

MORNING MIST

Midewin National Tallgrass
Prairie is larger than 23 of
New York City's Central Parks.

TALLGRASS REHAB

**AT THE MIDEWIN NATIONAL TALLGRASS PRAIRIE
IN ILLINOIS, A TEAM IS TRYING TO RESTORE
A RARE BIOME THAT WAS NEARLY LOST.**

BY DAWN REISS

MICHELLE WENDLING



LEFT
More than 100
grassland birds
breed at Midwin.

OPPOSITE
Midwin is dotted by
concrete ammunition
bunkers, which each
cost roughly \$50,000
to demolish.



IT IS JUST AFTER 8:00 A.M. ON AN UNSEASONABLY WARM DAY IN APRIL WITH THE KIND OF OVERCAST MUGGY WEATHER THAT RATCHETS UP INTO A SCORCHING MIDDAY SUN.

After making the hour's drive south and west of Chicago, past a replica of the Blues Brothers' 1974 Dodge Monaco police sedan, complete with air raid siren, hoisted on top of a large black pole in Joliet, Illinois, I reach the quiet respite of the Midwin National Tallgrass Prairie in the town of Wilmington. It's home to fewer than 6,000 people. Despite its relatively close proximity to Chicago, it seems most people have never heard of it.

I end up at a north side entrance, known as Hoff Road Trailhead, instead of the main gate that is south-

west of here. It's firearm turkey season, a little-known secret that isn't well advertised. A sign alerts visitors that hunters may hunt on the east side of Midwin on even-numbered days and the west side on odd-numbered days, starting an hour before sunrise until 1:00 p.m. from April 15 to May 16. It also suggests that visitors like me wear blaze orange. Having had no idea beforehand, I'm dressed all in black.

I begin to get back into my car to find the main entrance, when Ken Cunz of New Lenox, Illinois, appears with

Herschel, his 75-pound, friendly rescue mutt. He started coming to Midwin more than a decade earlier. After having multiple back surgeries, Cunz took a couple of years off before returning a month ago. He'd spent the morning hiking the six-mile loop around Twin Oaks Trail seeing deer, coyote, rabbits, a turkey vulture, and a hawk.

"There's wildlife galore," he says. "There's so much space out there that even on the busy days, you feel like you have the place to yourself."

There are 20 national grasslands in the USDA Forest Service system, but there's only one national tallgrass prairie, Midwin National Tallgrass Prairie. Despite its name, it is not a

prairie reserve, but public land managed by the forest service as part of the National Forest System, and the only one of its kind, says Karen DiBari, the director of the Conservation Connect program at the National Forest Foundation. More than 31 square miles—20,283 acres—make up this former World War II U.S. Army arsenal site. More than 13,000 acres are open to the public.

As the lone federally protected tallgrass prairie in the United States, DiBari says, it is the largest piece of public land in the country that supports a tallgrass prairie and the largest public open space in the Chicago metropolitan region. "Like the largest island in an archipelago of protected areas," she says.

Congress authorized conversion and preservation of the land by passing the Illinois Land Conservation Act of 1995, signed into law by President Bill Clinton in 1996. In installments from the army, the USDA Forest Service took over its management and began the process of restoration.

Transitioning the former arsenal—which was listed on the Superfund National Priorities List until 2008—hasn't been an easy task. Though Illinois is known as the Prairie State, less than 0.01 percent remains of its original 21 million acres of tallgrass prairie, according to the forest service.

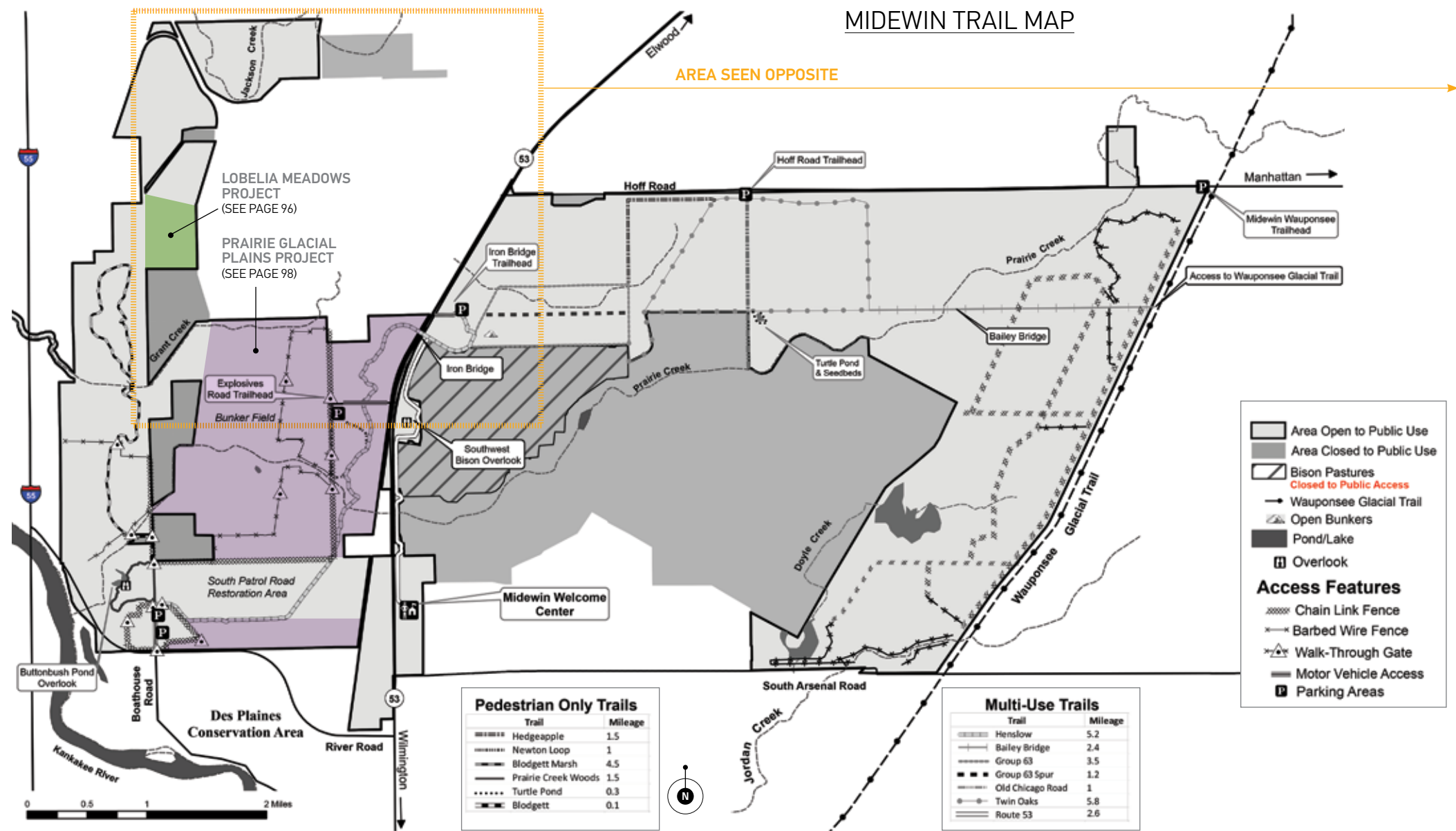
"True natural tallgrass prairie is the rarest of North America's major biomes," DiBari says, owing in part to

the migrations of the 1800s when settlers crossed the prairies, built homes, and drained and cultivated the land for agriculture.

Around 600 plant species live at Midwin. There are 348 species of native plants—rare species such as the sand and whorled milkweeds, blue skullcap, fringed puccoon, and bastard toadflax, and 10 prairie grasses. The big bluestem and prairie cordgrass can grow to eight feet high. There are 108 grassland birds that breed at Midwin, among them the loggerhead shrike, Henslow's sparrow, and approximately 40 other birds who use Midwin for feeding and wintering. The devil crayfish is one of about 40 aquatic species. You could find snapping turtle, the

MICHELLE WENDLING

THE WETLANDS INITIATIVE



ABOVE
Map of Midwin National Tallgrass Prairie, which encompasses more than 20,000 acres.

nonvenomous bullsnake, and 30 other kinds of reptiles and amphibians. Twenty-five insects at Midwin need native plants to survive, and 27 species of wild mammals, including the plains pocket gopher, long-tailed weasel, muskrat, and meadow and prairie voles, tread the area. More than 80 species of butterflies and moths can be found here.

Midwin is a tallgrass prairie but also has sedge meadows, savanna, ponds, wetlands, and upland forest. Several streams feed into the Kankakee and Des Plaines Rivers. There's also the rarely found Drummond dolomite prairie formed af-

ter glacial debris left 1,000 acres of magnesium-rich limestone bedrock with only thin soil near the surface. The soil is very alkaline and toxic to some plants, but allows others to grow—the leafy prairie clover, the limestone hedge hyssop, the prickly pear cactus. I had no idea cactus even grew in Illinois. This wildlife refuge is nothing like what I imagined. It can be deafeningly silent or alive with birds that are hard to hear even in the most densely populated woods near Chicago.

Near the welcome center, I meet Rick Short, the landscape architect at Midwin. He's in charge of its prairie

and also recreation projects. We hop into a white pickup and head south on the highway to the southwest side of the property, a focus of much of the prairie restoration.

"I grew up in the Midwest," Short says. He earned his undergraduate degree in landscape architecture at Iowa State University in 1985. He spent a lot of time outside as a little kid and remembers asking what was here before farming and being told by his father there was prairie.

"What is prairie?" Short remembers asking. His father explained, "I guess it is grasses."

USDA FOREST SERVICE

EARTHXPLORE.USGS.GOV, TOP LEFT: MICHELLE WENDLING, BOTTOM

"Nobody knows the natural heritage of the Midwest," Short says. "You go out to the West, and there's the conifer forests. You go out to the East or to the South and you see the deciduous forest. In the Midwest, that doesn't exist anymore. Less than one-tenth of 1 percent of tallgrass prairie that was originally on this continent is left today."

Short arrived at Midwin in 1997, a year after the U.S. Army's transfer of 15,083 acres from the Joliet Army Ammunition Plant to the USDA for use by the forest service. At that time, fewer than 200 acres of the original

tallgrass prairie remained. The prairie wasn't open to the public. "There was a lot of army infrastructure, buildings in disrepair, and safety hazards for the public," Short says.

We turn down Boathouse Road and stop to see the River Road seedbeds. Stripes of emerald grass alternate with six- and eight-foot-wide tan rows filled with prairie forbs that have yet to blossom on the west side of the road. Right now, everything looks dead, even though it's not. "These are the forbs of the prairie," he says. "People talk about the tallgrass prairie and they always think about the

grasses, but really the prairie is a matrix of different types of plants, including the forbs."

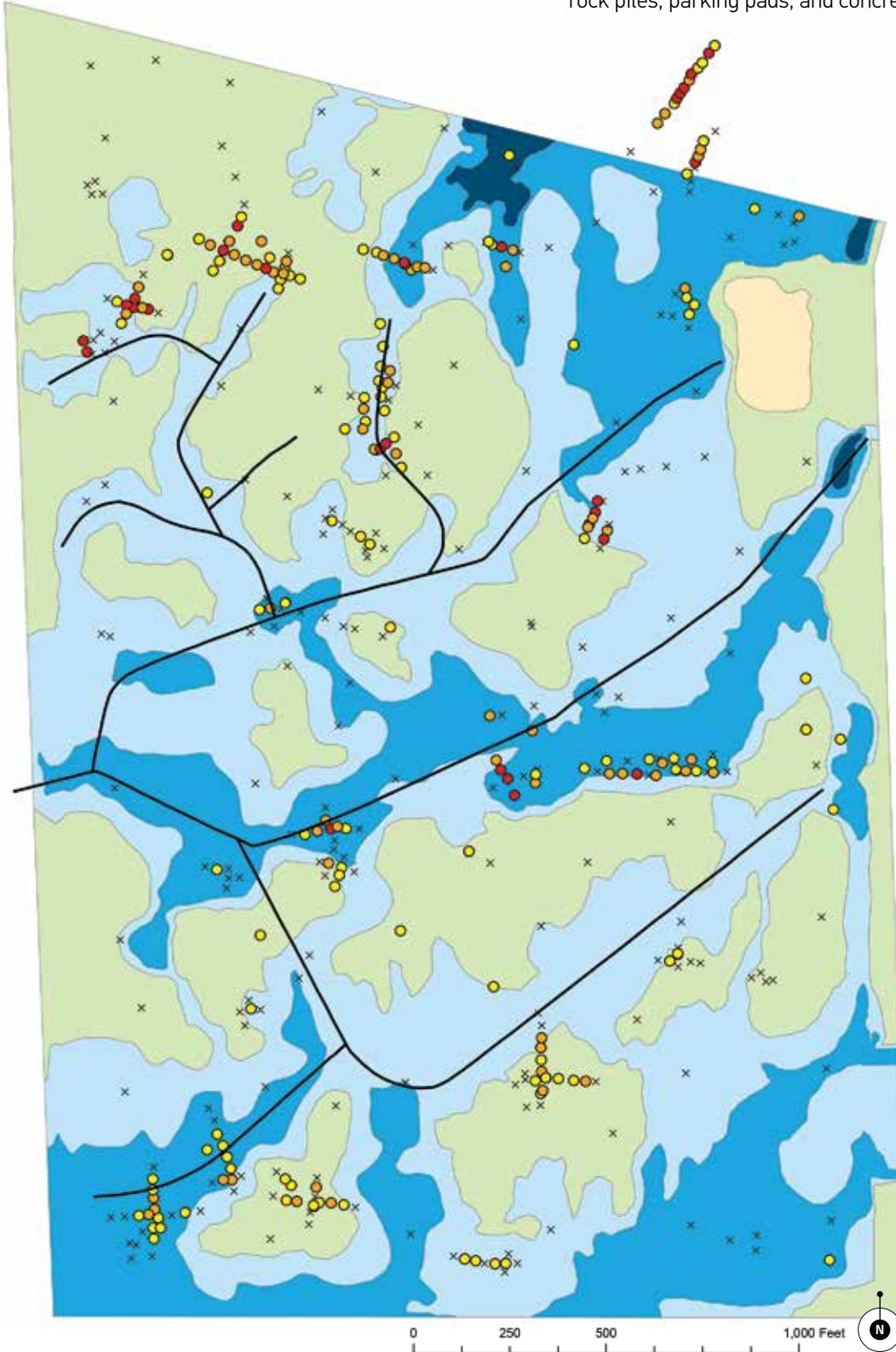
This is the production area, where native plants, including yellow prairie dock, royal catchfly, sunny compass plants, pale purple coneflowers, and large stalks of prairie, marsh, and rough blazing stars, are grown from plugs. Picnic tables are dispersed in the open field for the volunteers and educational groups such as the Mighty Acorns, which helps grade-school kids connect with the environment, plant seeds into plugs, and harvest them for restoration at Midwin.

TOP LEFT
Midwin once housed the Joliet Army Ammunition Plant (Kankakee Ordnance Works) seen here in 1946.

ABOVE
The U.S. Army still owns 466 acres, according to Anna Braum, an ecologist at the Wetlands Initiative.

LOBELIA MEADOWS PROJECT
PRIOR TO HYDROLOGIC RESTORATION (2011)

Starting in July 2012, the Wetlands Initiative worked in partnership with the USDA Forest Service at Midwin to restore a 160-acre tract of land—known as the Lobelia Meadows project—that once held a sewage treatment facility used by the U.S. Army. The land was filled with agricultural drain tiles, gravel berms, rock piles, parking pads, and concrete foundations.



- | PROJECTED HABITATS | SOIL DEPTH (INCHES) |
|---|---|
| DRY PRAIRIE | 3-6 |
| MESIC PRAIRIE | 7-9 |
| WET PRAIRIE | 10-12 |
| SEDGE MEADOW | 13-35 |
| MARSH | DRAINAGE TILE LINES |

LEFT
 The depth of soil overlying dolomitic bedrock was surveyed to determine the planting locations of species specifically adapted to dolomitic soil chemistry. The shallow zones are indicated by colored circles with drainage tile lines in black.

3-D SURFACE MAP

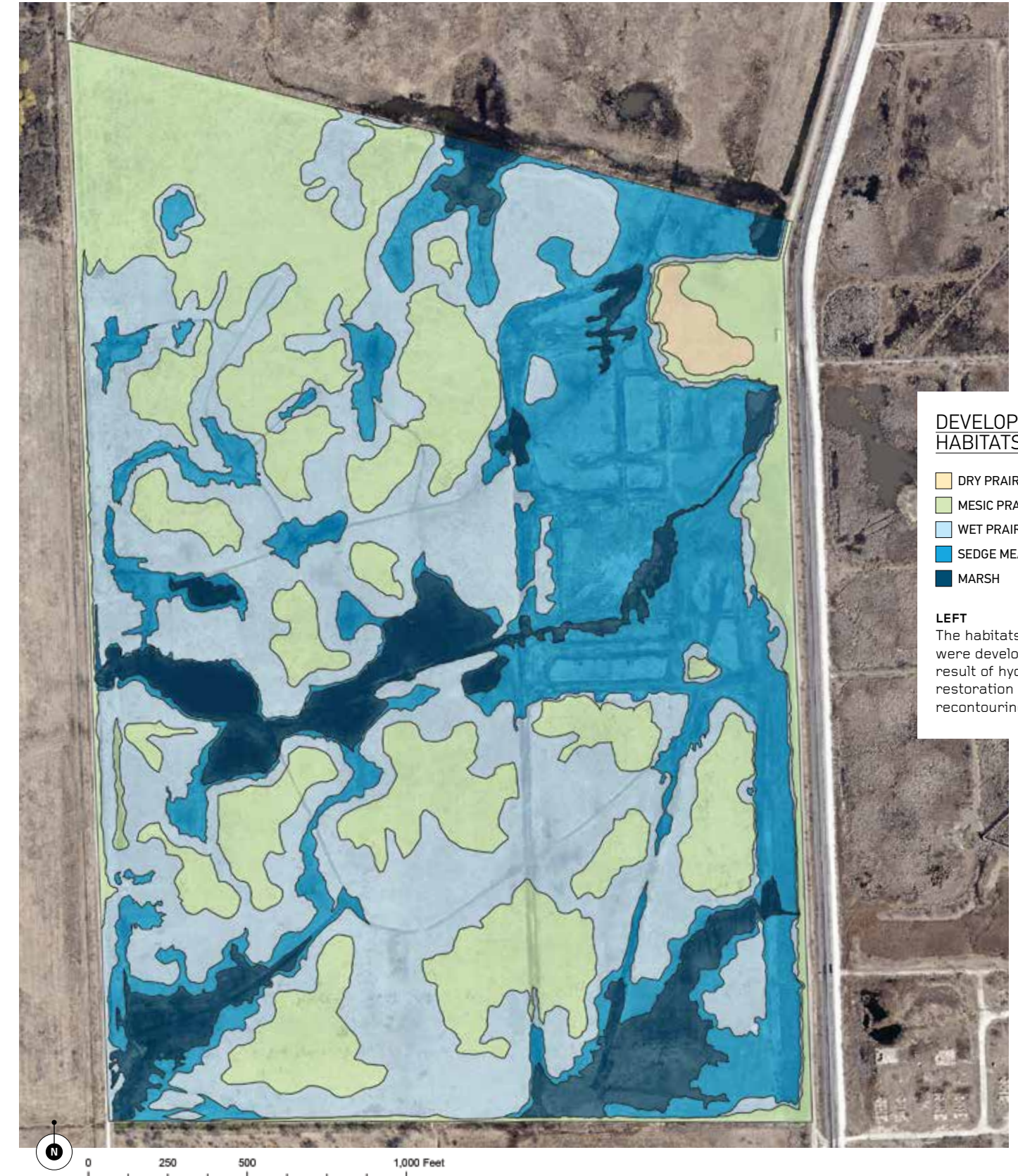


ABOVE
 On this map, the highest elevations are indicated in yellow, middle elevations in green, and lowest elevations in blue. The yellow zones are associated with berms and buildings, all of which were restored to natural contours in 2012. The borders of the projected habitats are indicated with black lines.

THE WETLANDS INITIATIVE

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LOBELIA MEADOWS PROJECT
DEVELOPING HABITATS IN 2013

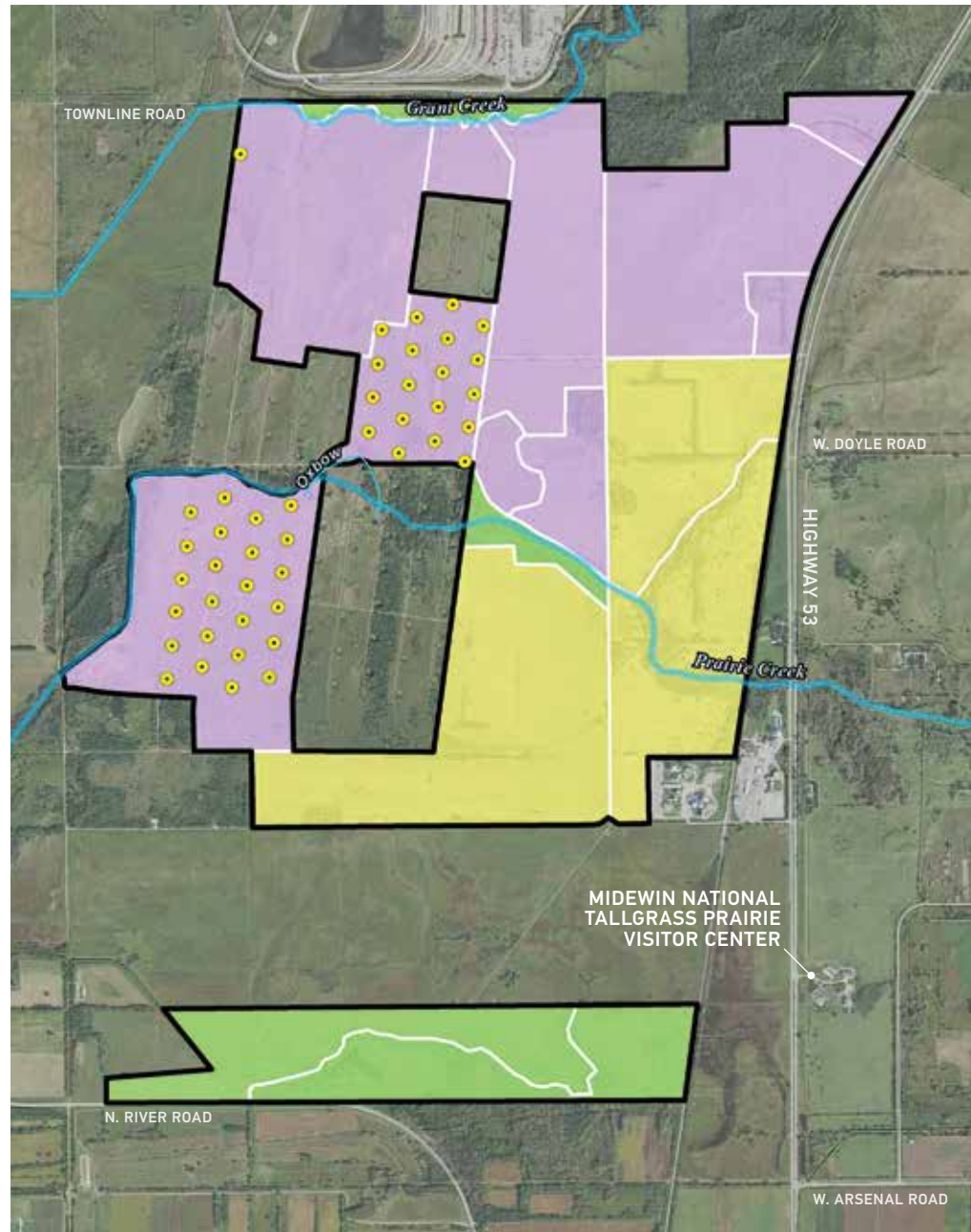


DEVELOPING HABITATS

- | |
|---|
| DRY PRAIRIE |
| MESIC PRAIRIE |
| WET PRAIRIE |
| SEDGE MEADOW |
| MARSH |

LEFT
 The habitats as they were developing as a result of hydrologic restoration work and recontouring.

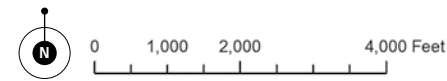
PRAIRIE GLACIAL PLAINS PROJECT
SEVEN-YEAR RESTORATION PROJECT (2019)



LEFT
In 2016, the USDA Forest Service, the National Forest Foundation, and the Wetlands Initiative launched a seven-year plan to restore 1,931 acres and create 4,000 acres of nearly contiguous native landscape on the west side of Highway 53.

UNITS TARGETED FOR WORK IN 2019/2020

- BUNKERS REMOVED TO DATE
- PROJECT BOUNDARIES – 1,931 ACRES
- UNITS OF CONTINUING RESTORATION – 1,052 ACRES
- UNITS FOR RESTORATION PREPARATION – 289 ACRES
- OTHER UNITS (FUTURE WORK PHASES) – 590 ACRES



planted from plugs. Including both sides, there are 20 acres. “We call it a national tallgrass prairie, but it’s multiple kinds of habitats,” Short says. “We are trying to move everything back to its native ecosystem, whatever that is.”

Increasingly over the past 10 years, there’s been a change in strategy in how this seedbed is managed. Although they still plant the plugs in early spring, there’s been more rainfall each year, which has caused crop failures, Durkin says, even on the west side, which traditionally didn’t have flooding in the seedbeds. “Instead of planting long row crops, we chop it up with more wetland seed,” she says.

→ The expansive and deep treelike roots of the wildflowers have incredible strength if they are allowed to mature. Planted too early, without time to grow, they can be overrun by the more aggressive prairie grasses.

“Prairie plants take time to put roots down,” says Jennifer Durkin, Midwin’s horticulturist and native plant specialist. “Most of the action goes

on under the soil. For a long time, you don’t see the top growth when they are just getting established. It’s hard, because in the early years of restoration you might not think anything is going on.”

On the east side of the road, hidden behind the trees, are wetland seedbeds filled with brown fox sedge, swamp milkweed, and blue flag iris,

RIGHT
In 2019, the EPA gave a National Federal Facility Excellence in Site Reuse award to the U.S. Army and the USDA Forest Service for restoration work at Midwin.

BELOW
Rick Short, the prairie landscape architect and recreation program manager at Midwin.



or two. Germination and colonization among plants can vary a lot.

Each year—usually through hand collection via hundreds of volunteers, staff, and partner organizations—Midwin harvests enough seed to net 1,000 pounds of cleaned seeds, Durkin says. Still, it’s not nearly enough to restore a prairie like this.

In all, there are 75 acres in seed production among the three seedbeds and fields of native grasses that grow approximately 130 species of native Illinois prairie plants, says Veronica Hinke, the public affairs officer at Midwin. Additionally, four hoop houses and a small greenhouse near the Welcome Center house plants before they are put into the ground. Much of the production focuses on growing rare prairie plants such as violet wood sorrel and yellow star grass that can’t be commercially purchased. Although some plants last for a decade, others last only a season

The sheer size and scope of Midwin have drawn a host of public and private entities, with varied restoration interests, based on different pools of money and expertise.

“It’s a high quality, expensive restoration,” says Gary Sullivan, a senior restoration ecologist for the Wetlands Initiative, a nonprofit. “That’s why so many different organizations have gotten involved. There’s a massive

number of acres and so much to do. It is several lifetimes of work. No one has enough [manpower and financial resources] to accomplish all of it.”

Without a lot of native plant nurseries to rely on, Midwin buys seed grown within a specific provenance zone, a geographic area that spans from northern Illinois and southern Wisconsin to central Illinois and north-west Indiana. That means buying from places like Prairie Moon Nursery and Shooting Star Native Seeds in Minnesota, Spence Restoration Nursery and Cardno Native Plant Nursery in Indiana, as well as the Pizzo Native Plant Nursery and Genesis Nursery in Illinois, among others.

“We cleaned them out and it still wasn’t enough,” says Sullivan, who spent \$633,388 for 9,800 pounds

THE WETLANDS INITIATIVE

USDA FOREST SERVICE, TOP RIGHT; DAWN REISS, BOTTOM



CLOCKWISE FROM ABOVE
Thousands of agricultural clay drain tiles are being removed at Midwin; volunteers participate in National Public Lands Day at Midwin's South Patrol Road Prairie; and a prescribed burn at Midwin.



CLOCKWISE FROM TOP LEFT
Approximately 130 species of native Illinois prairie plants are grown at Midwin; field crews for the Wetlands Initiative cut and clear invasive vegetation.



of native prairie and wetland seed to cover 731 acres of Midwin's prairie restoration in winter months around January 2019.

Maintaining what is already planted in restoration is difficult and crucial. "There are always invasive species looking to get a foothold," Durkin says. Other areas of Illinois are overtaken by buckthorn, but some of the invasive species at Midwin are honeysuckle, autumn olive, garlic mustard, and *Phragmites*.

Volunteers perform much of the planting and restoration by hand-pulling weeds, applying herbicide, and collecting seeds, depending on the season. In 2018, 780 volunteers

put in 12,800 hours at Midwin, mostly on restoration. The restoration process typically starts with planting Roundup-ready soybeans for two years to kill the invasive species in the ground and clear out former agriculture fields, Sullivan says.

Then a cover crop is planted to shade and protect native plants. Depending on where the land is in its restoration cycle, it is burned in the spring and seeds are planted in January on top of the snow because, Durkin and Sullivan both noted, the freezing and thawing process helps situate the seeds into the soil for stronger germination.

It can take years or decades to get the soil conditions right to support

the proper bacteria and nutrients, says Drew Ullberg, a former supervisory natural resources manager at Midwin who led the restoration team before leaving in 2019 to work in Arizona at Tonto National Forest. "That's why you have to re-establish the prairie in waves," he says.

At Midwin, Ullberg says, the staff has learned to make a mix that either leans entirely on forbs that help to reestablish the turf or contains a small percentage of short prairie grasses such as little bluestem and prairie dropseed. "If you put in too much grass, the turf will tighten up, and you can't get the flowers established," he says. "So you go through the back door. You put the prairie

forbs in greater number, let them get established, and then they'll fight it out with the grasses."

That approach means seeding in 50 or so plants that punch holes into the soil like holes in a spaghetti strainer, Ullberg says. Then after five years, it's overseeded with a light application of the tall grasses to fill blank spots, then a third layer of the most delicate plants. Once a prairie is established, burns help to maintain and manage it. "If you only put in typical prairie grasses like big bluestem, little bluestem, Indian grass, prairie dropseed, they will dominate a scene and force everybody else out," Ullberg says. "Then you will see nothing but a

monoculture of grasses, because you cannot come back in, even after a burn or herbiciding, to get the flowers established."

Much of the prairie restoration here is still a piecemeal patchwork of pieces, about 3,400 acres as of July 2019, Durkin says.

That will soon change. In 2016, the Wetlands Initiative and the forest service—which have worked together since 1997 to restore more than 2,000 acres of prairie-wetland landscapes across seven projects within Midwin—began an accelerated public- and privately funded plan to restore more than 1,900 acres of wetlands and prairies by 2023.

Focusing on the west side of Highway 53, the \$6.7 million project, which includes million-dollar grants from the Gaylord & Dorothy Donnelly and Grand Victoria Foundations, targets removing additional army buildings and other infrastructure, managing invasive species, and replanting native varieties. The goal: link together pieces of prairie and wetland that were previously separated into a 4,000-acre stretch of nearly contiguous tallgrass prairie on Midwin's west side.

We stopped next at the South Patrol Road Restoration Area. This is where Midwin began its initial restoration efforts, focusing on re-establishing wetland, sedge

THE WETLANDS INITIATIVE, TOP LEFT; USDA FOREST SERVICE, BOTTOM LEFT; VERONICA HINKE/USDA FOREST SERVICE, RIGHT

USDA FOREST SERVICE, TOP LEFT; THE WETLANDS INITIATIVE, TOP RIGHT AND BOTTOM

BISON
In October 2015, American bison
were introduced to the Midewin
National Tallgrass Prairie.



MICHELLE WENDLING



RIGHT
Visitors hike on pedestrian-only trails or enjoy multiuse trails for biking, hiking, or horseback riding, including here at Iron Bridge Trailhead.

OPPOSITE
Much of the restoration at Midewin has been focused on reestablishing wetland, sedge meadow, and mesic prairie habitats.



→ meadow, and mesic prairie habitats on 460 acres.

I am six feet tall and am dwarfed by the prairie grasses. Migrants crossed this tallgrass prairie when it was so high a person riding a horse wasn't always visible. To re-create some of that experience, Midewin has a recreational trail system where ATVs, snowmobiles, and cars aren't usually allowed, though the staff is permitted to use vehicles. "One of the focuses is the experience of solitude and the vastness here," Short says, "and you can't do that with an engine running

nearby." To Short, it's about scenic integrity, where the sounds of nature can be heard in a world that is rarely quiet. That means hiking, cycling, horseback riding, and snowshoeing are the modes of transportation across the 22 miles of trails at Midewin.

Much remains of the large swaths of land used to cultivate row crops, hay, or cattle grazing, and the land is dotted by abandoned ammunition bunkers that once held explosives produced during World War II—to the tune of 10,000 workers and one

billion pounds of explosives—and then later during the Korean and Vietnam Wars, until the technology became obsolete and ceased production in 1976. Originally, more than 400 buildings and structures were sited here.

A grassroots effort to preserve the space caught the attention of then U.S. Representative George Sangmeister, a congressman from Mokena, Illinois. He formed and tasked a 24-person citizens advisory committee, the Joliet Arsenal Citizens Planning Commission, to generate

a unanimous decision and divide up the 23,543 acres, which now encompass Abraham Lincoln National Cemetery, Prairie View Landfill, and two industrial sites on the west and south sides, as well as Midewin.

"That created extraordinary public and private partnerships and a coalition between federal, state, and local government entities," says Jerry Adelman, Honorary ASLA, the president and CEO of Openlands, a nonprofit conservation organization that helped spearhead the initiative.

It was the first time a state agency, the Illinois Department of Natural Resources, and a federal agency, the USDA Forest Service, had ever collaborated on such a project, ac-

cording to the University of Illinois Prairie Research Institute.

Even after Midewin's new designation, a well-thought-out plan had to be created before anything could be started under the National Environmental Policy Act.

"For a while, we couldn't do much," says Bill Glass, who served as Midewin's ecologist until he retired in 2018. "Now, it's an opportunity to show people what the Prairie State was like before it was lost."

After years of slow growth, a change in political philosophies flipped a wait-until-everything-is-done ideology to "do it now." Midewin opened its doors to the public in 2004 with 5,000 acres available for recreational use.

Today, there are still plenty of former TNT bunkers—concrete, igloo-like

mounds built into the earth that can be seen in various stages of demolition.

The restoration process also requires digging up tile drains laid by farmers who previously used the land. "Sometimes we can find the end of one, near a stream or drainage ditch," Short says. "And we work our way back and either crush them or pull them back up, and that restores the hydrology to the landscape."

Over time, Midewin managers plan to open more than 40 trails and build two prairie learning centers.

In October 2015, a herd of 27 American bison was introduced at Midewin. A herd grazes at different grass heights and that attracts different species, increasing hopes for a return of the upland sandpiper, which hasn't been accounted for in Midewin's annual grassland bird tally since 2013.



RIGHT

A bumblebee pollinates a patch of rare purple prairie clover.

OPPOSITE

Turtle Pond, home to frogs, turtles, and birds, is located near the Chicago Road seedbeds.



THE WETLANDS INITIATIVE, TOP RIGHT: MICHELLE WENDLING, OPPOSITE

“The bison were brought in to help solve that riddle,” says Trevor Edmonson, a restoration specialist and project manager at the Wetlands Initiative, because upland sandpipers like to graze on shorter prairie grasses like little bluestem, gathering in massive groups only on large expanses of open land.

The free-range herd roams over 1,000 acres on the property and now includes more than 80 bison. For those who can't come in person, Midewin operates a bison camera with a live feed update between 6:00 a.m. and 6:00 p.m. The popularity of the bison has helped Midewin to increase its annual attendance, which hovered around 6,000 visitors in 2014, to more than 12,600 in 2016.

“We like to say, ‘Come for the bison,’” says Fran Harty, a special projects director of the Nature Conservancy who works at Midewin, “and stay for the prairie.” ●

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