeon, the prairie chicken, the bobolink and other grassland nesting birds; the black bear, wolf, cougar, elk and bison, the many large migratory wading birds that used to nest in the wetlands amid the cornfields; and perhaps even the commercial honeybee? If monarch butterflies are lost, could other abundant and ubiquitous animals, such as lightning bugs or the American Robin, face a similar end?

The decline of the monarch butterfly is best understood in the context of agricultural industrialization. The processes which threaten this most resilient of Mid-



PHOTO COURTESY OF JON ANDELSON.

western creatures have created other seemingly intractable problems in our communities and in our ecosystem—the persistent and growing Dead Zone in the Gulf of Mexico, the nitrogen and phosphorus contamination of rivers and sources of drinking water, the increased frequency and intensity of flooding, the usurpation of local elected government function by agribusiness interests (revelations for which Art Cullen, the editor of the *Storm Lake Times*, received a 2017 Pulitzer Prize in editorial writing), and the economic and social decay of rural communities. All these problems have been framed as necessary costs in the struggle to feed the world. Midwesterners have learned to live with them, and even to embrace them. Some say these sacrifices are a sacred duty, or dues which must be paid if we are to benefit from our region’s productivity. By sacrificing environmental quality and biodiversity here—the argument runs—we can boost yields and feed a starving child, or spare a rainforest somewhere else. This doctrine, known as “sparing land for nature,” has become a central trope in our region—and indeed in all regions touched by industrial agriculture—used by chemical and seed companies such as Monsanto to frame as intractable problems which are in fact mostly political and, therefore, quite tractable after all.

It should be no surprise that the emerging strategy to increase habitat for the monarch in its Midwestern breeding range has been running into the sorts of roadblocks that caused the 30-year effort to address the Dead Zone in the Gulf of Mexico and the quality of surface water in the Midwest to fail. Measures on private

land are voluntary, reliant on government (taxpayer) funding, and inadequate in the face of the problem they are supposed to address. Regulation and accountability for results are never mentioned in polite company. Blind hope and unrealistic expectations stand in for a plan based on sound science, because our agricultural system has been too politically powerful and poorly understood to question.



PHOTO COURTESY OF LAURA JACKSON

Monarch butterfly decline, and the reaction

The decline in the monarch’s population made a splash. In response, in spring 2014, President Obama issued a Memorandum called “Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators” (Obama, 2014). This document called upon U.S. federal agencies involved in any sort of land management to develop a strategy for creating new habitat, by summer 2015, using existing resources. The Bureau of Land Management (BLM), the U.S. Forest Service (USFS), the National Park Service (NPS), the Natural Resource Conservation Service (NRCS), the U.S. Department of Transportation (USDOT), and the U.S. Fish and Wildlife Service (USFWS) all scrambled to come up with plans. For instance, The USFWS announced the creation of a Monarch Highway (<http://blog.nwf.org/2017/06/interstate-35-monarch-butterfly-highway>), a 100-mile-wide band centered on U.S. Interstate I-35, from Minnesota to Texas.

Then in 2015, a group of scientists and conservation organizations, led by the eminent monarch biologist Lincoln Brower, petitioned the USFS to put the monarch butterfly on the Threatened Species List. After initial review, the petition was deemed reasonable, which

put the USFWS and major stakeholders on a timetable. By June 2019, the agency would have to weigh evidence and make a decision. A decision to put monarchs on the threatened species list would have vast repercussions. It would become illegal to harm the species in any way, including through harm to its habitat. Common land management actions, such as mowing or grazing at the wrong time, or converting a conservation area back to row crops, could trigger a fine. In short, endangered species status for the monarch could theoretically paralyze economic activity in the U.S. Corn Belt and force unprecedented regulation on every landowner and tenant/operator.

Another response to the shockingly low number of monarchs overwintering in 2013-14 was a scientific effort to determine, first, an estimate of the target population of monarch butterflies that would be stable, long-term and not likely to go extinct, and, second, the total number of new milkweed plants that would be needed to reach that population target. Scientists with the USFWS arrived at a target of six hectares of monarchs in Mexico, and to achieve this target, various estimates of the amount of new milkweed stems needed range from 1.3 to 1.8 billion (Pleasants 2017).

Also in response, several major efforts are under way to plant more milkweed and nectar plants:

- The Monarch Joint Venture (<https://monarch-jointventure.org>), formed in 2009, coordinates government and private partners “united in an effort to conserve the monarch migration.” Their North American Monarch Conservation Plan has become a blueprint for research, education and habitat restoration, and the partnership has swollen quickly from just a dozen to over 70 groups nationally, as

more local, state and federal partners join the group.

- The seed and pesticide company Monsanto (<https://monsanto.com>), which originally introduced glyphosate/herbicide tolerance technology, established a fund through the National Fish and Wildlife Foundation (<http://www.nfwf.org/Pages/default.aspx>) of \$4 million to support recovery efforts. Much of the funding in 2016 went to projects in urban areas and transportation rights-of-way. Monsanto and other major seed and chemical companies such as Dow, DuPont and Syngenta also co-fund other efforts to create habitat such as the Bee and Butterfly Habitat Fund (<http://beeandbutterflyfund.org>). This group, which includes the companies that provide pollination services to vegetables and fruit trees, seeks to turn underutilized acreage into productive precision habitat to help save pollinators. Landowners receive free seed, three- to six-year contracts, planting incentives and annual rental payments.

- Every state in the tallgrass prairie region either is developing or has already announced a Monarch Recovery Plan. In Iowa, the Monarch Conservation Consortium (<https://monarch.ent.iastate.edu>)—composed of 30 groups in all and organized by Iowa State University (<https://www.iastate.edu>) with membership from major farm and agribusiness sectors—is developing a strategy that focuses on adding milkweeds to roadsides, urban areas, and already protected public lands. Separately, the U.S. Fish and Wildlife Service is coordinating a national plan for monarch recovery that relies on the same mix of strategies, plus existing Farm Bill conservation programs (Conservation Reserve Program, etc.).

- The public passionately wants to be involved. There has been an explosion of interest in planting



PHOTO COURTESY OF LAURA JACKSON

milkweed in home gardens, and on the grounds of schools, churches and corporate campuses. Many organizations such as Wild Ones (<http://www.wildones.org>), and Plant. Grow. Fly (<https://www.blankparkzoo.com/conservation/plantgrowfly>) have been facilitating these efforts. The organization Monarch Watch (<http://monarchwatch.org>), based in Lawrence, Kansas, grows and distributes several hundred thousand milkweed plugs to individuals to create small monarch waystations across the country. Monarchs in Eastern Iowa (<https://monarchsineasterniowa.blogspot.com>) distributes over 50,000 milkweed seed balls, each one containing four seeds, to riders each year in the Register's Annual Great Bike Ride Across Iowa (RAGBRAI; <https://ragbrai.com>). The Monarch Research Project (<http://monarchzones.com>) rears caterpillars in captivity and releases them, while working with the City of Cedar Rapids, Iowa, to convert 1,000 acres of turfgrass to wildflower plantings.

All of the examples of rescue efforts propose to do the same things: plant milkweed and nectar-producing plants on public and urban land, and modify existing farmland conservation programs that were designed primarily for severe soil and water conservation problems. More fundamentally, they assume that the market and policy incentives now encouraging our current vast areas of row crops are permanent, and that conservation practices on private land will continue to be completely voluntary.

This may be politically realistic, but is it scientifically realistic? A recent study by Wayne Thogmartin and others (2017a) used geospatial modeling and expert opinion to estimate potential land area, adoption rate and numbers of new milkweeds that could be added to

five different sectors of land cover: protected area grasslands, lands enrolled in the U.S. Department of Agriculture's Conservation Reserve Program, (<https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program>) urban/suburban lands, rights of way, and agriculture. The authors calculated low, medium and high estimates of milkweed gain in each sector, and examined every two-, three-, four- and five-sector combination for a total of 218 scenarios. Sixteen of the scenarios were able to meet the minimum target of 1.3 billion milkweed stems thought necessary for a sustainable migratory population. All

Regulation and accountability for results are never mentioned in polite company. Blind hope and unrealistic expectations stand in for a plan based on sound science, because our agricultural system has been too politically powerful and poorly understood to question.

of the successful scenarios included conversion of at least six million acres of agricultural land in the U.S. now devoted to row crops such as corn and soybeans, to grasslands. To put it another way, even in the most optimistic scenarios with highest levels of participation, the model failed unless it included agriculture.

This disappointing result is primarily because the footprint of non-agricultural areas is relatively small, but additionally because other non-agricultural areas already contain significant amounts of natural milkweed (e.g. along railroad tracks), or adoption rates are expected to be limited (urban/suburban areas), or both.

Urban monarch supporters have challenged this conclusion, and the estimates for contributions of urban/suburban homeowners may in fact be too low. But few urban people drive the rural gravel roads in the heart of the monarch breeding zone, through the miles of solid corn and soybean fields, for hours on end. It is a common and natural fallacy to extrapolate—from one's own personal world of high milkweed abundance in backyard gardens, roadsides, parks and schools—to the whole world. An individual's observations along familiar routes are misleading: they sample only the thin belt of land on either side of a road, but not the large

interior spaces beyond. And they do not sample the vast unpeopled spaces of rural America.

Roadsides are a popular target for new habitat, but in order to increase milkweed stems in these areas, state departments of transportation would need new tools, new training for staff, and an entirely different mindset to give up frequent mowing and plant more diverse habitat. Conversion of roadsides to suitable habitat is not simple. Iowa is unique in having a provision in state code declaring it to be in the public interest for roadsides to be managed with ecological goals in mind. After 25 years of state and federal incentives—equipment, coordination, research and free prairie seed—only 44 of Iowa's 99 counties have chosen to hire a full time roadside manager. Many of the barriers to converting public rights-of way are not appreciated by the general public.

General audiences and scientists alike are powerfully drawn to images of hope: a photo of children releasing hundreds of tagged monarchs from a backyard garden certainly gives one hope. And the vision of children releasing hand-reared butterflies should inspire hope. But, hope for what?

Humans have the capacity to feel affection for, and to lavish care and attention on, a wild animal such as the monarch. We have the ability to learn about and then spread awareness concerning the threat the monarch is under. But the source of hope should not be the number of butterflies the children release; it should be the children themselves—deeply affected by their experience, and moved to become advocates for meaningful public policy. Equally, our hope—indeed, our faith—should lie in the ability of plants and animals, given a chance, to go about their business every day, busily reproducing and multiplying, completely untended. These are the processes, combined with plenty of habitat, that produce billions of

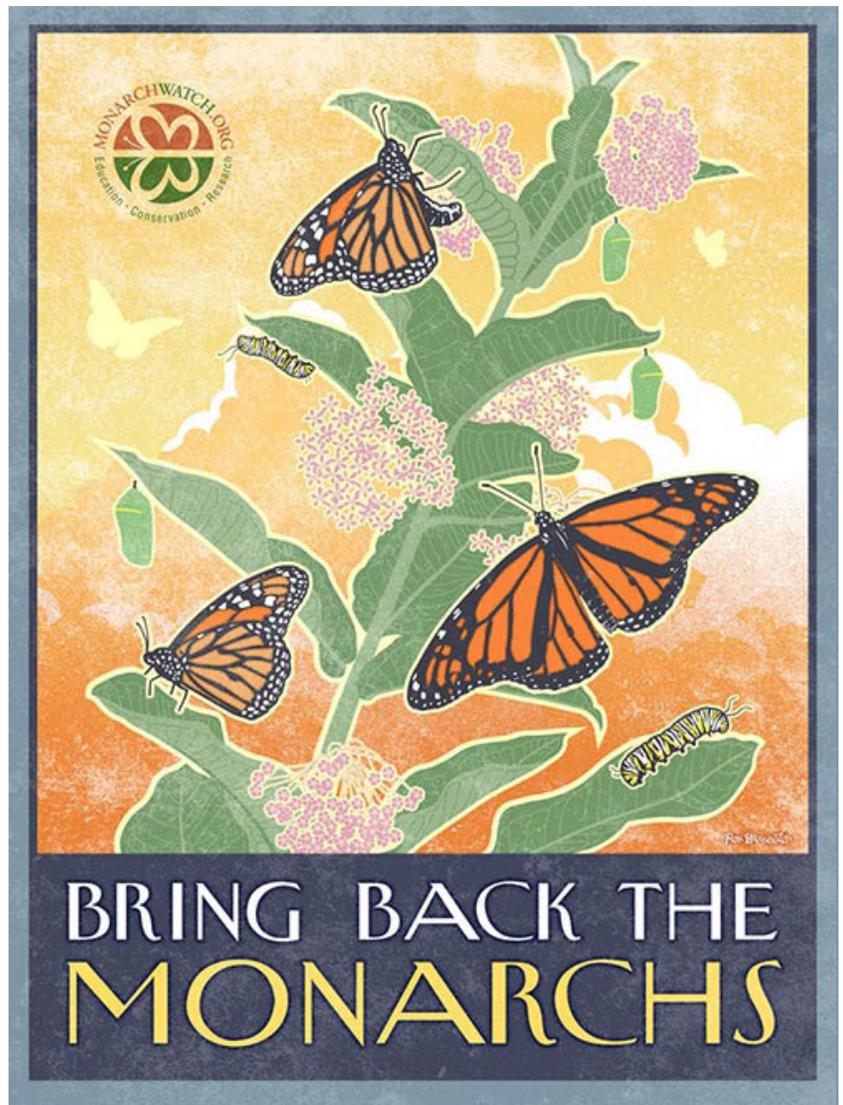


IMAGE COURTESY OF MONARCH WATCH

milkweed plants year after year, and millions of monarchs.

Public involvement will be an effective tool for monarch recovery when it results in advocacy for policies that support wild populations. It will undermine our efforts if it is entirely focused on the satisfaction of raising a few caterpillars. When NASA was trying to put a man on the moon, it had incredible support from taxpayers. Some of NASA's budget went to public engagement programs which sustained political support for the program. Some money went to engineers to figure out how to accomplish the agency's aims. But the public was never asked to do the engineering. Public en-

agement fueled political and economic support for the program. NASA-pin-wearing children helped build our rockets, not because they were engineers, but because they influenced their taxpaying parents to continue support for the space program. Planting milkweeds and rearing butterflies are great activities, but they should not be seen as an effective substitute for policy change.

A better approach to monarch conservation

If we are truly committed to helping the monarch to recover, there are two parallel approaches we will need to take. First is formulation of a long-term strategy that focuses on changing farm policy. Second is effective habitat monitoring to support our awareness of the root causes of monarch decline. In the short- to medium-term, there are some pragmatic tactics we can use to engage and mobilize large-scale forces rather than diverting time and money to token, symbolic efforts.

Changing farm policy. Monarch conservation groups should approach the national and regional organizations that promote farm policy reform and offer to join forces. In this connection, we can learn something from the Union of Concerned Scientists' ([http://](http://www.ucsusa.org)

www.ucsusa.org) proposal, *Subsidizing Waste: How Inefficient U.S. Farm Policy Costs Taxpayers, Businesses, and Farmers Billions* (Mulik 2016). The proposal begins with the idea that taxpayers should expect some accountability for their support, and that federal farm policy should not subsidize water pollution only to patch up the problems with a few conservation programs. It favors two main changes in agricultural practices for the upper Midwest. The first is the (modernized) return of integrated crop-livestock systems with grazing by ruminants and long (four or more year) crop rotations that require little or no herbicide or nitrogen inputs and result in more perennial vegetation in the ground at any given time. The second change would be planting 10 percent of fields with 30-foot-wide strips of tallgrass prairie wrapped around the contour of the slope. These prairie strips reduce surface runoff, slow the movement of soil downhill, reduce nitrogen and phosphorus losses, and increase habitat for wildlife. (The Tallgrass Prairie Center at the University of Northern Iowa is helping farmers to do this in the Cedar River watershed.) The Union of Concerned Scientists also urges environmental accountability, proposing that any farmer who wishes to receive federal farm subsidies

such as crop insurance should be required to prove he or she is following a tailored conservation plan on their farms. These programs would still involve incentives, but the threat of having subsidies taken away for lack of compliance to conservation plans would create a powerful stick as well.

Along with this would be pursuit of greater accountability in the rest of the value chain for support of conservation. This approach begins with the assumption that the corporations supplying most of the inputs to farming—seeds, pesticides, fertilizers, loans, equipment—should shoulder some of the burden of conservation, along with the primary processors, such as grain processors and livestock feeders. Properly focused, large scale

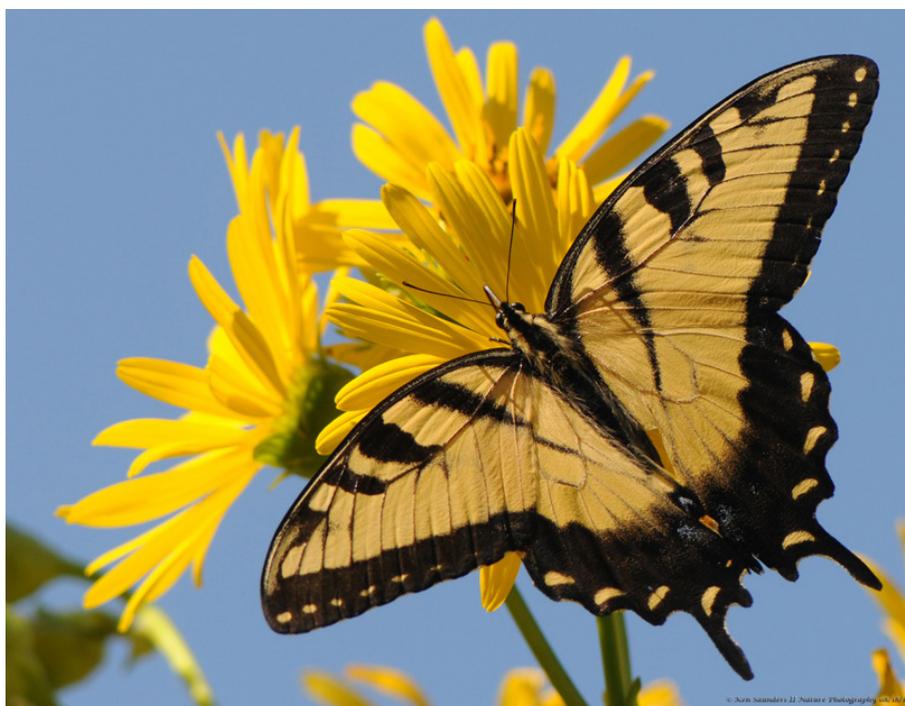


PHOTO OF EASTERN TIGER SWALLOWTAIL BUTTERFLY COURTESY OF KEN SAUNDERS II, TAKEN AUGUST 18, 2013, AT THE SUGAR CREEK AUDUBON NATURE SANCTUARY IN RURAL JASPER COUNTY, IOWA

public concern for monarch conservation could eventually compel corporations to do this.

The large numbers of urban and suburban people who have come to love monarch butterflies also have a crucial role to play in promoting better agricultural practices. There is enormous potential for a powerful political partnership between the “monarch constituency” and the host of sustainable agriculture organizations lobbying for changes to the farm bill.

Effective habitat monitoring.

This second part of a changed approach to monarch recovery would involve rigorous monitoring of what we accomplish. Such accountability for measurable results is difficult to pursue and is usually the first thing to be dropped in any restoration program.

Most restoration programs are “hit and run,” meaning that after an area is planted and the fanfare is over, everyone declares victory and leaves. Instead we need to measure the effort’s success or failure and adjust our plans and next steps accordingly. We need to hold entities accountable for what they say they have planted, for how much new habitat they have created, and for how long this augmentation of habitat lasts. The stakes are high, and thus it will be tempting to paper over failures and exaggerate successes. With the threat of endangered species status, there is incredible pressure to show that sufficient habitat is being created or protected so as to render listing unnecessary. For the sake of the monarchs, it is important for us to insist that we gather and respond to accurate data.

Short- to medium-term strategies

In addition to these long-term strategies, we need to do something now to increase habitat for monarchs as well as for other pollinators, particularly in the most intensively farmed areas of the Corn Belt. This is the dilemma: how can we make measurable change on a large scale when farmers are tied to existing conditions and



PHOTO OF GRAY COPPER BUTTERFLY COURTESY OF KEN SAUNDERS II, TAKEN JUNE 10, 2012, AT THE CONARD ENVIRONMENTAL RESEARCH AREA IN RURAL JASPER COUNTY, IOWA

barriers?

First, conducting research on natural regeneration of milkweed in the existing landscape would yield relatively large dividends. We need to know how the existing milkweed plants got where they are, and where and how our management practices can encourage them to spread. While it still makes sense to seed other species of prairie milkweeds such as butterfly (*Asclepias tuberosa*) and swamp (*Asclepias incarnata*) milkweed and nectar plants in places where they are sparse or absent, it makes little sense to do this with common milkweed. Although it has been banished from corn and soybean fields, we are lucky that common milkweed can still reproduce and spread naturally, on field margins. It is far more important—and would be less expensive—to discover how to “uncover” new populations through favorable management practices.

Second, we should aim education and demonstration projects at large-scale land managers and their crop consultants. Increasingly, they set agricultural practices on lands owned by investor groups or out-of-state absentee landlords (approximately one-quarter of farmland in Iowa). The professional land manager’s primary goal is to help the landowners achieve their goals.

Often, this traps them in a system which incentivizes waste and does not reward conservation. However, soil erosion eventually cuts into income potential and land values. Landowners and land managers may be willing to address soil erosion in a way that also improves farm biodiversity.

For those investors interested in conservation as well as income [up to 57 percent of farmers in one recent survey by Hertz Farm Management (<https://www.hertz.ag>), a large company in eastern Iowa] there are ways to help farm management companies meet investor goals. The Tallgrass Prairie Center's Prairie on Farms program has collaborated with professional farm managers, their tenants, and their investors, to establish demonstration prairie strips on vulnerable land. We are gathering data concerning these hands-on projects to share with others in the industry. Our prairie strip field days regularly include attendees whose decisions affect thousands of acres of farmland.

Organic farmers and those with alternative practices are important too, and we should reach out to these individuals and groups to find opportunities for collaboration. Many will be growing crops that require pollination services, such as fruits and vegetables. Many are likely to have forage and pasture land. This group is not using harmful insecticides such as neonicotinoids, which compromise the value of planted habitat. However, their footprint is still extremely limited, and they remain surrounded by high intensity, conventional corn and soy production.

Still another focus for these efforts could be land whose production value is marginal due to dry, wet, or damaged soil. It may be a high priority for land managers to find ways to put this land into other uses. Most now have the tools to identify these areas, and calculate a potential profit in taking land out of production (at least until grain prices rise again).

Finally, we should improve the federal conservation programs such as the Conservation Reserve Program (CRP, a program of the USDA Farm Services Agency;

<https://www.fsa.usda.gov>), to include more diverse and cost-effective seed mixes and practices for a broad array of ecosystem services. Currently there are several specialized programs for pheasants, quail, water erosion, and pollinators. The Thogmartin et al. (2017b) study cited above demonstrated that CRP land could only provide a small fraction of the needed milkweed stems, so it is important to make the most of these lands. If we are successful in shifting farm policy to favor more agricultural grasslands on the landscape, today's CRP fields could form the foundation for rotational grazing and hay production, biomass energy production, and other

[T]hey are trapped in a system which incentivizes waste and does not reward conservation.

sustainable farming practices that naturally favor habitat for monarchs. The Tallgrass Prairie Center is investigating seed mixes and

systems for assuring appropriate species and sources of seeds that will deliver diverse ecosystem services while controlling costs.

Conclusion

The fate of the monarch butterfly is linked to every other conservation issue associated with industrial agriculture in the Midwest. If we continue to avoid an honest reckoning, the monarch will fare no better than grassland nesting birds, our rivers and drinking water supplies, rural communities, or the Gulf of Mexico. These sacrifices were not inevitable and can be reversed. The widespread popularity of the monarch butterfly presents us with an unprecedented opportunity to welcome a new group of urban advocates for farm and food policy that, in line with Aldo Leopold's vision, "changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it". (1949) Like any true community, what benefits one member, ultimately benefits us all. Saving the monarch migration will require us to convert large areas of row crops back to diverse perennial grassland, and this will have uncounted benefits for soil, water, biodiversity; that is the ecosystem as a whole. 

The Moon Shines on the Prairie



VIDEO BY ISABELLA KUGEL; AUDIO BY EMILY MAMRAK. TO WATCH—AND HEAR—THE VIDEO ABOVE, DOWNLOAD THE FULLY INTERACTIVE PDF OF THIS FEATURE, USING THE HYPERLINK AT THE BOTTOM OF THE CORRESPONDING WEB PAGE, THEN CLICK ON THE IMAGE TO PLAY THE VIDEO

Historically, moonshine has been defined as any type of alcoholic beverage brewed in secret. The state of Iowa banned the manufacturing and selling of liquor in 1916, four years before the national Prohibition policy was put into place. Due to Iowa's location, bootleggers—people who made and sold alcohol illegally—had easy access to corn, which they used as their main ingredient. Templeton Rye (<http://www.templetonrye.com>, made today in Indiana) was distilled back in the day on farms near the town of Templeton in northwest Iowa and was a popular beverage in speakeasies all across the country. Most moonshine brewing went on in rural areas, unregulated and often unsafe, and intentionally far away from law officials. If caught, bootleggers would have to pay a fine of \$500 dollars or serve six months in jail.

The moonshine in the video above is made legally by an Iowa farmer using corn, sugar, one small packet of yeast, and hops, though it can also be made with barley, wheat, or rye. Each batch takes about six hours to cook, and, depending on the temperature, 10 to 14 days to fully brew. The farmer has been brewing his own moonshine since he was a teenager. He tells us that, with permission from the ATF, it is legal to make eight gallons per year as long as it is not sold and not over 80 proof. Although he makes his moonshine legally, this farmer has asked us not to use his name because he doesn't "want people showing up at [his] house asking for samples". 🌿



PHOTO COURTESY OF MOLLY RIDEOUT

Molly Rideout's fiction and nonfiction engage Wisconsin and Iowa towns with large-scale writing installations and community-based publications. She's published in Flyway Journal (<http://flywayjournal.org>), Bluestem (<http://bluestemmagazine.com>), The Wapsipinicon Almanac (<http://www.wapsialmanac.com>), Front Porch Journal (<http://frontporchjournal.com>), and Prairie Gold: An Anthology of the American Heartland (<http://www.icecubepress.com/2014-books/prairie-gold-anthology>), and is earning her M.F.A. at The Ohio State University. When she began her Midwestern Elegy project, she had never heard of Edgar Lee Masters or his Spoon River Anthology. She says: "These stories are inspired by real people: names and dates and words as they appear on gravestones I've found in Midwestern towns I've lived and traveled in. Some of these people were rich. Some are still remembered. Some have more common or forgotten histories. These stories aren't who these people really were. They're my own fictions."

Selections from "A Midwestern Elegy"

SHORT FICTION BY MOLLY RIDEOUT

Mother
Addie DeBow Raulston
1853 – 1943
Daughter
Sena Miles DeBow
1884 – 19__

It wasn't like they were saying out west. Her daughter said the house had chinks she couldn't find. Her daughter said she'd given up cleaning, that her hands bled, wind-burnt and cracked. Storms of dust finer than flour, her daughter said, and Addie thought of the cakes of hardtack she'd made with the meager season's cabbage. Flour and kraut, dried into shale fit to break human teeth, she steamed them back to a palatable consistency over the water boiling for her husband's coffee. What they called coffee these days. He complained that some of the flour dusted down into the water. Her sons complained of sore jaws, all that chewing. To her daughter out west she complained how loose her wedding band had become on her thinning finger, that one day she just might lose it. "Come home," she wrote to her daughter. The next time she made hardtack, her daughter did.

Sena left her husband in Nebraska. Left his name just west of the Mississippi. For her first month back, her mother clung to her like she had once clung to her mother. When the crops stopped cheating them and their corn and savings started once again to grow, her father went to the big cemetery in Columbus and reserved a double plot for him and his Addie. When he died the next year, her mother lowered him into a plot

in the town church cemetery. She paid for engravings on the double plot in the capital: just herself and her daughter. "We didn't need men when we entered this world and we won't need them when we leave." Her mother was like an October stalk of corn by the time she went. To help with grief, Sena took a trip to Massachusetts. She did not return.

Catharine Poorman

Died Aug. 3, 1858

Aged 68Y. 5M. 16D.

John Poorman

Died Feb. 20, 1839

Aged 55Y. 4M. 13D.

She dreamed of a down mattress instead of clover straw the cows had turned down. He dreamed of healthier children, sons working the field. She dreamed of a city made of brick with shops to walk to. He dreamed of a self-fixing wagon that never got stuck in the mud. Some nights she went to bed so tired she dreamed of nothing at all. Or else she dreamed of chicken feathers pasted to her hands and arms like glue. He dreamed of tuberculosis. She dreamed the doctor pulling another blue infant out of her. He dreamed of the cows breaking the fence and trampling the strawberries. She dreamed of the bruise she'd seen halfway up her sister's arm. She dreamed of climbing Mount Pleasant and looking out onto Lancaster, onto the southern hills, onto the yet untamed world beyond, and on every square inch of land, men and women and children buzzed like locusts.

Mother

Louise Holycross

1878 - 1942

Mother

Jane Cox

1873 - 1948

Our whole lives, we never did a thing without the other knowing. When we were children, I helped Louise watch her siblings while our mothers cleaned the

church, on account of her being too young to really care for them alone. I told her about my first menses when it came, about the fearful things I heard my brother yell at Ma. I let her try on my corset and, since I only had brothers, I passed her down my dresses. She told me about a boy she fancied and swore me to secrecy on the day she left the chicken coop open and the coon got in.



HAZELWOOD CEMETERY, GRINNELL, IOWA. PHOTO BY EMILY MAMRAK

We even had this idea of getting married on the same day, but when I got engaged, Louise was still only fourteen and her mother wasn't about to let her pick a man when there were so many other children in the house who needed caring after and the family butcher shop in need of sweeping.

She taught me how to pick a good cut of meat and, when times were scarce, which parts of the animal they didn't sell that a person could still eat. When her own proposal came, we hemmed my wedding dress and let out the bosom. We resolved to get pregnant at the same time. The doctor estimated Louise beat me by twenty days. She didn't have any children yet and I had two, which meant she had more time with her husband to

work toward our goal.

We went to every funeral together, every party. We even exchanged invitations for family reunions. We baked together. We sat in the butcher shop and mended. When my marriage vows started feeling like a hand on my throat, Louise massaged my neck and said, "I hear you, sister," and told me about a young man with glaucoma in one eye who gave her that smile women know each time he came into the shop. I told her about the man who had written a letter to me in secret. "Of course I burned it in the stove," I said. She nodded. We started our affairs within the month. When we left our husbands, we coordinated that too. We reserved a double plot at the cemetery. Our children knew what to do. 🌿



HAZELWOOD CEMETERY, GRINNELL, IOWA. PHOTO BY EMILY MAMRAK



PHOTO COURTESY OF RICHARD LUFTIG

Richard Luftig is a former professor of educational psychology and special education at Miami University in Ohio now residing in California. He is a recipient of the Cincinnati Post-Corbett Foundation Award for Literature. His poems have appeared in numerous literary journals in the U.S. and internationally in Canada, Australia, Europe, and Asia. Two of his poems recently appeared in *Realms of the Mothers: the First Decade of Dos Madres Press* (<https://www.dosmadres.com/shop/realms-of-the-mothers-the-first-decade-of-dos-madres-press>).

Three Poems

RICHARD LUFTIG

Compromise County, Illinois

The people who first came here settled on a life, on a land so flat that one might get lost on a turn-around plat of a single farm. Then, first

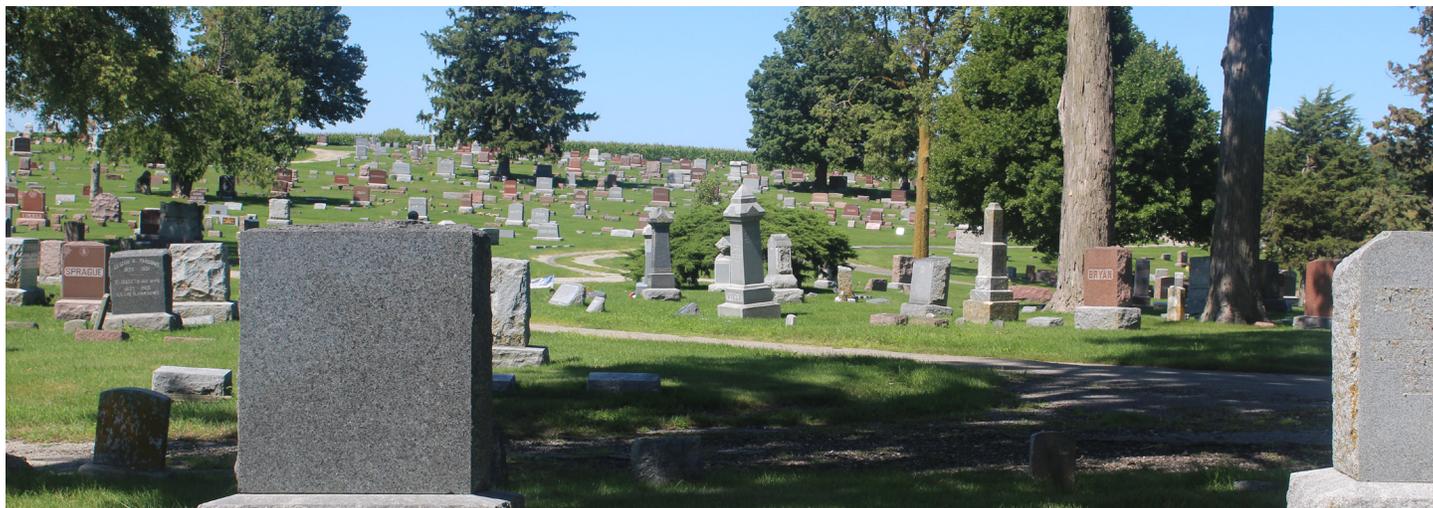
crops: corn, winter wheat, beans that decorated acreage like dots in a Seurat painting. Later, saplings of windbreak trees,

spruce, sycamore, the occasional cottonwood, twisted and gnarled like the trunks of the old, German men who planted them, watched

them grow even as they shrunk and shriveled. Men who still arose at dawn to work this land long after their best time was done.

Now, one-hundred, two-hundred years and acres later, the grief of failed crops, land, luck, love, stick like the gumbo of April

mud, their grandsons of grandsons have left, selling what they could, giving away the rest of whatever wasn't foreclosed or signed away.



HAZELWOOD CEMETERY, GRINNELL, IOWA. PHOTO BY EMILY MAMRAK

And they, lifted away like topsoil
in an endless, prairie wind,
moving up, moving out
to cities where they never want

it to grow cold, grow wet.
Where they would live their lives
without even a single, hard freeze
if they could, leaving behind

the stubborn ghosts
of those first farmers who
took their best chances, now
making do with sandstone

tombstones, the names, dates,
lives worn away. Now guarded
hard by what's left of withered
trees, their weary branches fighting

January winds, so strong they blow
sheets of freezing snow sideways,
trying hard not to give in again
to what they might have been.

Plains Cemetery

The only mourners left;
These summer storms,
Those winter moons.

Winds that sand
Away the names
On tombstones

To flatness as if
No one ever lived
Here to farm these fields.

But someday,
When even the dead
Are not looking,

The centurion pines
Standing guard
Nearby will split,

Splinter, collapse,
From lightening
Or ice-laden limbs,

Just like everything else
In these forgotten plains,
Years before their time.



“BRIDGE,” OIL ON CANVAS, 12” X 60,” BY JANE PRONKO, 1987

Along the Ohio

This river with so many meanders
and oxbows that at times it seems
like it has no idea which way
to flow. And the towns

that run along; confused,
without direction as if
folks believe that if
the damn water would just

straighten itself out, run
pure and plumb, folks
might see what they need
to save the place, keep

things ahead of the curve.
But here, at Coropolis, Crown City,
Maysville and Martin’s Ferry,
the deserted, boarded-up stores

show their rears to the river
and the banks seem to have lost
any interest in watching water pass
downstream. The only occupants

left are bald tires,
rusting oil drums,
broken quart bottles of High Life
and the occasional sofa

dumped when people thought
no one looking. Even the houses
seem to have given up
the ghost: back yards

scattered with driftwood
and weeds, save for one
with an ornament of a fat,
old, Dutch woman bending

over her tulips, bloomers
mooning the water and a family
of plastic ducks wondering
when it will be their turn to leave.



PHOTO COURTESY OF KEN SAUNDERS II, TAKEN NOVEMBER 1, 2009, AT ROCK CREEK LAKE STATE PARK IN JASPER COUNTY, IOWA

drumming noises they make with their beaks to claim territories and attract mates. It's a somewhat excited string of hoarse, high-pitched notes that descend in pitch toward the end; the call lasts about two seconds. Excited birds also give a very sharp *pik* note, occasionally repeated several times. (Description adapted from text created by the Cornell Lab of Ornithology, <http://www.birds.cornell.edu>).

To hear an audio recording of Downy Woodpecker, recorded by Jonathan Jongsma at Bear Head Lake State Park (http://www.dnr.state.mn.us/state_parks/bear_head_lake/index.html), St. Louis, Minnesota, visit Xeno-canto (<http://www.xeno-canto.org>), or download the fully interactive PDF of this issue's Birds of the Prairie feature using the hyperlink at the bottom of the web page.

Birds of the Prairie: Downy Woodpecker

Picoides pubescens

The Downy Woodpecker is a common sight across North America all year round on tree branches and trunks or tall weeds and grasses. Both males and females have checkered black and white wings, but only the males have a patch of red feathers on the top of their head. Keep an eye out for them in the prairie and near open woodlands, particularly deciduous trees.

Song: The Downy Woodpecker's whinnying call, made by both sexes, is a typical sound of deciduous forests during the breeding season, along with





PHOTO COURTESY OF QUENTIN CHIRDON

Quentin Chirdon *has wandered the Midwest and Southwest most of his adult life, getting up to all sorts of things. He's been a soldier and a songwriter, a felon and a scholar. He studied English at the University of New Mexico (<http://english.unm.edu>) and Creative Writing at Creighton University in Nebraska (<https://www.creighton.edu/program/creative-writing-mfa>). His work has appeared in Conceptions Southwest (<http://www.conceptionssw.org>) and has earned three consecutive Lena Todd Creative Writing Awards as well as the Hillerman-McGarrity Scholarship for Creative Writing. Today he lives in Colorado, where he's struggling to write a novel he's sure no one will read.*

The Next Time You Read Our Poem

FICTION BY QUENTIN CHIRDON

I'm sitting at your antique Queen Anne desk. It arrived this morning, and when I signed for it, I gave the guy from English Classics some money to put it upstairs by the big window in the study. You may have your own ideas about where it should go, of course. I think it's a good spot, even though there's nothing else in here, except the tall wooden hat rack you haven't found a place for yet. I've opened the window to the breeze that ruffles these pages and chills the room. I can just make out the blue ocean through the elms.

I've got your old photo album with me. It's weird, different from everything else in this place. Its creamy white is a desperate stab at formality, betrayed by its cheap vinyl construction, as if there were a market for wedding albums you could buy off the bargain table at Walgreens. It's cracked with age and ragged from years of handling, but I can see how the biting irony of it would have made you laugh. I hadn't thought about it before, but this old album might say more about who you used to be than anything pressed inside.

I'm writing this in the Jenni Bick Journal you bought me. Now and then, I stop and run my fingers over my debossed initials hammered into its spine. The journal is more like everything else in your house: ornate, meticulously hand-crafted, and expensive. It would be great to believe I'm a lot like this journal: handsome and well-made, but it's just not so.

Lastly, there's my Greyhound ticket. My bus leaves in three hours, one way.

I don't want you to think I'm ungrateful for your gifts and this time we've had together. I don't think it was a mistake and I've got no regrets about it. You may feel differently, but when you think about it maybe you'll see this is for the best.

I was so happy when you found me. Your voice over the phone sounded just like it had twenty years ago, light and wry all at once, like laughter at the end of the world. You were exactly who I needed to hear, exactly what I wanted, and we burnt whole nights on the phone long-distance.

For all that time spent, our talks didn't include much catching up. It had been so long since we'd seen each other, but we rode roughshod over those intervening years. You told me you were a CPA now, and that you had a big house on Wishart. I remembered that crummy ground floor apartment you lived in with your mom and figured that had to feel really good. I told you I had drifted around after the Army, headed west doing this and that over the years. I told you I had done some work with horses.

"Oh, I love horses!" you said, the way everyone who's never mucked a stable or been thrown says they love horses. "I can't imagine you working on a ranch. You were always the smart one; I thought you'd be writing your fifth book of poems by now."

"I never got around to writing my first one."

"That's a shame," you said.

I didn't tell you that I had been pretty serious about horses. After the Army, I moved around north Texas as a stable hand, then a wrangler, for years before I landed a trainer's position at a ranch in Kansas. I didn't tell you how I got hurt pretty bad. I was getting this Friesian ready for the ring. I worked mostly barrel horses; dressage was not my strong suit. But Manny, the guy who ran the stable, put in a good word for me. Besides, Friesians are usually gentle and I thought we got along. I always thought I was good with horses, that I had a knack for it, but maybe I wasn't ready. Maybe I spooked her, I don't know. While I was in the stable, yarning her mane, she pressed me against the wall, pressed me hard. Broke three of my ribs and ruptured my L1 and L2 disks, just like that.

I didn't tell you that the year before you found me I was living on disability and using up my unemployment. I was renting a shitty efficiency on the east side of Wichita, where I moved as little as possible while I ate OxyContin and tried to figure out what to do next.

It didn't feel like I was holding out on you; you

didn't seem to want to hear about any of that anyway. You were more interested in who we were when we met, who we said we were going to be back then, and I went with it. Truth is that the accident and a year on my back had left me rattled, like I really wasn't cut out for horses, or much of anything else. I was still passing time reading a lot; that hadn't changed since we were together. It felt good to stop thinking about the present. It felt good to think maybe it was never too late to write a book of poems.

You were always drilling me about our time together, our friends, the way things were back then. "Do you remember Jason and Anna?" you asked. "Do you remember the Owl Creek Diner?" "Do you remember how we met?"

We met on the shore of Virginia Beach, by Lynnhaven pier, the winter after high school. There was a party, lots of people. I remember seeing you dance to The Pixies around the towering bonfire. The rest of us didn't know who The Pixies were. My friends talking big and hitting on you, getting shot down one by one. I remember finally stepping up and asking if I could dance near you, and your friends laughing and you smiling and shrugging an indifferent "yes." We never took our eyes off each other.

Later, when the hot fire was too much, you grabbed a bottle of wine with one hand and my hand in your other and we ran off into the dark. I remember the cold sky and the brittle starlight, the restless surf's endless crashing, and the way you drew close to my ear to be heard. I listened to all the smart things you said and I remember the curves of your bare body pressed against my own. I remembered giving you my long wool coat and walking back slow, hand in hand, back to the light and the heat and our friends surrounding.

What I didn't tell you, what I've been thinking about this past week, is how easy it all was back then. Whenever we moved we were dancing. We talked and we knew our words were smart. Whatever we looked at was beautiful, and we looked at each other. The very best thing I remember about that year we spent together was how inevitable everything was, how naturally our pleasures came to us, how little we had to really think about anything.

“Remember the poem you wrote me?” you asked. I remember the night I left for boot camp, I wrote you a poem and left it in your windowsill. It said something about how hard it was to leave, but that I had to go see the world. I remember it said something about wanting to go find something worth remembering, worth writing down. I remember that I wanted you to know I was going to miss you and wouldn’t forget you.

“Of course I remember,” I told you, but the honest truth is that I couldn’t remember any of the exact words I’d written.

I told you I’d never been married, got close a couple times. You told me you’d just been through a long, messy divorce, and now that it was over I was on your mind a lot. You found me on the internet, and there we were.

I’m telling you all of this so you’ll understand how much I appreciate your invitation after all those years. How good it felt to throw some clothes and a few books into a duffle bag and catch the next Greyhound for Virginia. Packed in tight with everyone headed east, I watched some big windmills churning in the dark outside of Hope and wondered what it’d be like to just start over with you, to finally be the poet I had set out to be all those years ago. I wondered why I’d given it up, why I’d never found much worth writing down or remembering. I want you to know that above everything else, I’m grateful.

I still have that selfie you took at the bus stop, first thing. The moons of our faces pressed close. Mine waning and grizzled from the road, yours beaming and bright-eyed. It’s still on my phone; I look at it all the time. It’s good to see on our faces the optimism we were capable of, to remind myself that as beat up as I am, it’s still possible to feel that good. I hadn’t felt that good since I could remember, and I’m sorry to say I haven’t felt that good since. Fresh starts are always best before you actually get started. I see that now.

There were other good moments like that. I don’t want you to think it was all bad. I don’t know when it turned. Maybe the bad had been there since the beginning, just hidden under all the nights we stayed up late, making love and binge-watching shows I hadn’t seen but you told me I had to. Maybe the bad was just under

the blue horizon every weekend we caught the Number Six bus out to Neptune’s Park, just waiting for us to turn our backs on the ocean so it could creep in on the tide and find us. I don’t know why, but things changed. This fresh start, for all of those good moments we shared, has stalled, and I’m leaving. You deserve to know why, know all the things I can’t keep to myself anymore.

Your house is a big, old colonial, one of the very ones we used to drive by on summer nights and hope to call home someday. I don’t know if the years have worn on the house or on me, but it looks now like a sagging pile of bricks, with a busted foundation and floors warped and twisted into waves of cherrywood, dull and scratched.

Every night before bed, like a ritual, you wander the dusty upstairs, bemoaning every new crack in the plaster like some kind of fairytale banshee. La Llorona, issuing a forlorn tirade against the plumbers and roofers and carpenters, the HVAC specialists, and the masons, all coming to overcharge you, to rip you off and take away everything you’ve fought so hard to make for yourself. So you never call any of them to fix any of it, and the cracks fan out and deepen, the wood rots, the pipes drip faster, and your nightly inventories go on.

The husband who left you—whom I’ve never known except as the bullseye for the worst of your curses—apparently took half of everything, and so a huge part of your time is devoted to filling the hollows he left, the echoing rooms upstairs, the odd absences of arbitrary cookware and bathroom fixtures, furniture and appliances.

For as well as you have done for yourself, the years had not been kind to you, either. I see that now, too. You work too hard and too long. You come home every night exhausted and complaining about nuances of accounting that I don’t really understand, clients that I’ll never meet, bills I could never afford to pay for things I don’t think I’d ever want. You make more money than I ever will, but it’s not making you any richer.

On your days off you never want to do anything except Facebook and Instagram and shop online. I’ve never seen you read anything except the catalogs that come in the mail alongside the Amazon boxes that pile up every day on your gingerbread porch. Catalogs

chock-full of Victorian candleholders and Betty Boop toilet covers, pizza cutters from Norway and wine from Costa Rica. The catalogs pile up in drifts on every table and on every shelf, burying the little stack of books I brought with me. I look at them, worn and dog-eared, and can't help feel they deserve better. Between the nightly complaints about work and the nightly complaints about some new dent in the wainscoting, there is a time in which you open your boxes and post selfies with whatever new thing you have now. I watch you beam into your smartphone and leave you alone. These are your finest hours.

It's not just you. I want you to know that I'm not proud of the way I've carried on, either. I tell you I'm writing; I tell you my ideas for poems. The truth is I haven't written anything. Those ideas are just from other people's poems I've read. While you're at work, I take long walks and try to come up with my own. I walk huge orbits

around your neighborhood, as far out as the Wolfsnare. I watch the leaves change and the sun get lower. I come home when

my back starts to hurt; I bring the catalogs and boxes in from your porch. Other than that, I stare at the blank pages of the leather-bound notebook you bought me and wish I had an OxyContin. I sign for the odd delivery that arrives late and wait for you to come home.

I have terrible dreams. I'm back in Kansas in that stable and I can't move and that Friesian's eye is so close to my face it's an obsidian marble set in a field of glossy black hair. There's no anger, not even fear, only love in the white of it. Then she crushes me against the wall and my ribs crack inside my chest and I feel my back wrench and the vertebrae pop. It sounds like a controlled, three-round burst of rifle fire.

I wake up beside you in your big feather bed and I can't breathe. I lay there in the dark and wonder how something can love you and hurt you terribly and it's the rightest thing you can imagine. I lay next to you,

listen to you while you growl in your sleep. Sometimes you flail your arms and kick and laugh out loud. When it looks like the sun's about to rise, I go down and make us breakfast. When you come down I ask about how you slept. You tell me you slept fine. You tell me you don't remember your dreams.

Last week I tried to explain all of this, but before I could say much of anything you said you needed to show me something. You produced from the back of an upstairs closet your photo album, and from among your old photos you showed me a worn and yellow scrap of paper tucked into a stationary envelope stapled to the thick, black page. You removed it and handed it to me so carefully. "Don't tear it."

It took a moment to recognize my own faded handwriting. It was the poem I had written you before I left, all those years ago.

Like I said before, in youth we moved with a confidence so

It's not just you. I want you to know that I'm not proud of the way I've carried on, either. I tell you I'm writing; I tell you my ideas for poems. The truth is I haven't written anything.

natural I never appreciated it until I was old and it was gone. Youth

makes it all

look so easy, but it has its limits. I know now that in my own youth, for example, I couldn't write a poem to save my life.

I am certain now that the poem I gave you all those years ago was the most pretentious, bombastic, clichéd, and malformed thing I've ever read. I mean that honestly without exaggeration. The goddamn worst thing. All the crap that passed for wisdom from a smug, know-it-all punk kid who didn't know anything about anything at all. A poem from before he'd "seen the world," and been awarded a medal for looking right into the eye of and then killing a kid younger than he was when he wrote it. Before he'd drunk, popped, and snorted his way out of the service. A poem from before the years of wasted stupor that followed, before he met Manny, who gave him a break and a job, and before he finally found something kind to him, something good in living

beside great and graceful animals. Before that goddamn Friesian and whatever was wrong with her that day took it all away from me.

And the way you looked at me so proudly, like that dumb poem was the most wonderful thing. You've been keeping faith in that nonsense for all these years, built your life around it, like whatever you've become is in part because I left that crap folded up on your window-sill before I left. Like some old Japanese soldier proudly defending your atoll decades after your emperor threw in the towel. The truth is I was embarrassed for us both.

"That's really something," I said, and carefully folded up that old paper and gave it back. I haven't tried explaining any of this since. I don't think it would have done any good if I did.

By the time you read this I'll have gotten on that Greyhound, packed in tight with everyone else headed west. I'll have spent a lot of time looking out at big windmills and looking at our selfie on my phone, thinking about fresh starts. A few days ago I found Manny through Facebook. He's in Nebraska now, heads a ranch, said he needed a wrangler with some experience. When he said of course he remembered me and asked if I was

interested, I didn't ask for any details. I don't care if it pays bad or its back to mucking horseshit and hauling hay bales. I'll do it 'til my back gives out for good and I drop. There are worse fates; I see that now.

I'm taking this notebook with me, minus these first pages. I'm still trying to come up with some poems and you never know, I may need a place to write them down. This morning I found your photo album in the upstairs closet. I've torn up our poem and thrown it away. In its place please find this letter, and I hope something worth writing down and remembering.

As it turns out, I don't think starting fresh worked out for me, but I think maybe it might for you. I wonder if maybe deep down you already know what you need to do. Maybe it's what plays out in your dreams all night before you forget and wake.

Move and know you're dancing. Take all the bills and all your clients, the dinged wainscoting and the cracks in the plaster, the catalogs, all the Amazon boxes and the selfies and this gorgeous Queen Anne desk and this letter, all of it, and light it all on fire. Build yourself a bonfire and dance fierce around it the way you did the night we met. 🌿

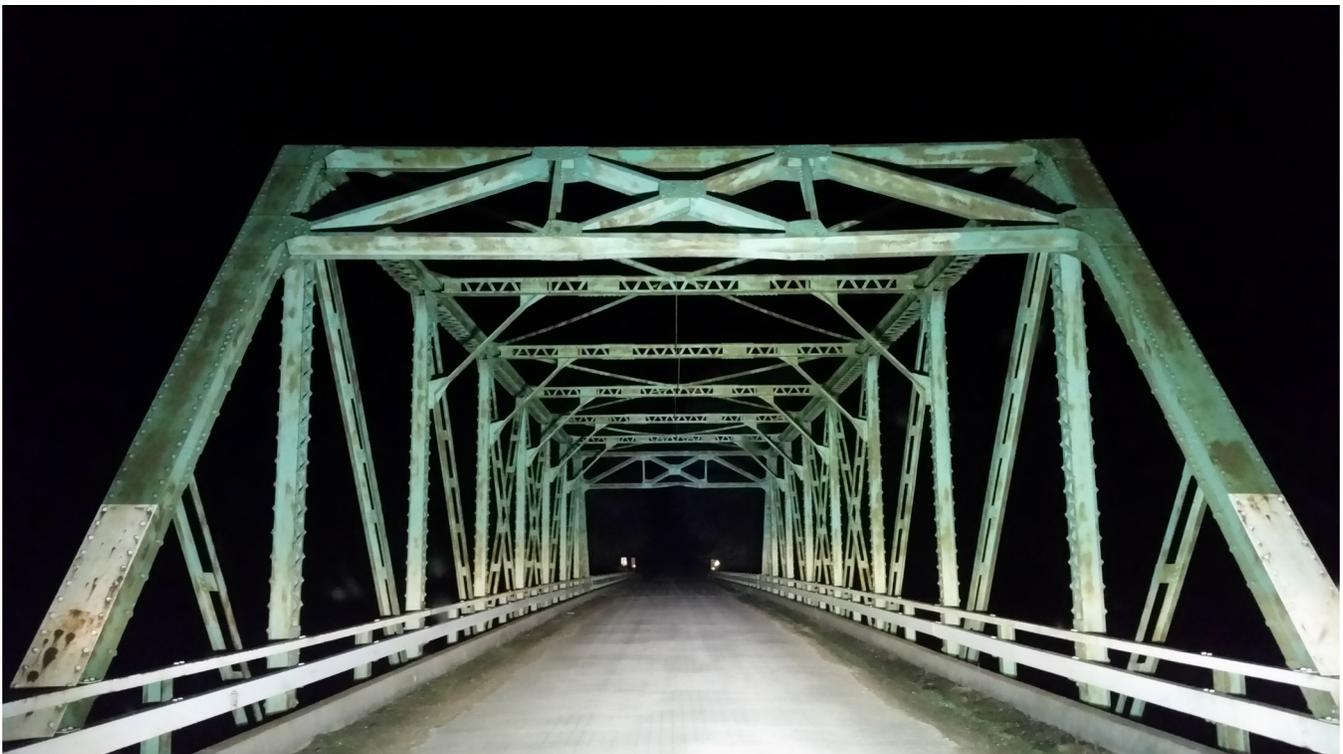


PHOTO COURTESY OF NICK KOSTER



PHOTO COURTESY OF SAM BURT

Sam Burt is a recent graduate of Grinnell College, currently living in Grinnell, Iowa. Post-grad, he's enjoying spending his days spread-eagled on the lawn with his dog Abby.

Prairie Burn

SAM BURT

The earth teemed
with jazzy knuckle-cracks
keeping time beneath
high boots and wild ginger
shoots too cool
to light, though
sweating dew...

The burn—too quick
to scorch soil—only
painted,
with oil begged
from every bluestem root,
onto a glossy veneer:

an uneven, inky iridescence;
a toad's damp spine;

wet-shine, smoking
like a body in night-rain,
surprising my downstretched
fingertips with a chalky
black chill

licking nails
as silver
as a cold-sweat shiver. 🍃



PHOTO COURTESY OF MARY ROSE BERNAL

Mary Rose Bernal is a third-year English major and Neuroscience concentrator at Grinnell College from (<https://www.grinnell.edu>) San Jose, California. She is a past assistant editor for Rootstalk and hopes to continue to write for a living.

A Farmer for Two Weeks

MARY ROSE BERNAL

For two weeks this past summer, I had a farm of my very own. This is the story of what those weeks were like for me: my everyday routine, its trials, and my growth. A family that I babysit for in the small town of Grinnell, Iowa, went away on vacation for two weeks and asked me to take care of their house while they were gone. It's on a hill outside of town that includes acres of land in the back, a small barn with goats, dogs and cats, and a chicken coop. Chores such as milking the goats at 5 a.m. required that I live there and use their car to commute to my full-time job. In addition to being paid, I was allowed to use their kitchen, their bed, and utilities. As a bonus, I got a glimpse into what life on a small Midwestern farm is like.

These surroundings were quite different from what I had known from the suburban streets of my hometown, San Jose, California. My backyard at home is relatively large for its neighborhood. It covers two of the house's four sides; the third faces the front yard, and the final serves as a passageway from one yard to another. I'd always thought of myself as fortunate to be able to be outside with grass, a garden, and a play structure. But if I had grown up with the farm's 115 acres, I would have felt like a king in his spread of the world. Whole days would have been filled up by the scenes I discovered there: a stream with a steep bank, woodland areas, and of course the tall grasses of the meadows. There was an open hill on the property from which I could see the house as a tiny box from afar. From one spot in the fence line, I could even look between two framing oak trees, across the highway and straight across miles of open countryside.

In standout moments I could imagine my friends from home calling me a farm girl, had they been able to

see what I was doing. The first time this happened was on the second day I was there, in the backyard. I was exploring the grounds with Herb, one of the family's three Anatolian Shepherd dogs (the others were Peaches and Rosie). As I explored the variety of unknown weeds and wildlife, Herb was sometimes leading and sometimes following,

sometimes going off on his own, but always returning, even when

I had never realized how enjoyable it would be to push back grass taller than myself, or to leap through it like I was wading in the tide.

I thought he had gone too far and wouldn't be able to find me. I ran with Herb through a hill of prairie grass—literally frolicking. I had always wanted to frolic through rolling green hills, “Sound of Music” style, but I had never realized how enjoyable it would be to push back grass taller than myself, or to leap through it like I was wading in the tide. Here, with Herb's tonguey smile beside me as we ran, I thought of how fun and different it might have been to grow up in this place instead of in

California.

Though I may have been more entertained in this alternate upbringing, I would also have taken more hits from nature. While I was exploring the massive space, I was wearing a skirt, not pants. The vegetation, while fun to explore in parts, also scraped me up pretty well

with thorns, spikes, sticks and brambles, and spotted me with bites from mos-

quitoes and other mystery insects. Navigating got frustrating and tiresome, especially when I was hungry and still a good fifteen minutes out from the house without a clear notion of how to get there. When I finally got back, my camera was covered in dust and my legs in red blotches and marks.

A second farm-girl moment materialized in the kitchen. The kitchen was where I spent most of my waking hours, taking advantage of having the whole place to



PHOTO COURTESY OF MARY ROSE BERNAL

myself to cook meals, try new things, mess it all up and clean it when I got around to it. Cooking dinner one night, I realized that it was the first time that I had ever constructed a meal off of such intimately local ingredients. The only things I had bought were the vegetables. The eggs, the milk, and the bread that I had baked had all come from the farm. It was a learning moment not only of taste, but also of economics. I was proud that I had saved the money that would have gone into store-bought proteins and grains, but I was also aware, on a personal level, of the self-sufficiency that farming makes possible. I could visualize a lifestyle sustained not by monetary currency, but by the fruits of investing in land and livestock, as humans had done for thousands of years.

Caring for the animals was a growing experience, putting me in the mind of the “I’ll Make a Man Out of You” training sequence from the Disney movie *Mulan*—except that I wouldn’t say that I overcame anyone in the end to become an expert in the field of milk-maidery. The morning and afternoon milkings were a tussle at first, with the goats stamping in irritation as I tried to adjust my technique. Milking one teat at a time was easier for me because I could hold on to the bucket, but milking both in a rhythm went faster and seemed to be more pleasant for the goats. One of the goats, Dolly, only produced milk in one udder and she would kick and make a fuss before I even touched her. Of the five goats I milked, some consistently made it easier than others, and some I consistently dealt with

last. Luckily, kicks to the bucket usually resulted only in sloshes lost over the top, but occasionally the whole bucket would tumble over and make a pond of milk on the floor for the dogs to drink.

When that happened—and it seemed to happen in succession because the female goats (or does) waiting in the pen would see it and get a similar idea—I would react in various ways. Sometimes I would groan or shout. Other times I’d just keep milking as if nothing had happened. The lack of milk was to their own detriment as it was fed to the kids in the adjacent pen, and I never understood why the goats would want to knock the bucket over, subjecting their own offspring to hunger. Still, I knew that the kids would always have enough, either supplemented by pellets or from the yard outside.



PHOTO COURTESY OF MARY ROSE BERNAL

Part of why I milked was also to relieve these girls of their uncomfortable weights. As time went on, I started observing how the more their udders bulged the funnier they would walk, and I began to feel more sorry for them than upset when they kicked. Especially when the older goats like Naomi and Dolly winced, I thought about how I would feel if some young inexperienced person was hurting the most sensitive part of my body.

After milking a goat I’d lead her out the back door by the collar. I got into the habit of saying, “Thank you, Miss Naomi.” Sometimes the sentiment was sincere, and other times I hoped that my showing civility would reward me with a better experience next time. “Next

time” was a given, because I couldn’t leave any of them unmilked or unfed. It was more than merely a chore, in that I was responsible for their lives no matter how hard it was for me to get out of bed some mornings at 5:00 a.m.

The most difficult task I had in the barn, and the thing that would make me dread coming in the next time, was corralling. The goats, understandably trapped and wanting access to food and the run of the barn, would be clever and find ways to butt out when I opened the pens. One doe in particular had an iron neck and determination and would shove the others out of the way to be the first out of the gate, causing the others to rush the gate and burst free. The does weren’t as bad as the bucks, because I could lead them back by the collar even if the strong-necked one went dead-weight on me. The bucks, huge and stir-crazy, were horrendous. Lugging them in the right direction was hard enough, let alone getting them into their pen. As soon as I’d open the door to put one back in, another would go out again. In fact, a jailbreak would often ensue just as I was putting the last one back, making me repeat the process upwards of three times. One time I stood amidst their heads shoved down different feed bags and

wondered how bad it would be if I just left them there. Putting them back didn’t seem like a possibility. But somehow I would do it, yelling and panting and picking up the last little one, Lamb-of-God style, to lower him

into the pen from above the gate. By this time, I would be physically exhausted and able only to trudge back up the hill to the house.

One night that I’d had to wrangle the goats back inside, I banged my head hard on the top of the baby pen door just as I finished, and I immediately burst into tears. It was a good, healthy cry, something I hadn’t had in months, and all three dogs came up to the pen to comfort me. That was a new experience for me too; I had seen movies and read books where the dogs could sense suffering and come in times of need, but my little shih-tzu-poodle mix back home in California had never done anything like that. Here were three dogs, a family, that enjoyed playing together and resting together in the evenings,

that wouldn’t hesitate to come up to me wanting some affection, would forgive me for my having to sometimes push them in the pens to prevent goats from coming out, and were there for me when I felt unappreciated. I stood there on the fence for awhile sniffing and petting their faces, moved with love from their kisses.

From there on, my tasks got steadily easier. Feed-



PHOTO COURTESY OF JON ANDELSON

ing the baby goats was fun because they'd drink the milk in a frenzy. They anticipated mealtimes aggressively and would jump on me when I entered the pen. I confess I felt favoritism for Spring, the littlest of the kids. She was black with light brown spots by her eyes, and she drank kneeling on the ground with her front legs tucked into the hay and her hind legs tall, tail wagging, eyes half-closed. She slurped without pausing to take a breath, leaving her coughing and burping afterwards. I don't think I ever loved anything the way she loved milk. Her calling in anticipation of mealtime was distinctive all the way from the house.

The kittens held another special place in my heart. I was shocked at how quickly they grew: on the first day, they shied away from being picked up and let out intermittent cries for their mama. Apart from napping, their time was spent demurely swiping at one another's tails or tussling together. But within two weeks, they had grown

into tall and lean almost-cats. They could spring up the walls of their cage in pursuit of a

Under a huge Iowa sky, and surrounded by trees on all sides, with only the sounds of the braying of animals and intermittent breezes, work done and doing nothing, I was happy.

piece of hay, wrestle one another all around the boundaries of their cage, and jump into my hand when I came to give them food. An all-black kitten I called Jackie wasn't afraid of anything and was quite the escape artist. She scared me to death when she once threatened to go into the great outdoors with the goats. In calmer times she would let me cradle her in my arms and would climb onto my shoulder. Mama Emily was the classic couldn't-care-less mother who lounged the day away and folded over like a string if I picked her up.

Then there were the chickens to tend to, who invariably squawked in unison and flew for their lives if they heard a suspicious sound. To collect eggs, I had to hunch over with my bucket and creep to every corner of the chicken coop. I'd collect six or seven eggs a day, far more than I would eat by myself, and became absolutely inundated with them. Eggs came to the forefront of every meal: hard-boiled, scrambled, fried or baked

in a quiche. Sometimes my meals would start at 9:00 p.m. and end with me going to bed. There were times, though, when I had a couple of hours to read my book in the living room, where I could watch the last bit of sunlight leave the sky.

Cooking, showering and reading were the only times I had for myself. It was peaceful at the house; I could say whatever I wanted, sing whenever I wanted, wear whatever I wanted and just lounge around for hours on weekends. I was able to live as I had when I was a kid, caring nothing about my appearance, and simply wearing whatever was dry and clean. Large t-shirts and athletic shorts became my everyday attire.

Being at the farm also gave me a deeper understanding of the Iowa prairie. I knew what it meant when people wrote that the fields made waves like the sea, because I could see them rippling and glinting in the wind when I drove to the house. I was able to read poems

about the prairie grasses while sitting in the middle of them. Reading about the love for the

sunsets and the changing seasons of the Midwest made more sense to me the more I became integrated into the Grinnell community and came to understand a landscape that differed from my native one.

I viscerally miss the beach when I see photos of it, my family's voices when I hear them over the phone, and the California warmth when I check the weather, but I never regretted my time at the farm. I experienced something on my own, and I gained insight into the life of a farmer and a Midwesterner that can't be understood by words alone. Tired, cranky, and busy as I was at times, I valued the work I did because I could see its impact on the animals around me. From them, I learned more than I have from humans about how to embody emotion. Under a huge Iowa sky, and surrounded by trees on all sides, with only the sounds of the braying of animals and intermittent breezes, work done and doing nothing, I was happy. 



PHOTO COURTESY OF JON ANDELSON



PHOTO COURTESY OF KEN SAUNDERS II, TAKEN MARCH 7, 2015, AT RED ROCK RECREATION AREA, NEAR PELLA IN MARION COUNTY, IOWA

they are assertive over smaller birds. Their flight tends to be fluttery but level rather than undulating. You'll find Tufted Titmice in most eastern woodlands below 2,000 feet of elevation, including deciduous and evergreen forests. Tufted Titmice are also common visitors at feeders and can be found in backyards, parks, and orchards.

Song: The Tufted Titmouse's song is a fast-repeated, clear whistle: *peter-peter-peter*. The birds repeat this up to 11 times in succession or up to 35 songs delivered per minute. Females occasionally sing a quieter version of the song. (Description adapted from text created by the Cornell Lab of Ornithology, <http://www.birds.cornell.edu>).

To hear an audio recording of the Tufted Titmouse, captured by Eric DeFonso at the Konza Prairie Nature Preserve (<https://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/kansas/place-sweprotect/konza-prairie.xml>), Riley County, Kansas, visit Xeno-canto (<http://www.xeno-canto.org>), or download the fully interactive PDF of this issue's *Birds of the Prairie* feature using the hyperlink at the bottom of the web page.

Birds of the Prairie: Tufted Titmouse

Baeolophus bicolor

The little gray Tufted Titmouse is common in eastern deciduous forests and a frequent visitor to feeders. The large black eyes, small, round bill, and brushy crest gives these birds a quiet but eager expression that matches the way they flit through canopies, hang from twig-ends, and drop in to bird feeders. When a titmouse finds a large seed, you'll see it carry the prize to a perch and crack it with sharp whacks of its stout bill. Tufted Titmice are acrobatic foragers, if a bit slower and more methodical than chickadees. They often flock with chickadees, nuthatches, and woodpeckers and are regular visitors to feeders, where





PHOTO COURTESY OF SANDY

Sandy Moffett, *Emeritus Professor of Theatre at Grinnell College, joined the Theatre faculty in 1971 and continues to teach and direct plays on campus on occasion. Currently he spends most of his time restoring prairie, writing songs and stories, entertaining his grandchildren, and performing with The Too Many String Band. His most recent short stories are scheduled for publication in The Wapsipinicon Almanac (<http://www.wapsialmanac.com>) and Gray's Sporting Journal (<https://www.grayssportingjournal.com>).*

Addiction

SANDY MOFFETT

This is a story of a misspent youth, of wrong turns taken, of love misdirected and unwise romance. It is a tale of mistakes made and made again, of experiments with exotic plants and strange substances and foolish choices—and serious addiction. This is a ballad of unnatural behavior and of lost roots, but more than anything else, it's the story of an approach to a long-sought goal: Nirvana. This is the story of how I found grass: pleasure in grass, euphoria in grass, contentment in grass.

“Oh, great!” you say. “Another Timothy Leary wannabe: broken-down old hippie. Get him outta here. One strike and you're out, buddy.” Let me quickly assure you that I am not referring to *Cannabis sativa*, pot, weed. Nor do I mean “lowjuana” or plain old hemp. No. The grass to which I am addicted is actually *grasses*. And it is referred to by many names: big bluestem, Indian grass, sideoats grama, and Canada wild rye. It's little bluestem, dropseed, switchgrass, cord grass, and innumerable sedges. My addiction is to the prairie.

Let me tell you how I came to have this love affair with a patch of prairie, a place which many have told me looks like a bunch of old weeds, but which for me holds never-ending charm and which, like all true love, grows more beautiful every day.

In the early spring of 1976 I, along with a number of my Grinnell College colleagues, received a mimeographed sheet of paper by campus mail on which was an appealing description of a parcel of land that was being offered for sale. The sellers, members of the Department of Sociology, were moving to California; the land was located about 12 miles south of town. The flyer spoke of coreopsis and chipmunks, columbine and chickadees. Intrigued, my wife and I went out to have a look on what must have been the final day of that spring's

thaw. The fact that the ground we sought was accessible only through a quarter mile of naked bean field on the north or a greasy minimum maintenance road from the south presented us with our first challenge. We knew that trying to drive would be sheer folly, so we rolled up our trousers and slipped and slogged through several hundred yards of mud, reaching the property line with about 10 pounds of Iowa gumbo on each boot. Then we walked across the cornfield to the edge of the timber, stopped and listened to the silence and breathed the air.... we simply looked at each other and nodded. Watching a cock pheasant catapult from a bramble patch, cack-cack-cackling its way across the cornfield like an old biplane hitting on one cylinder certainly put an ear-to-ear grin on my face. Even with the brown muddy field and the leafless trees, we were smitten. Following a short price haggle, and after convincing the folks at the local savings bank that we were reasonable risks, our two names were added to the deed for the NW 1/4 of the SW 1/4 of Section 26, Township 79 North, Range 16 West of the 5th PM.

What that meant was 40 acres, exactly square, a quarter-mile on each side, one half scrub timber, second growth oak, hickory, hack berry, silver maple, aspen, and box elder, 12 tillable acres, and 8 acres that looked to me to be just plain scrub.

I was holding down two jobs at that time—teaching at Grinnell College during the school year and running a theatre company in North Carolina during the summers—so it was well into autumn before I began to discover what we had purchased, to learn the gullies and small hills, the branches and shallow frog ponds, and to begin to devise plans for our acquisition's future. I can't say exactly what my wife saw that made her agree with me that we needed to buy this ground—virtually worthless by many standards—but I know what I saw. I saw a chance to create for myself a little bit of North Carolina—a piece of my old homeland—in the middle

of this land of corn.

I hadn't been long in the state between two rivers, and I must admit that I still felt like a stranger to the heartland. I missed the red clay hills I had left behind, the pines and hemlocks and the sweet gums. Why couldn't I transform this little landscape so it would be green in the winter, burn red in the fall, and smell of pine needles all the year round? Ah, the thorny paths the follies of youth can lead us down.

Of course, what I was hoping to do is what settlers in a new land have forever done. From the irrigated green lawns of Phoenix to the rows of blue spruce in Ne-

braska to the place in the north-east of the U.S. called New England, we humans have always tried to bring home with us, and to recreate it when we arrive in a new and different place.

So, my initial impulse was unremarkable. The next spring I contacted the state forestry nursery in Ames and ordered a thousand seedlings—Scotch and white pines, spruce and maples. When they arrived I borrowed a planter from our biology department. Calling it a planter is

an overstatement; it was a devious piece of iron, weighted and pointed on one end, that was heavy to lift, hurt my hands when I slammed it down, hurt my feet when I shoved it in the ground, and rattled my bones like a minor car crash when I was unlucky enough to hit it into a stone. Nevertheless, I set about circling the cornfield with little 6-to-8 inch sprouts and sticks, heeled them in (as they say in the forestry world), prayed for rain, and headed off to North Carolina for my summer of theatre.

On my return at the end of the summer, I went anxiously to my new tree farm, expecting at least two feet of new growth, and there, amid lush green grass, and in the shadow of 10-foot-high swaying Iowa corn, were my evergreen trees, exactly the same size I had left them, but a lovely reddish brown in color and as brittle as fine porcelain figurines. The maple sticks were nowhere to be found. It turns out I should have told my

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dicted is actually *grasses*.
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renter who was planting the cornfield what I was up to. I learned that seedling trees and the broadleaf weed-killer atrazine—which he had spread on the field—don't get along.

Undaunted, I planned for the following spring. This time I would plant a thousand evergreens (after all I had lost a year) plus a few walnut trees and, as a nod to the Midwest and for bird food, some high-bush cranberry. The next May when my planting was completed I limped on my sore feet to the farmer's house to make sure that he would spray only the middle of the field. Shortly thereafter we packed our things again and headed east. Each time I looked at those gently swaying Carolina pines that summer, I could almost feel my young seedlings growing like reeds, creating a miniature Tar heel state in the middle of Iowa.

What I saw that August was indeed remarkable—no swaying pines, no little saplings, no matter how hard I looked. They had been smothered by a twenty-foot border of weeds surrounding the cornfield. The bur-

dock and velvet leaf and jimson weed and ragweed plants, overjoyed by the absence of herbicide, all about 12 feet high, had simply devoured my little babies.

Of course, there was nothing to do but plow ahead. Johnny Appleseed must have had setbacks, I reasoned; Sandy Seedling wasn't going to let a couple of bad years put him off his course. If my friend on the other side of town could make pine trees grow on his lovely Christmas tree plantation; surely I could too.

I cut back a bit. Just 500 trees, all evergreens, I made a list:

1. Let the farmer know so he won't spray.
2. Clip the weeds early.
3. Arrange for another clipping during the summer.

I even carried buckets of water around to give each seedling a drink before I left that May—and that was pretty much the last water they saw all summer. This



PHOTO OF CONARD ENVIRONMENTAL RESEARCH AREA COURTESY OF JUN TAEK LEE

time when I returned, everything was brown. It was the drought summer—dead weeds, almost dead corn—all curled up, and of course 500 little brown brittle match sticks sadly surrounding it all. Needless to say I was a wee bit disappointed. I was beginning to feel like the Jeffrey Dahmer of the tannenbaum world. I could imagine the little baby trees begging not to be sent to that Moffett guy. Unlike Mr. Christmas tree, I couldn't get the damn things through one summer.

It was beginning to look like a change of tactics was in order, so for the next few years I simply let everything alone and enjoyed what was there. To say I decided to do this would be an over-statement. It was more by default, or maybe from exhaustion or a failure of imagination. But we were beginning to spend more summer time in Grinnell, and I was amazed and took pleasure in watching the corn and beans grow before my eyes. I set aside a couple of acres and seeded it to alfalfa and brome (which I realized later were non-native and invasive, but I was ignorant then), enough hay to get our horses through the winter. I laid out half a dozen possible cabin sites and built a small, if somewhat leaky pond. And I began to see things.

Annie Dillard, in her book *Pilgrim at Tinker Creek*, devotes a chapter to seeing—the phenomenon whereby we alert our senses to something in our environment we have never noticed before, and then suddenly begin to find that everywhere. She tells of hiding a penny on a sidewalk when she was young and chalking arrows pointing to it with messages saying “surprise ahead” and “money this way.” Then she would spend the rest of the day imagining the lucky finder with wider eyes looking for pennies and finding many more. Reflecting on this, she says: “It is dire poverty when a man won't stoop to pick up a penny . . . If you cultivate a healthy poverty and simplicity, so that finding a penny will literally make your day, then, since the world is in fact planted with pennies, you have with your poverty bought a lifetime of days. It is that simple. What you see is what you get.” During the next two summers I began to see

those planted pennies.

I saw that my oaks were not simply oaks, but burr oaks and red oaks and pin oaks; that the oaks grew in their own places and the hickories and maples in their separate spots. I saw what happened when an old tree fell—that the next summer, raspberries grew in the patch of sunlit ground that the tree had formerly shaded.

One May day, my nine-year-old son and I were walking through the woods when he spotted a morel mushroom and said “What's that?”

“What's what?” I said, looking straight where he was pointing.

Then, one summer morning, I discovered that a little patch of rutted hillside, in the area that I had labeled “just plain scrub”... was the richest, most diverse and complex part of the whole property.

“That brown thing.”

“Everything down there is brown,” I came back.

“This!” He touched it. And I saw.

Suddenly, as if by magic, there were morels all through the woods.

Then, one summer morning, I discovered that a little patch of rutted hillside, in the area that I had labeled “just plain scrub,” a piece of ground no bigger than an average back yard which I had written off as a worthless, washed out weed patch and seldom entered unless I was in hopes of kicking out a rabbit for the frying pan, was the richest, most diverse and complex part of the whole property.

It was the purple coneflowers that first caught my attention; the tall spindly native kind, that made me see this little place for the first time. But I found that this little piece of dirt was literally strewn with “pennies.” The flowers drew me to it—an array all summer long of wild rose, sunflowers, asters, many others I couldn't name. And, of course the stately coneflowers; it was the other plants, grasses and sedges, that kept me there, though; each seeming to have its own place, a part in some kind

of balance. Changes would happen from month to month and over the next couple of years, but never the sort of change that seemed to destroy anything. There was nothing that appeared to need mowing—nothing to apply chemicals to.

This relict, this little neglected park, was taking care of itself. It was an ebb and flow. If it was wet, one group of plants would come to the fore, and if it was dry they would make way for others; hot, others, cool, yet others, in a seemingly infinite variety.

What I was observing was a prairie, a community of plants—a tiny piece of the Midwest that had escaped notice, had probably escaped the plow, and, for the most part, had even escaped grazing by domesticated animals. This crazy-quilt of flora soon became my favorite spot, and a love affair had begun.

I had found grass, and although I still couldn't identify much of it I was slowly beginning to see grass everywhere—the turkey's feet of big bluestem, the plumes of Indian grass, the sprays of switch grass in roadside ditches, vacant lots, railroad rights-of-way. Something was taking hold. A dependence was beginning. I made pilgrimages to the spectacular national grasslands in Oklahoma, Wyoming, South Dakota, and other places where native prairie grass could be found. I spent days in the Neal Smith National Wildlife Refuge (https://www.fws.gov/refuge/Neal_Smith) in nearby Prairie City, and the Crescent Lake National Wildlife Refuge (https://www.fws.gov/refuge/Crescent_Lake) far away in the Nebraska sand hills—mile after unbroken mile of grass. I couldn't get enough of it. I was hooked.

Then, in 1991, another change took place. I carried my little black loan book to the bank for the last time and saw it marked "Paid in full." I had been thinking of taking my crop field out of production when the land was paid for and we no longer needed the income to cover the payments.

At first I had imagined our acreage as a clean green pasture of clipped fescue and bluegrass ringed by a rail

fence and surrounded by, of course, softly swaying white pine trees. But that was before. What I envisioned that winter as I looked out over the snow-covered bare bean field was prairie.

So began my next, present, and I hope last grand horticultural experiment. Only this time I would not try to bring a piece of Carolina to Iowa; this time I would try to bring a lost piece of Iowa back home.

In the spring of '92 I prepared a seed bed, disked it a second time to kill any emerging weeds, and arranged for the head of the county conservation commission, with help from the local Pheasants Forever (<https://pheasantsforever.org>) chapter, to drill native grass seed in late May. A few days before this planting I walked

“If you build it they will come.” This familiar quote refers to turning a cornfield into a baseball diamond, but it also applies to projects such as mine. If you plant it they will come.

the twelve-and-a-half acres with a crank seeder, spreading 30 pounds of forb seed (forbs are non-grassy native plants—mostly flowers). It was an exciting day when the tractor arrived with the drill filled with funny fuzzy little seeds and began crisscrossing the field, marking it like a sheet of graph paper. The seeds were in, and I began to pray for rain—and pray and

pray and pray. In the spring of '92, as some might recall, no rain came. Of course, the weeds did, which I dutifully clipped, and then finally, about mid-summer with some rain, little blades of grass began to appear. I was beside myself. I went out twice a day with a ruler to measure the progress of these little shoots, and within a fortnight the entire field was as uniformly green as a billiard table. With great excitement, I brought out our local expert to see my miracle prairie. “Foxtail,” he said. “That’s a weed too.” So out again with the tractor: mow-er and clip, clip, clip, and pray for more rain.

That winter I again stared at a bare field, either a uniform brown or a uniform white depending on the snow cover, and when the next spring came it appeared again that the weeds would triumph. I watched in dismay as a slightly fuzzy plant with long finger-like leaves began emerging across the field like the advance guard of an attacking enemy army. This was beginning to look

depressingly familiar. I readied my mower for a counter-attack when suddenly I noticed small buds on each plant. I decided to delay my offensive. Two weeks later I had a twelve-acre carpet of yellow black-eyed Susans. Then, when the truly hot weather of summer came, that year with adequate moisture, the real grasses (the warm-season grasses, as most native varieties are called) made their debut: straight shoots of big bluestem, curly switch grass, feathery Indian grass, and the curiously asymmetrical side oats grama. During the next months, almost everything I had planted appeared: prairie clover, coreopsis, primrose, and, of course, the spectacular purple coneflower. It has been a never-ending show ever since.

“If you build it they will come.” This familiar quote refers to turning a cornfield into a baseball diamond, but it also applies to projects such as mine. If you plant it they will come.

Native species that were not in my original seed mix appeared. A few summers later a botanist friend, on a quick walk through the prairie, identified 27 plant varieties I had not planted. The power of the native plants is awesome, and it is with great pleasure that I watched the clumps of bluestem and switch grass begin to crowd out the foxtail and thistle, and choke the ragweed and burdock to death. Ah, sweet revenge.

In addition to the flora, there are also enough ring-necked pheasants, turkeys, and magnificent white tailed deer to provide my family and friends with gifts of many splendid meals each year without doing any harm to their healthy populations. Finally, perhaps, I have got it right. My stash is out there; my fix assured.

I have since learned, to my delight, that there are many projects such as mine in Iowa and the Midwest. These projects have three main types: prairie reclamations, prairie replications, and prairie restorations.

Reclamation is discovering and saving a relict prairie, a little piece of ground that has managed to look

worthless and hide out for the last couple of hundred years and avoid “progress and improvement.” Old cemeteries often hold some of these treasures. Remarkably there are some interesting relict prairies within in the city limits of Chicago. Replication is what my project is. This involves planting native varieties and enabling a natural process to eventually replicate the original prairie conditions. Restoration is the most complex process—locating and planting native seeds from within a specific area and recreating all the conditions that existed before the original prairie was destroyed. The task is painstaking and daunting, representing much research, work, and most of all, time. I once heard a joke

about a Texas billionaire oilman vacationing in London buying up antiques and fine art pieces. On visiting a traditional English garden, he expressed the desire to have one for himself and asked the groundskeeper what it would cost him. “About a hundred years,” was the reply. That is what it costs to restore a prairie—about a hundred years.

Most Iowa counties are blessed with spots of prairie. From the magnificent Loess Hills to the bluffs along the Mississippi, one can look closely and find relicts, replications, and restorations of all kinds.

My own addiction has spiraled almost out of control. To my original prairie restoration, I’ve added an additional 80 acres on a farm I was fortunate enough to purchase and “unimprove.”

Prior to European settlement almost all of the mid-Midwest was covered with countless square miles of prairie. Now less than a tenth of a percent of this vast garden remains. What does remain is a priceless reminder that it was this prairie and hundreds and hundreds of years that provided us with the gift of the richest land in the world. This land and these little overlooked and rebuilt jewels desperately need our notice, our love, and our protection. Addiction's not all bad. 🌿



PHOTO COURTESY OF JUSTIN HAYWORTH

Endnotes

"ANIMAL, VEGETABLE, HUMAN: GLYPHOSATE'S EFFECTS IN AG AND BEYOND"

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Endnotes (cont'd)

"SAVING THE MONARCH MEANS SAVING THE PRAIRIE—AND AGRICULTURE"

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