Roots and revery

Midewin – Putting the prairie back into the Prairie State

By Arthur Melville Pearson

In honor of Illinois' now completed bicentennial celebration, let's start with a little quiz: how much prairie is left in the Prairie State? Prior to Illinois joining the Union in 1818, there were about 22 million acres of native tallgrass prairie. Fast forward to 1978. The Illinois Natural Areas Inventory – the nation's first statewide survey of natural areas – revealed that there remained 2,500 acres.

That's right – 2,500 acres, or .0001 percent of our namesake natural heritage.

To put it another way, imagine Illinois is a 2,200 square foot house. Prairie once carpeted two-thirds of the rooms. Today, it wouldn't quite cover a 6" x 6" floor tile. To get an even truer sense of how much – or how little – prairie is left, imagine that same tile broken into more than a thousand pieces and strewn all over the house. What native prairie remains in Illinois lies mostly in small, widely scattered patches, some scarcely an acre in size and surrounded by a sea of corn and soybeans.

The good news is that our native prairie is making a comeback in a big way in the most unlikely of places: the former Joliet Arsenal.

Prairie to Farmland

It wasn't easy turning 22 million acres of prairie into some of the most productive farmland on the planet. First, from the settler perspective, the fledgling state of Illinois needed to be safe from the threat of its native inhabitants. The tragic conclusion to the Black Hawk War of 1832 led to the last of several treaties, which removed the last of Illinois' indigenous peoples to the west of the Mississippi River and opened the last five million acres of northern Illinois to settlement.

The next battle for settlers was busting the prairie sod. Unlike the forested lands of the East, the Midwestern prairie lands did not require being cleared of trees. However, beneath the tall grasses and profusion of wildflowers lay a virtual forest of deep, densely-matted roots. Slicing through these "devil's shoestrings" to an initial depth of just an inch-and-a-half required a near-Herculean effort. Farmers who could afford it hired special "breaker brigades." These were two-man teams that guided massive breaker plows, pulled by yokes of three to six oxen. One team could bust up to three acres per day at a cost as high as $5 an acre – this at a time when an acre of land could be bought for $1.50.

There are at least 30 miles of trails for visitors to enjoy the recovering landscape – such as this one that winds through South Patrol Road Prairie, one of the first areas to be restored at Midewin.

Once the breaker plows had turned the first furrows, there remained the problem of wet, sticky Midwestern soils, for which the conventional wood or iron plows of the time were no match. Some sources still claim that John Deere, of Grand Detour, Illinois, first fashioned an old sawblade into a new kind of self-scouring plow fit for prairie soils. Indications are that it was fellow Illinoisan John Lane of Will County who holds that honor, though he never patented his invention nor ventured into mass production. Deere did both and by the late 1850s, his company – relocated to Moline, Illinois – was churning out more than 15,000 highly-polished, highly-effective, steel moldboard plows per year.

Illinois' earliest farmers faced yet another significant challenge: too much water. According to the president of the American Geographical Society, Illinois is the second flattest state in the nation. But even where the retreating glaciers did a particularly good job of scouring the land, it was not left – as the saying goes – flat as a pancake. Much of the prairie was pocked with undulations and depressions, which, combined with various soil and bedrock conditions, held water. Wet areas and saturated soils resulted in limited and inconsistent crop yields.

It took another enterprising John – John Johnston – to solve the water issue, using a technology dating back to early Rome. In the 1820s, the enterprising Scotsman dug ditches in a boggy area on his upstate New York farm and laid tiles – loosely connected sections of clay pipe – which effectively lowered the water table and carried excess water off his fields. Neighboring farmers mocked his spending the time and money to

The remains of a pioneer schoolhouse in the Grant Creek prairie and wetland restoration area at Midewin.

"bury crockery" in his fields until they witnessed his wheat yield increase from five to fifty bushels per acre.

To say that tiling took hold in Illinois would be an understatement. By 1935, fueled by various government assistance programs, Illinois farmers had laid enough drain tile to circle the globe six times. To this day, more than one-third of the entire state remains undergirded by a massive plumbing system.

Small wonder, then, with all the hard work and investment over the course of several generations, that farmers south of Joliet were less than thrilled when Uncle Sam knocked on their doors in 1940, demanding to buy their land and turn it into a munitions factory.

Farmland to Arsenal

In 1940, anticipating entry into World War II, Congress authorized a massive build-up of the nation's arsenal. First step: the government needed a lot of land, fast, that met specific requirements. Among other things, the land had to be level, inexpensive and located at least 200 miles from an international border "to minimize the possibility of enemy attack by air." It had to be near existing highways and rail lines, and in proximity to a skilled labor force, but far from major population centers "due to the potentially hazardous character of the operations.

Unbeknownst to the landowners who would be impacted, the Joliet Association of Commerce aggressively promoted the area around the small farming communities of Wilmington and Elwood, twenty miles south of Joliet, as a perfect candidate site. The US National Defense Board agreed and authorized the purchase of nearly 37,000 acres to establish not one, but two munitions plants.

Few farmers were eager to leave. Some were descendants of the pioneers who had busted the prairie sod. Leaving the family farm also meant leaving behind the pioneer cemeteries filled with their ancestors. Some held out for more than what the government offered. Some refused to sell at any price. In the end, mostly through acquisition but also through condemnation when necessary, the government amassed 450 farms, covering nearly 38 square miles, for a total cost northward of $8 million.

Farmers typically had between 30 and 90 days to move out. Even before some had received payment, construction crews got to work. On the west side of historic Route 66, which divides the site, they built the Kankakee Ordnance Works for the manufacture of TNT and other explosives, along with their component chemicals. On the east side, they built the Elwood Ordnance Works, where the explosives were packed into artillery shells, bombs and landmines. Both facilities were up and running within seven months at total cost of $81 million, which in today's dollars would be $1.5 billion.

The twin facilities operated 24-7. At peak production, they employed more than 20,000 people. The Kankakee plant set a record for producing 1 billion tons of TNT. The Elwood plant loaded and shipped nearly 1 billion projectiles. Following the war, the two plants were combined as the Joliet Army Ammunition Plant and placed on standby. The plant was reactivated for the Korean and Vietnam conflicts. By the late 1970s, most operations at the arsenal had ceased.

Birdwatching among the former Joliet arsenal munitions igloos that once stored record-breaking amounts of TNT.

Arsenal to Prairie

Emily Dickinson famously penned:

> To make a prairie it takes a clover
> and one bee —
> One clover, and a bee,
> And revery.
> The revery alone will do
> If bees are few.

Well, not quite. Especially when you're trying to make a prairie out of land that first had been farmed for a century and then used for decades to fuel the conduct of three wars. In fact, in 1989 a portion of the arsenal was placed on the Superfund National Priority List as one of the most contaminated sites in the country.

More than "revery," it took a lot of complicated negotiation, planning and execution to clean up the site and reserve most of it for the return of the prairie. In 1993, the US Army declared the arsenal's remaining 23,000 acres to be surplus. Representative George Sangmeister (D-IL) established the Joliet Arsenal Citizens Planning Commission to determine the site's future use. Pro-development interests were eager to maximize the land for its economic value. However, conservationists made a compelling case for its environmental value because of the presence of, not a bee, but a bird.

Upland sandpipers are funny-looking birds – tall, skinny, long-legged, with big eyes set in small heads atop long, skinny necks. What they may lack in looks, they more than make up in song – a burbling trill ending in a blush-inducing "wolf whistle." They're also very rare. Ironically, the arsenal provided a safe harbor for this state-endangered species. In fact, surveys conducted by the Illinois Department of Natural Resources revealed that the arsenal was home to hopeful numbers of many different kinds of grassland birds – birds whose populations have been plummeting due to the loss of big, protected open spaces.

Astonishingly, the need to protect nature and recover the state's prairie heritage carried the day. Following Sangmeister's retirement, his successor, Representative Jerry Weller (R-IL), guided the passage of the Illinois Land Conservation Act of 1995, which carved out a portion of the former

The recovering prairie at Midewin's Iron Bridge Trailhead calls to mind the wonder Eliza Steele expressed about the prairie she saw near present day Midewin in 1840: "I started with surprise and delight. I was in the midst of a prairie! What a new and wondrous world of beauty! What a magnificent sight! You will scarcely credit the profusion of flowers upon these prairies. We passed whole acres of blossoms all bearing one hue, as purple, perhaps, or masses of yellow or rose…the iridescent glow was beautiful and wondrous beyond anything I had ever conceived."

arsenal for a county landfill, a union training facility, two industrial parks and, fittingly, the Abraham Lincoln National Cemetery. However, most of the land – around 19,000 acres – was reserved to establish Midewin National Tallgrass Prairie.

Midewin (pronounced mid-DAY-win) is the name of a healing society common to several tribes that once inhabited the Great Lakes region. It is a fitting name in many ways, beginning with the need to heal the site of its war-era wounds. Under the supervision of the US Environmental Protection Agency, the site was cleared of munitions and several landfills were capped. More than 100,000 tons of highly-contaminated soils were removed and another 280,000 tons bioremediated on site. There remain some areas yet to be fully remediated, but most of the land has been transferred to the US Forest Service, which has initiated removal of roughly 1,500 buildings, 400 earth-covered munitions bunkers, 200 miles of road and 160 miles of railroads. Below the surface, the spaghetti bowl of unmapped drain tiles are in the process of being removed or disabled.

Once the land has been cleaned, cleared and de-plumbed, the next step in returning it to prairie – according to Ms. Dickinson – is to add one clover and a bee. Let's start with a bee, but which one? There are between 400 and 500 different kids of bees native to Illinois. Typically, bees and other winged pollinator species tend to show up on their own if the right combination of plants and other habitat conditions are in place. So, let's turn to clover, of which there are decidedly fewer from which to choose.

There may have been eight different kinds of clover native to Midewin, not to mention more than 300 other species of native prairie plants. Because Midewin is, by an order of magnitude, the largest tallgrass prairie restoration underway in the nation, finding enough seed and root stock – particular to Midewin –is a major challenge. For this reason, the US Forest Service established seed beds on site, both to meet the volume demand and to grow some of the most uncommon plant species not typically offered by commercial sellers.

Hummingbird photo bomb in a stand of cardinal flowers at Midewin.

Another challenge restoring prairie on such a large scale is controlling weeds. Most prairie plants initially spend much of their energy establishing their famously deep root systems. Cylindrical blazing star, for instance, a bushy plant boasting feathery purple blossoms, grows only 18 inches tall, but its root systems extend 15 feet underground. Long-term, this adaptation allows prairie plants to survive periodic droughts and fires. Most weeds, on the other hand, are annuals. Growing from seed every year, they don't need deep roots. They spend their single season-bound energy vigorously growing above ground to set seed for the next year. Uncontrolled, they can starve baby native plants of the energy they need to gain a foothold. At Midewin, a regimen of mowing, applying herbicides and conducting controlled burns help keep weeds in check until native species are strong enough to outcompete the weeds.

When Midewin was established in 1996, less than three percent of its 19,000 acres remained in native vegetation and little of that could be considered healthy habitat. Today, with the help of key nonprofit partners and a devoted army of volunteers, Midewin boasts about 5,000 acres of restored and recovering prairie. That's twice as much prairie – in one, single location – as exists in all the other scattered remnant sites combined.

(There is another 3,500 acres of restored prairie – and a growing bison herd – at The Nature Conservancy's Nachusa Grasslands, located near Grand Detour. But that's a story for another time.)

There remains a long way to go to restore all 19,000 acres at Midewin. But already, visitors can hike, or bike, or horseback ride the many trails and marvel at the towering prairie grasses and the seasonal succession of wildflowers. And wonder at the soldier-straight rows of grassy ammunition bunkers. Perhaps get a good look at its own rapidly expanding bison herd. Or catch a glimpse of an upland sandpiper or some of the other 180 different bird species that rely upon Midewin for their very survival.

Midewin indeed means healing – healing not just for the rich diversity of our native plants and animals, but for us as well. Its bigness and its beauty invite reflection upon our complicated past, provide respite from the cares of today, and inspire hope for the choices that lie ahead of us in the days to come.

Arthur Melville Pearson has written extensively about conservation in Illinois, including his volunteer efforts at Midewin: http://arthurmelville-pearson.com/?page_id=52. In 2018, the Illinois State Historical Society honored Pearson with an Outstanding Achievement Award for Scholarly Publications for Force of Nature: George Fell, Founder of the Natural Areas Movement*, published by the University of Wisconsin Press.*

It takes a lot more than one flower and one bee to recover the prairie land of Midewin – it takes the hard work and dedication of a vast network of government agencies, nonprofit organizations, expert staff and passionate volunteers.

Additional Sources:

Midewin National Tallgrass Prairie, US Forest Service: https://www.fs.usda.gov/midewin

Midewin Tallgrass Prairie Alliance: https://sites.google.com/site/midewinalliance/

Midewin Heritage Association: https://www.facebook.com/MidewinHeritage/

National Forest Foundation: https://www.nationalforests.org/who-we-are/our-impact/midewin

Openlands: https://openlands.org/land-and-water/midewin-national-tallgrass-prairie/

The Wetlands Initiative: http://www.wetlands-initiative.org/midewin/