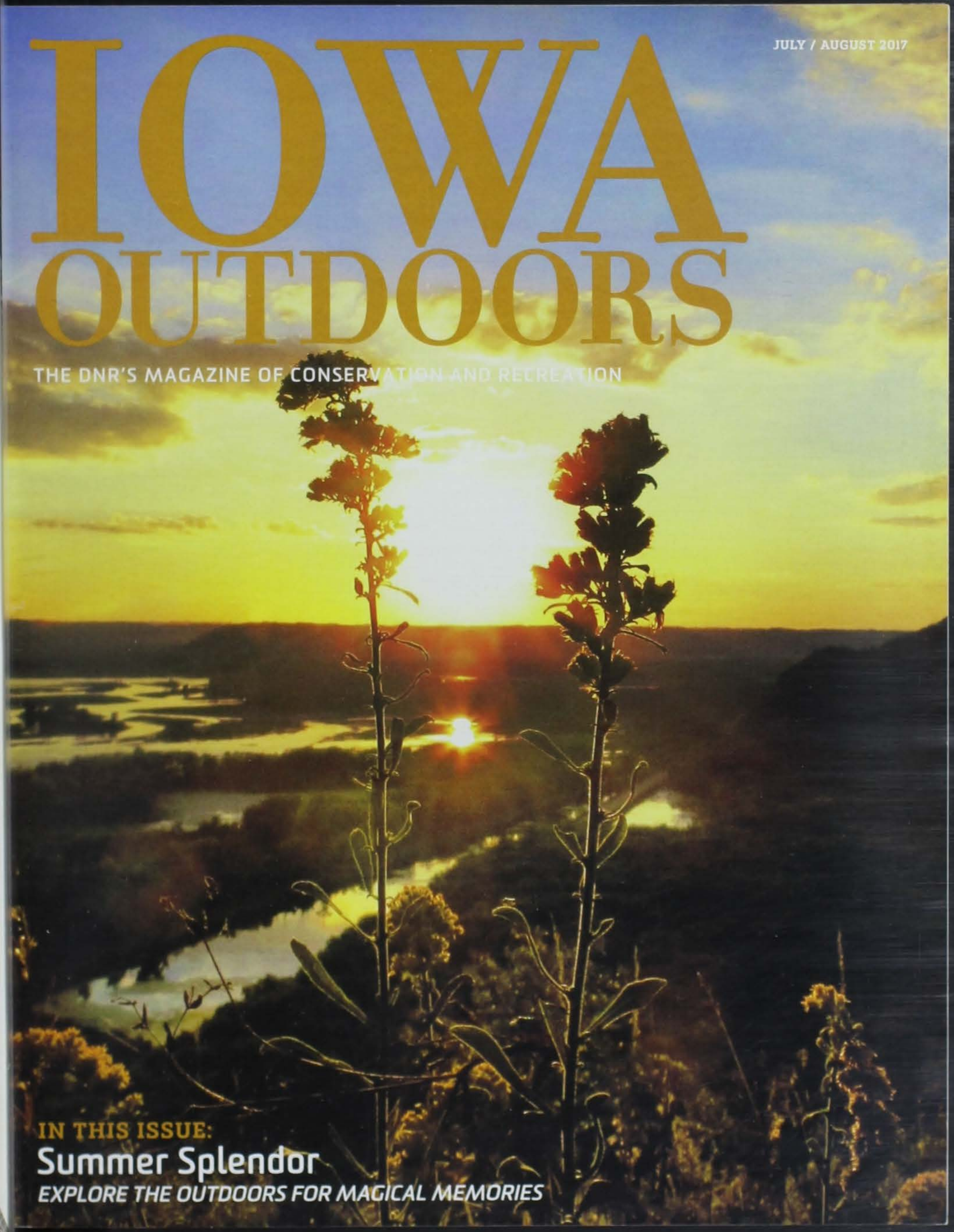
JULY / AUGUST 2017

IOWA OUTDOORS

THE DNR'S MAGAZINE OF CONSERVATION AND RECREATION



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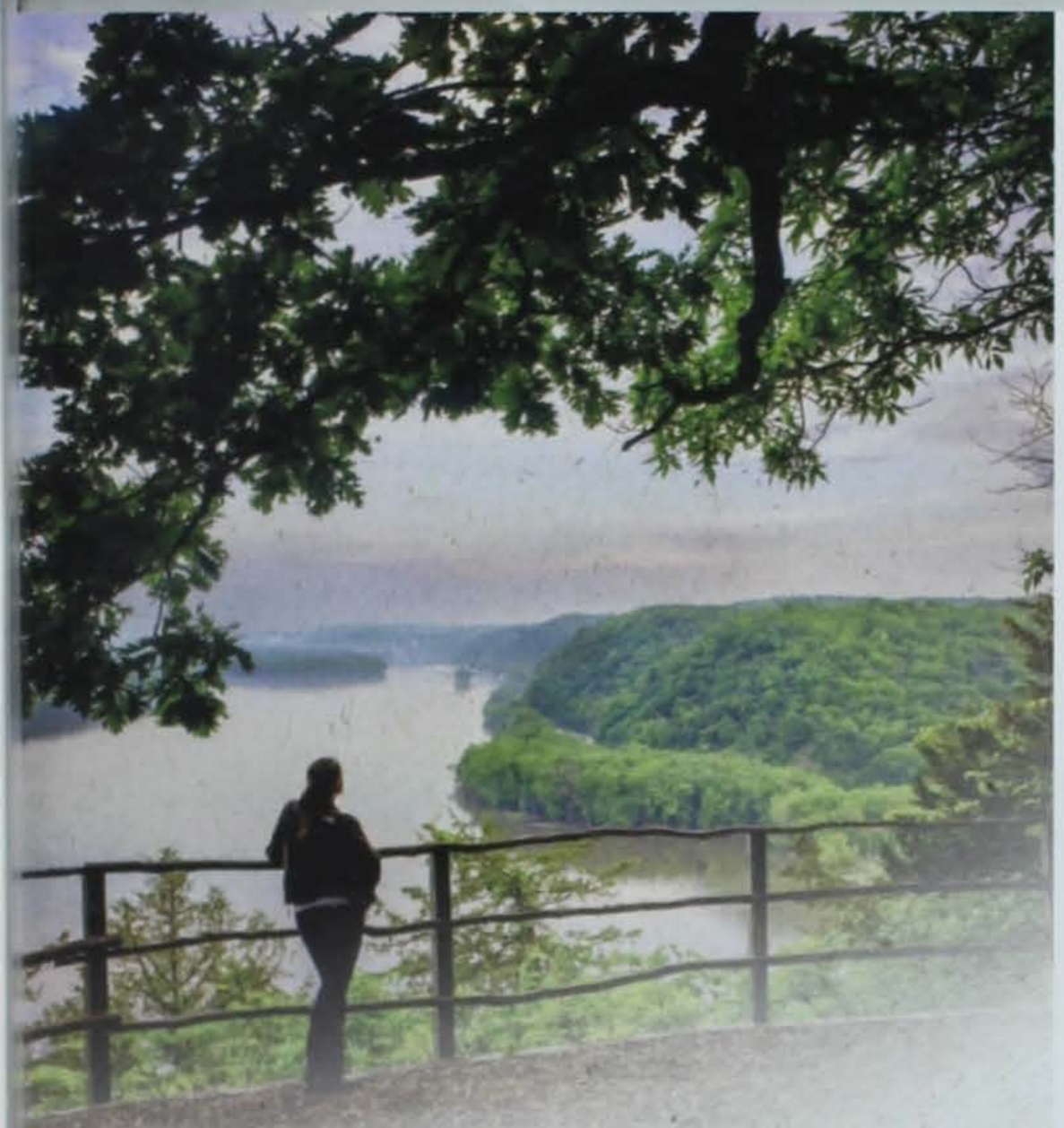

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Integrated Roadside Vegetation Management

Integrated roadside vegetation management—a fancy term for putting things back the way they were when bison roamed Iowa prairies. In the 1940s to 1960s when most Iowa roads were built, plantings were not a main focus. Planting non-native species was inexpensive and seemed to work.

By the 1980s, roadside erosion and water quality had become a problem. The Iowa Department of Transportation researched the underlying issues, then advocated transforming roadsides back to deep-rooted native prairie plantings to hold soil and filter runoff.

Today, Iowa is a leader in native roadside planting. Iowa DOT-managed areas bloom with coneflower; penstemon; blazing star; and dozens of species of trees; grasses; shrubs; and wildflowers. Hardy and beautiful, native roadsides offer aesthetic, economic, environmental and educational benefits.

Establishing prairie plants in roadside rights of way:

- Provides low-maintenance weed and erosion control.
- Slows surface runoff and improves storm water infiltration.
- Reduces blowing and drifting snow and winter glare.
- Improves sustainability by increasing species diversity.
- Enhances wildlife habitat.
- Beautifies with changing colors and textures all year.
- Preserves our natural heritage.
- Provides filtering and capture of nutrients, pesticides, and sediment.

Native plants

The term "native plant" can be defined many ways. A simple definition is: Plants originally from the area that are best suited for survival under local conditions. Iowa's native plants existed here prior to European settlement. It wasn't until the mid-1800s that large-scale habitat alteration and introduction of non-native plants significantly changed natural landscapes. Prior to this, more than 85 percent of the state was prairie grasses and wildflowers. Native plants from wetlands, savannas, and woodlands are selectively used along our roadsides, too.

Since 1990, the Iowa DOT has planted or enhanced 54,097 roadside acres with native grasses and wildflowers.

Research work includes a partnership with the Tallgrass Prairie Center at the University of Northern Iowa. Mark Masteller, the Iowa DOT's chief landscape architect, said, "The seed program at the Tallgrass Prairie Center takes seeds harvested from prairie remnants, grows them to increase seed quantities, and provides seed to commercial growers. This provides locally-grown native seed not only to Iowa DOT-managed roadsides, but provides cost-effective seed for city and county roadsides, too."

Grant Funds for Local Efforts Available

In 1988, the legislature established the Living Roadway Trust Fund (LRTF) within Iowa Code 314.21. The Iowa DOT administers this fund, including an annual grant to fund roadside vegetation management to cities, counties and others. In doing so, the Iowa DOT and its partners educate the public about the need for integrated roadside vegetation management. This ensures vegetation is preserved, planted and maintained to be safe; visually interesting; ecologically integrated; and useful.

Since 1990, the LRTF has funded more than $17 million for research and demonstration projects, vegetation inventories, education and training programs, gateway landscaping, snow and erosion control, and roadside enhancement and maintenance.

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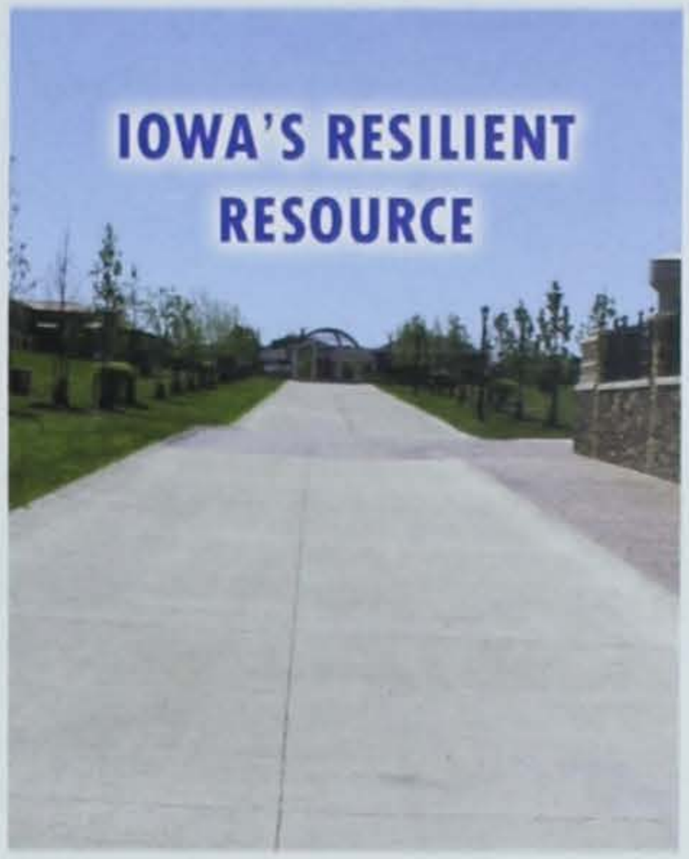

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FEATURES

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JULY / AUGUST 2017

DEPARTMENTS

ABOUT THIS PHOTO

With a recently renovated lake stocked with growing panfish, catfish and bass, trails to explore and a re-established prairie, the two handsome, modern, one bedroom cabins at Union Grove State Park are perfect for quiet getaways. The cabins sit just 50 yards from the lake with picture-perfect porch views. And at $75 a night or $450 weekly, they are a bargain. During peak season, May 1-Sept. 30, the cabins are rented by the week; reserve at iowadnr.gov (if unrented, arrange shorter stays through the park office, *641-473-2556*). **PHOTO BY** *JAKE ZWEIBOHMER*

ABOUT THE COVER

It's always a challenge to drive to the Mississippi River, scramble up a 400-foot bluff and do so in time to photograph the sunrise. "Be it the steep hike or stunning progression of colors, I'm always left breathless and grateful for the light of a new day," says Brian Gibbs. Read more about his entertaining struggles in attempting to photograph the rare fameflower in bloom at Fish Farm Mounds State Preserve in Allamakee County on page 50. **PHOTO BY** *BRIAN GIBBS*

Contributors

BRIAN GIBBS, a former Clayton County naturalist, has been addicted to wild places ever since his father first took him trout fishing in Yellow River State Forest. His passion for teaching others about enjoying and conserving natural beauty led him to work in such scenic places as Glacier National Park. When not teaching, Gibbs explores the natural beauty hidden amongst the bluffs and valleys of northeast Iowa. He now works at Effigy Mounds.

CANDACE ORD MANROE is a freelance writer specializing in travel, design and the outdoors. She is the author of 19 books and numerous articles for national and state magazines and major metropolitan newspapers. Among those are *Texas Highways*, *Better Homes & Gardens*, *Architectural Digest*, *The Dallas Morning News*, *Fort Worth Star-Telegram* and *The Des Moines Register*. A former editor for *Traditional Home* and *Country Home* magazines, she enjoys birding, camping and hiking.

DAN MAGNESON grew up in the southwest Iowa towns of Red Oak, Shenandoah and Clarinda, and today works as a fisheries biologist for the U.S. Fish and Wildlife Service on Washington state's Olympic Peninsula. He believes the 1950s and 1960s were the absolute golden era of being a kid, and that nowhere on earth was this more true than in Iowa.

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DNR MISSION

To conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life in Iowa and ensure a legacy for future generations.

EDITORIAL MISSION

We strive to open the door to the beauty and uniqueness of Iowa's natural resources, inspire people to get outside and experience Iowa and to motivate outdoor-minded citizens to understand and care for our natural resources.

MAKE A DIFFERENCE

DNR volunteer programs help Iowans give back to lands, waters and skies. *515-725-8261* or *iowadnr.gov/volunteer*

HOW TO DONATE

Charitable giving of land, funds, goods and services greatly enhances Iowa's outdoors. Call Kim Rasler at *515-725-8440*.

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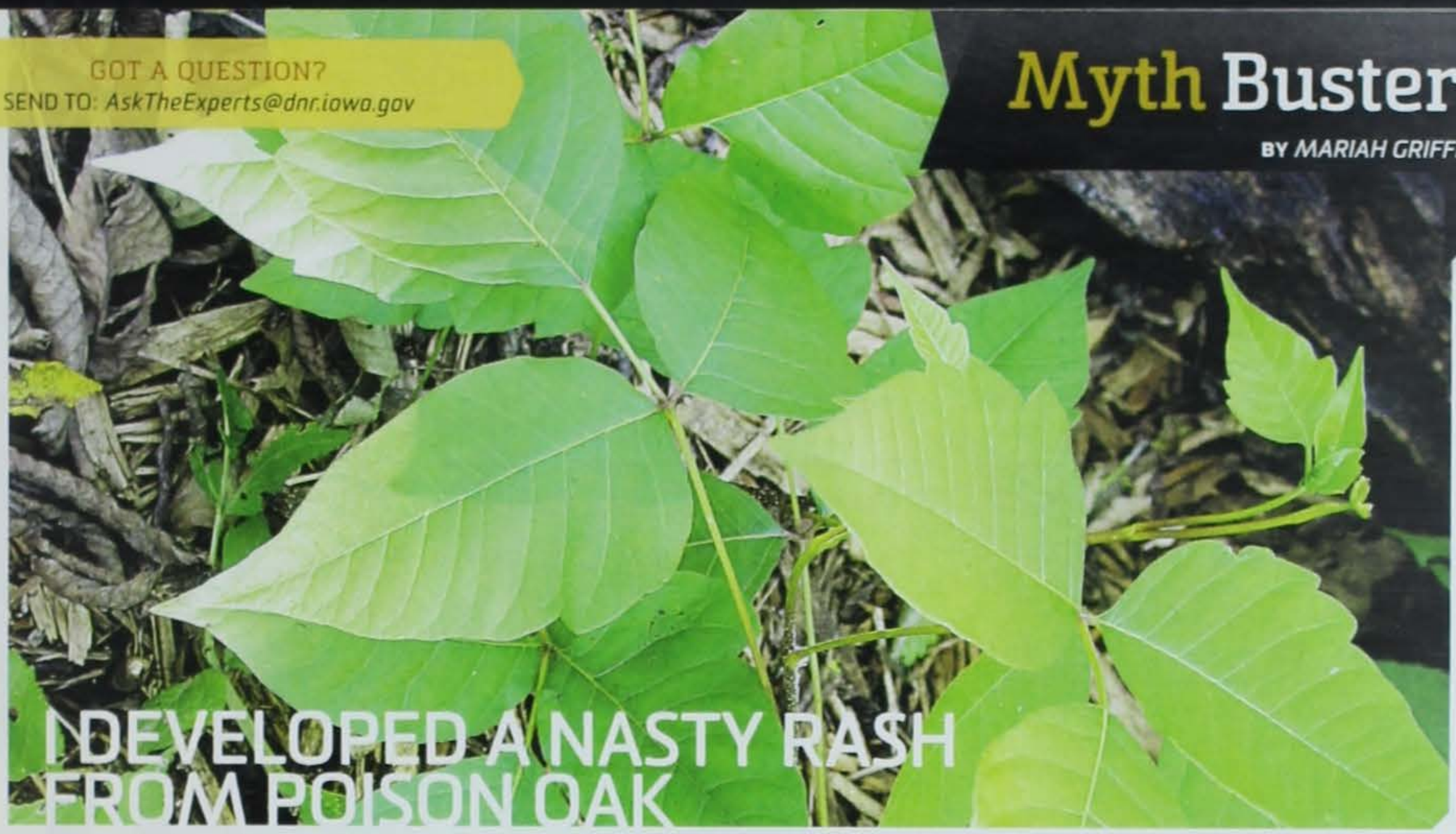
CARP PHOTO BY JAKE ZWEIBOHMER; POISON IVY PHOTO BY BRIAN BUTTON

GOT A QUESTION?
SEND TO: *AskTheExperts@dnr.iowa.gov*

Myth Busters

BY *MARIAH GRIFFITH*



I DEVELOPED A NASTY RASH FROM POISON OAK

Unless you traveled out of Iowa, it's unlikely the culprit was poison oak.

Poison ivy, poison oak and poison sumac are all plants from the same genus, aptly called *Toxicodendron*, and all three contain the same oil that causes a painful and itchy rash. Thankfully, there are only two types of "poison oak" in the U.S.—Pacific and Atlantic—and neither occurs in Iowa. Poison oak does, however, grow in bordering states to the south and east. Same for poison sumac, which while not in Iowa, inhabits our easterly neighbors.

However, poison ivy is prevalent in Iowa. It packs the same punch as oak and sumac—right along with wild parsnip, which is also found here. DNR botanist John Pearson says the imprecise common naming of plants may contribute to the misidentification as poison oak when it's really poison ivy.

Common names are not held to a specific standard, they are the name or names by which the public knows a plant or animal. In some cases, this leads to different organisms being called one common name. Scientific names are much more specific, and only apply to one organism. If a person grows up with parents who called poison ivy poison oak, then "poison oak" it is.

Still, Pearson says the use of common names isn't necessarily bad, just imprecise.

"It's something of a tempest in a teapot," Pearson says. "People are free to call a plant whatever they want, and some people learn to name the same thing differently. The important thing is that people recognize these types of plants as hazardous. All plants in the *Toxicodendron* genus induce unpleasant allergic reactions in humans, have similar basic growth patterns and leaflet shape variability, but with guidance anyone could tell the species apart side by side."

POISON IVY PHOTO BY BRIAN BUTTON

Ask THE Expert *How should I dispose of unwanted carp I catch?*

In most places, carp are considered a nuisance, muddying waters, destroying aquatic habitat and outcompeting juvenile game fish for zooplankton. In some cases, water bodies have been drained and renovated to remove rough fish, slowing down the fisheries for a couple years. Some anglers have taken matters into their own hands, tossing rough fish on the banks to remove them from the system. Not only is that illegal, it does little to help the fishery.

Leaving fish to rot is littering, says DNR fisheries chief Joe Larscheid, subject to a fine. Decomposing fish are smelly eyesores, he adds, that can "foul an area for days or weeks." And it's an ineffective management tool.

"Given that waterbodies can have 300 to 500—up to 800—pounds of carp per surface acre, removing just a couple is not going to solve the problem."

Larscheid suggests releasing them, taking them home for garden fertilizer or eating them—yes, that's right.

"Smoked carp is excellent," he says. "Pickled carp is good too." Canned carp—especially Asian carp—is mild and flavorful, and the bones melt away in the cooking process.

"Regardless of what you do, dispose of them properly," Larscheid says. "Throwing it on the bank is unfair to other lake and river users."

CARP PHOTO BY JAKE ZWEIBOHMER

Outdoor Skills

PHOTOS BY *JAKE ZWEIBOHMER*

TIPS, TRICKS AND **MUST-KNOWS** TO ENHANCE YOUR OUTDOOR FUN

Predict Approaching Rain Using Moon and Sun Halos

A halo around the sun or moon is caused by light refracting through ice crystals in high cirrus clouds. This indicates that low pressure is approaching and rain or snow can be expected within 24 to 36 hours. If the halo is broken, the open side indicates the direction of storm approach—expect precipitation soon.

Tarp Tie Down Trick

Use a "monkey fist" to attach tie-down lines to a tarp, boat cover or plastic sheet with missing grommets. Make the monkey fist by squeezing a golf ball-size stone or handful of soil inside the tarp at the attachment spot. Wrap your line twice around the squeeze point on the tarp to hold the stone in place, and tie it off. Attach the loose end of the line to an anchor point and tighten.

Freeze Pre-Made Camping Meals in Zipper Bags

Simplify campfire dining by preparing individual precooked meals at home before the trip and freezing them in zip-seal plastic bags. Label them for easy identification. These DIY frozen dinners not only help keep other cooler items cold, they are also easy to defrost. Just plop the bags in warm water.

Test Image Alignment Before Buying Binoculars

Bargain binoculars can produce images out of alignment, making it impossible to get a perfect focus. To test before buying, focus on a distant horizontal line, such as a rooftop. Still looking through the binocs, slowly move them away from your face until the view splits into separate images. If the line remains straight, the glass is properly aligned. But if it's higher on one side, the prisms are faulty.

KNIFE PHOTO BY BRIAN BUTTON

DIY Tree-Trunk Boot Drying Rack

Cut a 3-foot length from the trunk of a 6-inch-diameter pine or spruce tree. Then split the trunk lengthwise. Lay split sections flat and clip off all but the sturdy branches that stick straight up. To make two boot racks, nail foot-long crosspieces of 1x3-inch lumber to both ends of the trunk sections for steadiness. Place wet boots upside down on the upright branches for quick drying.

Woks Make Great Camp Cookery

A Chinese wok is super-versatile for camp cooking. Use to stir-fry, deep-fry, boil large amounts of water, make soups, toss salads, mix dough, cook pasta and wash dishes or socks. When driving, pack crushable items in the protective steel wok under the lid.

Ready to Fry

When frying fish or game, 350°F oil is often optimum. To gauge oil temperature, stick the handle of a wooden spoon in the oil. When bubbles form at the base and begin to float, it's time to cook. Or toss in a popcorn kernel, which usually pops around 325-350°F.

A Sharper Cup of Coffee

Ceramic mugs are made of the same material as ceramic sharpening stones. Even glazed mugs have an abrasive, unglazed ring on the bottom where the cup sat during kiln firing. Use this medium-grit ceramic sharpening stone after a cup of coffee around the campfire to sharpen your fishing and camping knives.

Thinner blades work best as they have less metal. Hold the blade at a 20 degree angle. (Find the angle by holding the blade upright at 90 degrees, halve that to 45 and halve it again to 22.5—lower a smidge to 20.)

Rub knife edge on ceramic in a small circular motion with some pressure. The ring will blacken as steel is removed. Work your way up and down the blade in small increments. Flip and repeat. Remove any burr edges using a lighter pressure rub.

KNIFE PHOTO BY BRIAN BUTTON

Together OUTDOOR FIT

BY TIM LANE

ACTIVITIES, TIPS AND EVENTS FOR THE WHOLE FAMILY

MAKE SOME GREEN TIME

I frequently mention the positive impact activity and nature has on physical and mental health. Recently, I read a study highlighting benefits from what researchers called "green exercise" on a specific aspect of mental health. Two remarkable items from the study conducted by the chaps at the University of Essex were that "green activity" such as walking, gardening, cycling or farming can boost mood and self-esteem and benefits are discernible after just five minutes.

Alarm bells went off as I felt people would hear this and stop activities at five minutes—what I consider just getting warmed up. There are countless benefits if one starts with five...but keeps going.

The article in the American Chemical Society's semi-monthly journal *Environmental Science & Technology* stated "For the first time in scientific literature, we have been able to show dose-response relationships for the positive effects of nature on human mental health." The analysis of 1,252 people in 10 studies in the United Kingdom indicated activity in the presence of nature led to mental and physical health improvements.

Authors Jules Pretty and Jo Barton explained that a more nuanced indication of the dose response related to the time people spend in green spaces. "The greatest health changes occurred in the young and the mentally ill, although people of all ages and social groups benefited." All green areas, parks or other natural environments were good...but those with water were better.

They believe "there would be a large potential benefit to individuals, society and to the costs of the health service if all groups of people were to self-medicate more with green exercise." This included a call for public policies that facilitate more interaction with nature for health and economic benefits, which they suggested would be substantial.

As I surfed the internet, I noticed the only thing folks were talking about online that day was shoelace tying. Oliver O'Reilly, a mechanical engineering professor at Berkeley, and two graduate students published a study titled "The roles of impact and inertia in the failure of a shoelace knot."

Given archaeologists say we have tied our footwear since 3500 BC...it's about time we got it right. The gravitational pull on laces in motion can reach 7Gs—more than you experience on a world class roller coaster. So the pull is significant. People—the last loop needs to go around the other in a clockwise fashion or over the top. I kid you not, there is a TED Talk on this and YouTube videos plus the scholarly article.

So today's message isn't just lace up your running, hiking or walking shoes and get out there...but do it right and don't stop at five minutes.

TIM LANE is a nationally-recognized authority on public health and physical activity. He is past president of the Iowa Association for Health, Physical Education, Recreation and Dance.

But Why?

Helping adults answer children's nature questions

HEATHER, 12, IN STORM LAKE, ASKS:

Why is it not safe to look at the sun, even when only a small part of it is visible?

The rods and cones in the human retina are very sensitive to light. Even a thin sliver of the sun's disk covers thousands of these light-sensitive cells. Normally during daylight conditions, the iris contracts so that only a small amount of light passes through the lens and reaches the retina. This level of indirect sunlight is perfectly OK and the eye has evolved over millions of years to safely see the daylight world under most circumstances. The problem is the sun's surface is so bright that if you stare at any portion of it, no matter how small, it produces enough light to damage individual retinal cells. It takes a few seconds for this to happen, but afterwards you will see a spot as big as the solar surface you glimpsed when you look away from the sun at some other scenery. Depending on how long you gazed at the sun and how badly the retinal cells were damaged, this spot will either fade away in time or remain permanent. You should never assume that you can look away quickly enough to avoid eye damage because every person is different in terms of retinal sensitivity, and you do not want to risk being the one who damages their eyes just to try to look at the sun. If you want to see what the sun looks like, use a properly-equipped telescope. Or why not just go online and view thousands of pictures taken of the sun by telescopes and NASA spacecraft!

PHOTOS, THIS PAGE, BY JAKE ZWEIBOHMER

ECLIPSE PHOTO BY S. HABBAL, M. DRUCKMÜLLER AND P. ANIOL

WHO TURNED OUT THE LIGHTS?

FIRST TOTAL SOLAR ECLIPSE IN U.S. SINCE 1979

A total solar eclipse occurs when the moon completely blocks the sun, revealing the sun's beautiful outer atmosphere called the corona. The path for this eclipse is a rare, perhaps once-in-a-lifetime event for some U.S. viewers. The last total solar eclipse occurred in 1979 and the next one occurs in 2024, moving from Texas toward Maine.

ECLIPSE PHOTO BY S. HABBAL, M. DRUCKMÜLLER AND P. ANIOL

PHOTOS, THIS PAGE, BY JAKE ZWEIBOHMER

On Monday, Aug. 21, all of North America will be treated to at least a partial eclipse of the sun. But to experience one of nature's most awe-inspiring sights—a *total* eclipse in full glory—you need to be in the ominous-sounding path of totality, the astronomical term for a 168-mile swath the moon's shadow traces on Earth during a total solar eclipse.

The path of totality will pass through 14 states—including shadowing the most southwest tip of Iowa. Viewers deep in the path of totality will see a resemblance of the onset of night and experience it the longest. Shadows will look different, breezes may dissipate and birds may stop chirping. Temperatures may temporarily drop 10 to 15 degrees.

Its longest duration in the U.S. will be near Carbondale, Ill., covering the sun for two minutes and 40 seconds. If traveling along the path of totality, lodging was reserved long ago by astronomy buffs, so plan accordingly.

In the path of totality, the moon covers the sun and the sun's tenuous atmosphere—the corona—can be seen. *Observers outside this path will see a partial solar eclipse where the moon covers part of the sun's disk.*

Hamburg State Wildlife Management Area in the farthest tip of southwest Iowa is closest to the path.

Never look directly at the sun without appropriate protection except during totality. That could severely hurt your eyes. There are many ways to safely view an eclipse including direct viewing—which requires a filtering device, and indirect viewing to project a sun image onto a screen.

The next total eclipse visible in the Lower 48 won't happen until 2024, and tracks northeast from Texas to Maine.

Learn more, see videos and maps, images and safe viewing tips from NASA at *eclipse2017.nasa.gov*

Together

CONTENT & IMAGES BY *THE PATH LESS PEDALED*

A FAMILY RIDE ALONG THE WABASH TRACE

Sometimes you find yourself in the middle of nowhere, and sometimes, in the middle of nowhere, you find yourself.

As you pedal your way along the Wabash Trace Nature Trail, gravel crunching under your tires and birds chirping in the trees, you are immediately struck by the calm that surrounds you. The Wabash Trace may be anchored by Council Bluffs, but this is no urban commuter trail, and it takes just a few short miles out of the metro area to relax into the deliciously quiet countryside that flanks the route.

Nestled at the edge of the Loess Hills in southwest Iowa, the Wabash Trace is a peaceful 63-mile rail trail, the entire length of which is a dedicated nature preserve. The trail surface is crushed limestone, but don't let that scare you off; it is exceedingly rideable, even in wet weather, and blends seamlessly into the surroundings. A canopy of walnut and elm trees lines the route, providing respite from the hot summer sun, transforming into a winter wonderland when the snow lands. As you wind your way through the countryside, watch for the cardinals, robins, squirrels, rabbits, deer and others who call the trail "home."

For a unique family vacation, park your car at one of the designated trailheads and enjoy a few days of cycling and exploring quintessential southwest Iowa. As you let your kids toddle along the trail, be sure to stop at one of the 72 bridges on the Wabash Trace. Trail supporters saved most of the original railroad bridges, including a few spectacular trestle bridges.

The beautifully rural location of the Wabash Trace is one of the big draws of the trail—the other is the collection of small communities along the route. The seven towns along the trail vary in size (from 50 to 5,000 residents), but they each offer a unique small-town experience, perfect for letting your kids be kids while you relax. What's more, the communities have embraced the trail and the benefits it provides, which means volunteers are continually building new amenities for trail users (watch for a bunkhouse to open soon in Malvern), and you won't feel like an oddity when you pop into the local eatery.

In Mineola, stop by the Mineola Steakhouse. While it may be most well known as the end destination of the weekly Thursday Night Taco Ride (*tacoride.com*), when a few hundred people pedal from Council Bluffs to Mineola, you and your kids can skip the rolling party scene and enjoy lunch or dinner on their open-air patio.

In Malvern, stock up on necessary supplies (and their specialty: house-made sausages) at Mulholland

Grocery, a family-run market since the 1870s. Pop into the Project Art Church to visit with Zack Jones and tour his unique and continually evolving gallery. (Pro tip: Zack rents out the apartment on the lower floor to visitors looking for one-of-a-kind small town lodging.) And be sure to enjoy a meal at the Classic Café, a beautifully appointed family restaurant, where you'll find some of the best food along the trail (the steak is absolutely worth the splurge!).

In Imogene, watch for the Quonset hut as you roll into town. In 2014, residents converted the grain bin into restrooms and showers for trail users and invite folks to camp in the park alongside. For a bite to eat, pop into the Emerald Isle for lunch or dinner, a family-run (and family-friendly) pub, and only full-time business in town. If you time your trip just right, be sure to order a slice of pie from the Pie Lady, who bestows her pie-making prowess on Imogene while visiting family during spring planting and fall harvest. Imogene may be a tiny hamlet now, but it was once a bustling rail town, and you can tour the impeccably restored St. Patrick Catholic Church, originally built in 1915.

The Wabash Trace Nature Trail is frequently recognized as one of the nation's best. The trail travels from Iowa's beautiful Loess Hills to its southwestern prairies. The Wabash has gentle grades, beginning in the popular, wooded northern section and ending in the wide-open vistas of the southern portion. With about 50 percent of its riders coming from outside Iowa, the Wabash Trace brings economic benefits to these towns and the entire area.

In Shenandoah, you'll find ball fields and a municipal swimming pool at the trailhead on the north side of town, a perfect place to rest or let your kids run around. Then head to George Jay Drug where employees still scoop ice cream sundaes and pour root beer floats at the old-fashioned soda fountain. The Depot Deli, an old railroad depot turned restaurant (and decorated with incredible memorabilia from the last century), will welcome you with pork chops for dinner and bacon for breakfast. When you're ready for a good night's sleep, check into the Shenandoah Inn. You're welcome to bring your bikes to your room, or keep it simple and park them in the Hospitality Room next to the front desk.

South of Shenandoah, the communities become smaller, so most services drop off. But the beauty of the trail continues to the Missouri border, and the Gravel House Cottage in Coin will welcome you with a place to stay if you follow the entire length.

The quiet beauty of the Wabash Trace and the welcoming hospitality of the small towns along the route beckon you and your family to spend a day or a week, slowly exploring this corner of Iowa. The communities are perfectly spaced to allow you to stop every few miles, whether that means a mid-day lunch break or the end of a short-but-beautiful day—leaving you with numerous ways to experience the trail and the area. It's a perfect vacation with kids, since you don't have to worry about cars, and there's really no way for anyone to get lost.

Trail Tips

Trail users are encouraged to buy a trail pass for $1. Money collected enables volunteers to maintain the trail and improve the services. You'll find trail pass collection boxes at each of the trailheads.

While the trail itself is 100 percent car-free, there are several road crossings. Most of the time, you won't see a single car on these back roads, but it's still best to stop and check for any traffic before proceeding.

As always, when bringing your bicycle into a hotel room with you, knock off any mud before entering, and lean your bike in a way that you don't accidentally smudge grease on the wall or furnishings.

Get Involved

Find trail maps, links to stops along the way and volunteer and donation opportunities at ***wabashtrace.org***. The Wabash Trace Nature Trail depends on volunteer efforts of private citizens who build, maintain and manage the trail.

Camp and Bike

Not feeling up to riding the whole trail? Camp at Waubonsie State Park for a few days and haul your bikes on the short 20-mile drive to the trailhead in nearby Shenandoah for shorter day outings. Reserve camp sites at ***iowadnr.gov***.

BY CANDACE ORD-MANROE PHOTOS BY JAKE ZWEIBOHMER

Hiding Out in Union Grove

Grab a backpack and discover this best-kept secret among Iowa's state parks. Spend the day—or a season.

"I could stay here forever."

My daughter Meg echoed my feelings precisely as she twirled around our cabin at Union Grove State Park 20 miles northwest of Tama, earbuds intact and her music flowing. It was our first visit—we'd only recently heard of the park even though it's not much more than an hour's drive from our home in Des Moines. Had we known of it sooner, we could've enjoyed decades of day-tripping. But no matter. These Jill-come-latelys were over the moon.

Our enthusiasm soared even before we could unpack and plan the day's activities. Views from the cabin were that good. One glance, and we took a unanimous silent vote to dawdle. The blue summer sky went on forever, and lush green grass sloped downhill for what seemed like a football-field's length (especially walking back up!) before bottoming out at the lake. Sitting on the porch in knotty-pine chairs handcrafted by DNR woodworkers from another park, our most urgent task was deciding whether to look up or down—up, to check out the bird life winging its way in a sea of blue, or down, for a Zen moment of

Surrounded by timber and just 50 yards from the lake, it's hard to leave the comfort and serenity—and spectacular view—from the porches at Union Grove State Park's modern cabins. But you will want to explore the trails in hopes of glimpsing a pair of elusive sandhill cranes.

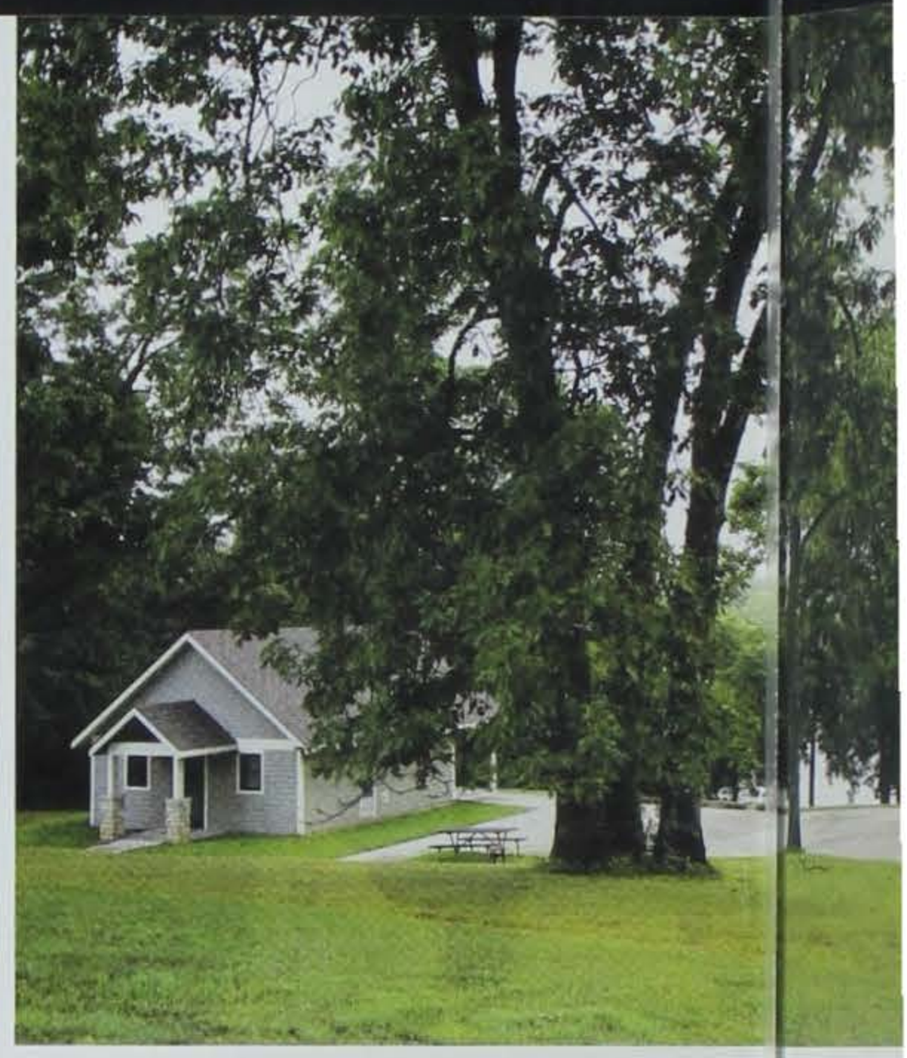
soft-focus reflection on the luscious spread of green and the glassy lake lapping at its feet. Just like that, we were in no hurry.

The only thing better than soaking up the views with our eyes was feeling them through our toes. Shoes kicked off, we sunk our feet into the velvety grass carpet leading to the lake and whooped in delight, especially as we gained speed headed downhill. As a state park groupie, I can attest that not too many of our parks feature cut-grass lawns to soften the camping experience. Even after only a short drive buttoned-up from Des Moines, the barefoot approach to the lake was rapturous.

Later that night, several hours past sunset, we carried blankets down the hill and spread them out by the water. The blue sky of mid-day was transformed into something more magical. With no city lights to interfere, stars glittered overhead in an abundance we never see at home.

There are only two cabins for rent at Union Grove, and

Lost In Iowa

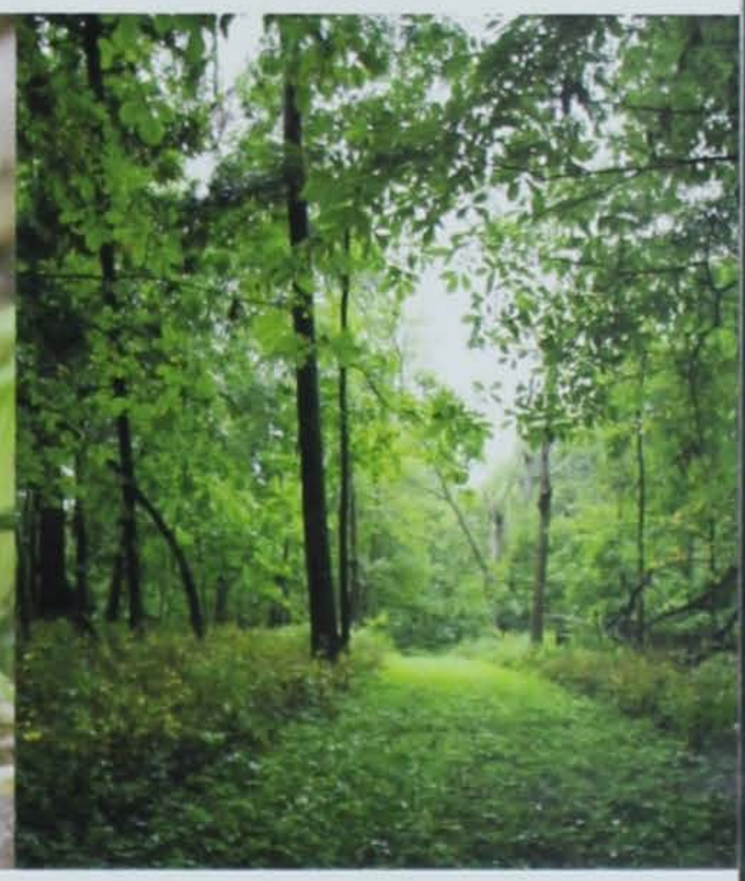


Union Grove State Park sits roughly an equal distance between the communities of Gladbrook and Garwin—about six minutes—and less than a half-hour from Marshalltown and Tama. With the lake recently renovated and restocked, fish aren't keeper-size yet, but as with most renovated lakes, it won't be long before a camp fish fry is in order. In the meantime, there is no shortage of activities, even if "busy" is simply relaxing on the porch of one of the two modern, one-bedroom, all-season cabins. From there, watch Canada geese lounge on the lake just 50 yards away, photograph diverse woodland birds from the surrounding timber or marvel at a deer quietly strolling through the park. Invite family to rent the second cabin and make a reunion weekend—or week—out of it. If friends are setup in the quaint, 25-site campground, take the short, 75-yard stroll to share s'mores and a campfire. But before you do, take a trail hike near the campground or through woodlands in the north corner of the park. Come back in winter and ride snowmobiles or cross-country ski the multi-use trails.

both sit atop that long, sloping hill. "The greatest sledding hill in the state of Iowa," Roger Thompson, the park's DNR manager, assures us. Thompson knows: He once incurred broken ribs when his sled veered off course into an oak tree at the side of the hill. The campground also is at the top of the hill, just behind the cabins. So even if you're opting to overnight it at one of the 25 campsites (11 have electric hook-ups, and a modern showerhouse and restroom facilities are close by), the views are yours to savor.

Unlike any of the other cabins we'd rented at Iowa state parks over the years, these are comparatively luxurious. Each one was built new from private donations ($100,000 for one of the cabins, which was completed in 2011, and another $30,000 for the other that opened in 2014) from a benefactress whose family had a long association with the property. The A-frame lodgings (wood-sided, not log) include a spacious handicap-accessible modern bath, a full kitchen and—wait for it—radiant heated floors, which make them winter-friendly. We can't wait to go back when there's snow on the ground. The lake views that sold us at the porch are nearly as impressive from big picture windows in the living room and the separate bedroom—another feature not typical in most state park cabins. After years of family tent-camping, outhouses and mandatory practice-casting with my flyrod along the streams of northeastern Iowa, was it any wonder my daughter felt she'd finally found nirvana?

I left her with her music and views and took off with binoculars to explore the trails that begin at the bottom of the hill and wind along the lake. I'd hoped to find the pair of sandhill cranes Thompson sometimes sees here, but they were elusive. An eagle fishing in the lake was less shy. I also spotted a great blue heron, cormorants and Canada geese—everywhere. Thompson has seen as many as 2,500 of the Canada species flock to the park, but snow



geese and swans are also frequent visitors. Bluebirds and other passerines sang noisily out of sight in the tree canopy, but honestly? That porch with the views called louder. I spent the next hour perched there, binoculars focused on the plethora of downy woodpeckers in the old trees that flank both sides of the hill.

Union Grove, which is equal distance from the small towns of Gladbrook to the north and Garwin to the south (its mailing address is in Gladbrook), got its start in 1935 when the Lake Park & Holding Company built the 100-acre lake now at the park's center. In 1938, the privately-owned lake was sold for $10,000 to the state, which created a 200-acre park around it to meet the outdoor recreational needs of area residents. Still in operation, the Lake Park & Holding Company remains involved in the park through its friends association.

Maybe one of the reasons I'd not heard of the park is because of its popularity with the locals, who keep it a carefully guarded secret. Families from Marshalltown make a day of picnicing at the tables on the west side, and sunning at the beach a few yards away. Still under construction during our visit, a new playground replete with benches for the grownups enhances the family experience.

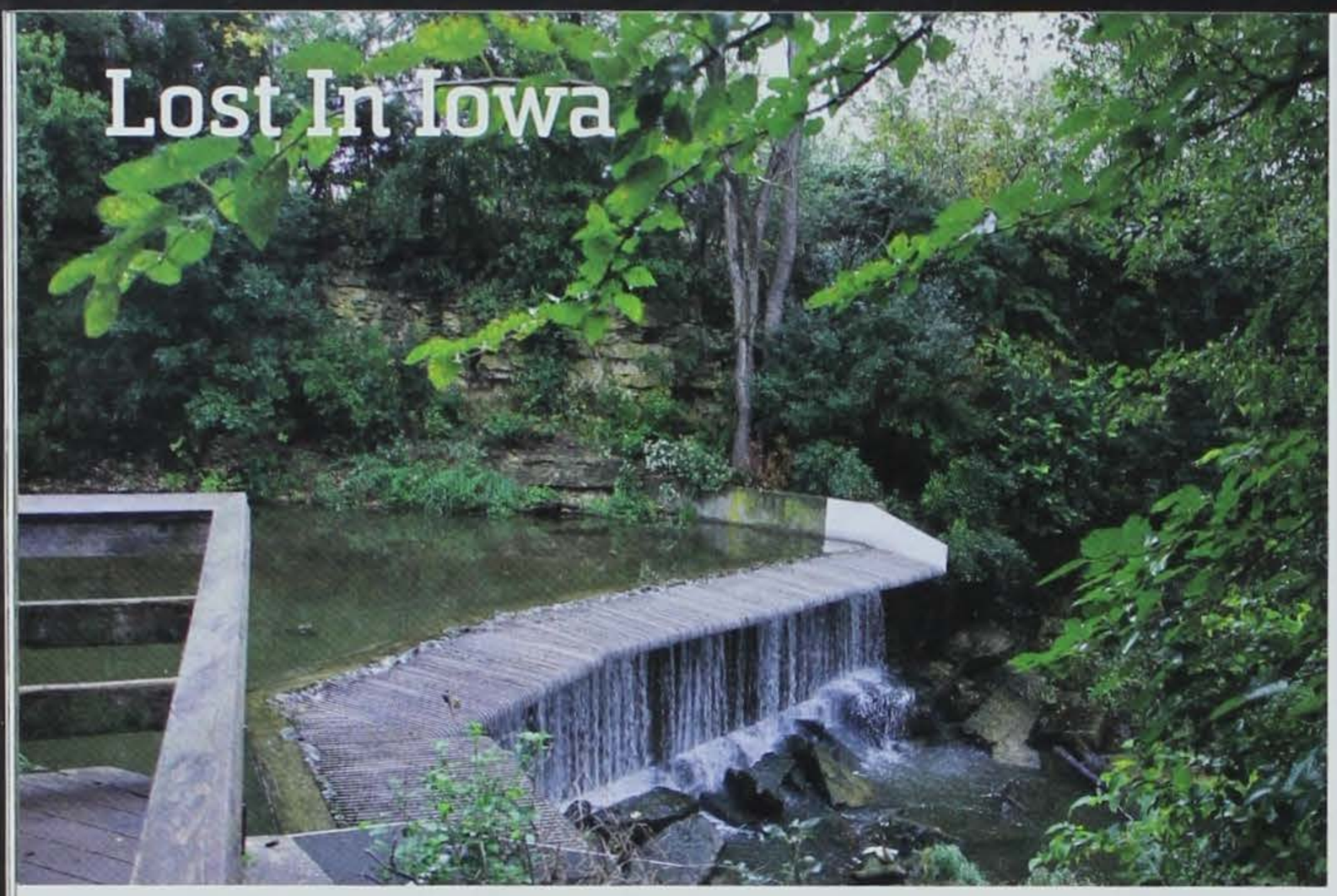
With two boat landings, the lake is popular for kayaking and canoeing. Powerboats are permitted, but only if they operate at no-wake speeds. As a convenience for campers, there's a boat dock by the campgrounds, but it's bring-your-own boat—the park does not provide rentals. Sixteen pontoon docks, each designed to accommodate two pontoons, can be privately rented for the season.

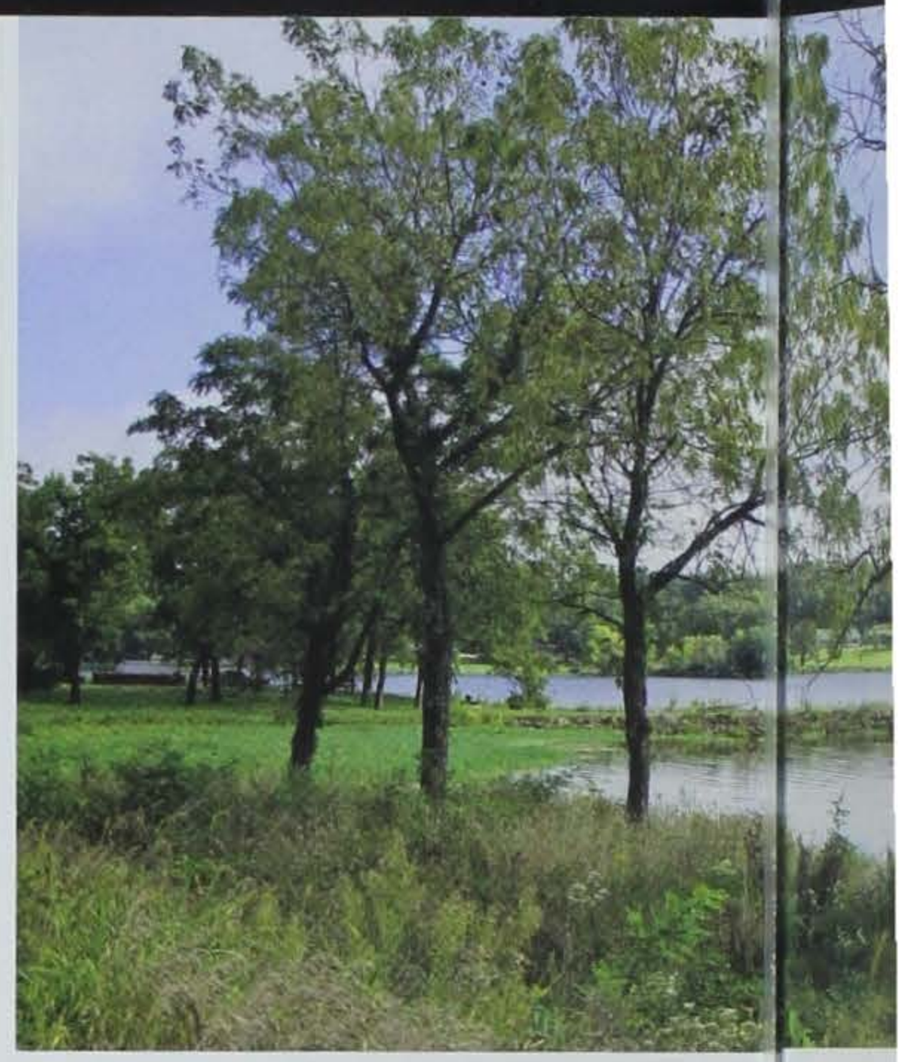
Jetties added in 1988 make fishing from the bank productive, but they're also a good spot for birding—you don't need field glasses to watch activity in an eagle nest just across the lake. During our visit last summer, the lake was in the final stages of a clean-up dredging, but it's since

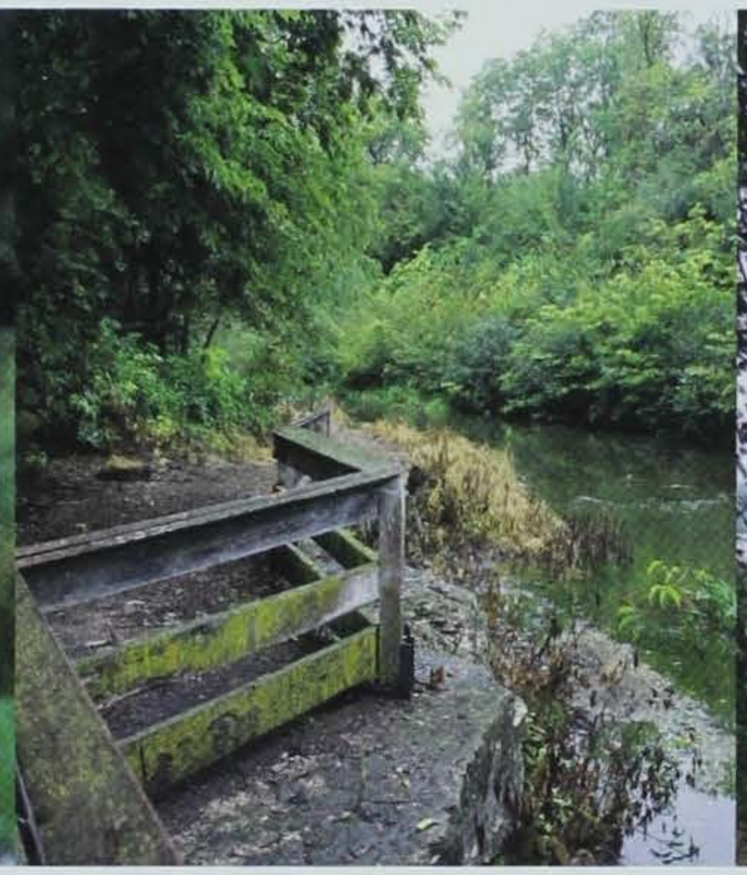
Lost In Iowa

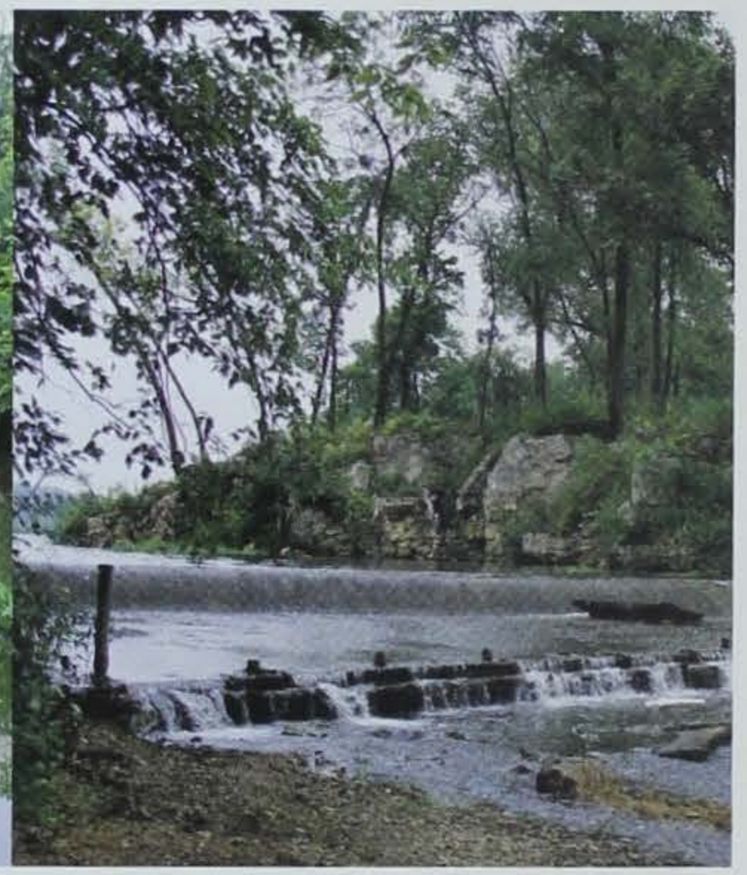

TAMA COUNTY
63
71
Gladbrook
Traer
96
8
Dysart
UNION GROVE
STATE PARK
220th St.
63
229
Garwin
MESKWAKI
SETTLEMENT
30
Toledo
Montour
Tama
30
Chelsea
63
146

Lost In Iowa









been restocked with crappie, largemouth bass, bluegill and channel catfish. The fishing's not great yet, but it will be. And after the new fish fatten up and reproduce, Thompson recommends anglers come back in the winter.

"Ice fishing always seems to land the best fish," he notes. He says it's not uncommon to have around 30 ice anglers in 15 to 18 shacks on the lake each weekend after the water is hard-frozen. Thanks to an aerator, part of the lake stays unfrozen no matter how cold the temperature. "This is what allows the lake to be oxygenated and prevents the fish from dying," Thompson explains, thus those good winter catches through the ice. And because the entire park is open year-round, its 3.5 miles of trails aren't limited to hiking and birding. They're equally conducive to cross-country skiing and snowmobiling.

In addition to the trail that runs along the lake just below the cabins and campground, another one is located at the northwest end of the park. For sheer beauty and serenity, this is the trail for me. Cherry trees, hickories, white and red oaks and basswoods create a forest wonderland straight out of a storybook. The large cherry trees alone demand gawking time, many growing cankers in eerie, other-worldly shapes. Don't expect a lot of sunlight, which can be a welcome change on a hot summer day. The heavy canopy obscures the sun, but intermittently it pierces through, sudden and unpredictable, in a golden blaze so astonishing it seems downright biblical. Have your camera ready. Also, wear durable clothing. You'll want to explore off-trail, and the understory is brambly.

The big trees that imbue Union Grove with so much of its charm haven't had an easy time of it. Straightline winds of 129 miles per hour blew down eight old-growth trees that flanked the cabins in July 2011. "We had to take down 284 others," says Thompson. A matched grant from

A picturesque spillway at Union Grove State Park sits a few hundred feet from the 110-acre lake's east end trail. The park is a popular place for family gatherings such as picnics or cookouts, with several shaded areas near shoreline. An open picnic shelter sits near the west boat ramp, available for rent through the park's reservation system. Modern one-bedroom cabins beckon those who aren't in tent camping mode, at less than the cost of a hotel room. All you need to bring is bedding and toiletries—including toilet paper. They rent for $450 for the week during peak camping season, May 1 through Sept. 30, available through the reservation system at ***iowadnr.gov***. However, if unrented, shorter stays at $75 a night may be arranged directly through the park office, ***641-473-2556***.

Trees Forever has allowed 160 new trees to be planted, and hopefully more donations will result in additional plantings.

Before it was known for corn, soybeans and butter cows, Iowa was famously a prairie state. Union Grove, along with most other Iowa state parks, honors that heritage. Plan on spending some time at the park's eight acres of reconstructed prairie, where monarchs, zebra swallowtails and black emperor butterflies can be seen fluttering amid the big and little bluestem prairie grasses, partridge peas and milkweed.

After just one night at Union Grove, I feel like a local. I'm a little reluctant to share this best-kept secret.

Nearby Attractions

Gladbrook is a short drive away, and its small-town-friendly grocery store is a great spot for stocking up on supplies. If you visit the park between June 22-25, the short drive to Gladbrook is a must, especially if you have kids—these are this year's dates for the town's annual Gladbrook Corn Festival. A parade, petting zoo and tractor rides are among the activities. (*Gladbrookcorncarnival.org*)

Immersing your kids in the outdoors, away from TV and other electronics, may feel like culture shock to them. To soften the blow, treat them to the movies at the Gladbrook Theater. It'll satisfy them, and feel like a step back in time to you. (*gladbrooktheater.com*)

Iowa artist Patrick Acton glued more than 4 million wooden matchsticks into 65 detailed scale models of world-famous architecture and more. Many pieces have gone on to be featured in Ripley's Believe It or Not museums around the world. See several in this downtown Gladbrook museum aptly named Matchstick Marvels. Admission charged. *641-473-2410; matchstickmarvels.com*

If you crave Mexican food and have 15 minutes to spare, drive to Marshalltown. We enjoyed the authenticity of Tacos y Mariscos Maraville, 911 E. State St.

Lost In Iow

MOUNT TRASHMORE

BY *KAREN GRIMES*
PHOTOS COURTESY OF *CEDAR RAPIDS/LINN COUNTY SOLID WASTE AGENCY*

In Cedar Rapids, a mountain of trash from record-shattering 2008 floods is transforming the highest point in the city into a recreational amenity.

Up for a great hike? The peak of a closed landfill is not your usual recreation destination, but the 208-foot climb to the top of Mount Trashmore could exceed your expectations. Now under construction, a scenic overlook, artwork and trails are poised to turn Cedar Rapid's mound of trash into a cultural and athletic experience. Stand atop more than 40 years of discards, most recently from the disastrous 2008 floods, for the best view in the city.

Iowa has no Stonehenge, no Easter Island monoliths or Taj Mahal. But we do have a living monument—a high climbing sepulcher commemorating the floods of 2008 and offering new recreational opportunities for sightseers, hikers, bikers and nature lovers.

Challenge yourself to a 208-foot climb above the Cedar River for the best view in Linn County. Look for a fox family or watch the strutting display of a tom turkey. Join one of the local groups for a mountain-top meeting and "Lunch on the Landfill," or watch the sun rise with "Morning on the Mountain" members. Take time to enjoy the three-season display of prairie grasses and wildflowers, planted for your enjoyment and much-needed habitat for pollinators, including monarch butterflies.

Maybe you're more technically inclined. The Rockwell Flyers launch their model aircraft from the top of the mound.

Or join runners to experience Cedar Rapids' recreation destination while raising funds in the Trashmore 5k to Bash Epilepsy, or Splash a Smile Color Run for the community health center. If you sprint to the top, it may be one of the toughest 5k runs you'll ever make—all uphill.

Joe Horaney, Cedar Rapids/Linn County Solid Waste Agency spokesperson, has another perspective. "Envision a 72-acre classroom where you won't get in trouble for gazing at a spectacular view from the highest accessible point in Cedar Rapids. A place where daydreaming is encouraged," he says.

For now, access is limited to insurance-carrying, scheduled events approved by the solid waste agency. That includes several thousand sixth graders who tour the site each year to learn about composting and see where their parents' and grandparents' garbage ended up.

But, this forward-looking agency is turning trash to treasure. Construction began this spring on a scenic overlook near the top of Mount Trashmore facing downtown and the river. Design work on an extensive trail system is underway with varying routes, distances and difficulty to accommodate walkers, cyclists and mountain bikers. The overlook is slated to open this October and the trails ready spring 2018. "The view will be the best in all of Linn County," Horaney says. "Spectacular."

It is a place of transformation ...from a hole in the ground as a former quarry, to a landfill taking garbage for more than 40 years, to a trail system offering a view of Linn County unlike any other from an overlook.

FROM QUARRY TO DUMP TO FLOOD

The trash heap did not start as a monument or recreation destination. In fact, credit the floods of 2008 for making it the attraction it is. Affectionately dubbed Mount Trashmore, the best view in Linn County started life as a pit in the ground—the Snouffer Quarry in the Stumptown neighborhood. The Stumptown area was home to Sinclair Packing Plant employees. Each day they walked to work, crossing a bridge over the Cedar River to their plant. Mined since the 1890s, the quarry produced road aggregate and much-needed building materials.

Starting in the 1870s, work for the railroads, Quaker Oats and the Sinclair Packing Plant drew waves of immigrants to settle in two historic neighborhoods: Time Check, home to the first permanent Mosque in the United States, and Czech Village.

In 1965, the quarry became a garbage destination, gradually climbing high above the city as it filled with flotsam and jetsam from Cedar Rapids' citizenry. Located southeast of downtown Cedar Rapids, most considered Cedar Rapids/Linn County Solid Waste Agency's Site 1 a noxious, odiferous eyesore.

To the relief of the neighbors, in 2006, Site 1, the 65-acre landfill at 2250 A Street SW, closed forever, rerouting detritus to a state-of-the-art landfill on County

From atop the city landfill, the red roof of the Czech Museum rises on the left, grain elevators and manufacturing plants edge the river, with the county courthouse and Veterans Memorial Building centered on Mays Island.

Home Road in Marion. Unlike its predecessor, the new landfill was built to strict standards with liners to prevent chemicals from seeping into groundwater. Equipped with methane gas recovery, a drop-off for hazardous materials, a drive-through recycling center and a pick-up area for free paint, cleaners and other recycled materials, the new landfill is something to be proud of.

Once closed, people could see downtown Site 1, roughly 368 feet tall, from pretty much anywhere in the city. Always there, looming in the background. Agency planners and city dreamers discussed ways to make the landfill into something else—from a downhill ski resort to a recycling education center. In the meantime, people continued to drop off recyclables (curbside, appliances, tires, electronics, batteries and scrap metal) and pick up compost for their yard and landscaping projects.

But wait, forever isn't always forever.

The deluge came in 2008. From May 25 to the end of July, the rain fell. Rainfall that made 2008 Iowa's fifth-wettest year since 1873, and resulted in federal and state disaster declarations. In Cedar Rapids, a whopping 50.23 inches of rain dropped throughout the year. Compare that with a norm of 37.59 inches.

"Major flooding in 2008 was mostly confined to the eastern two-thirds of Iowa, along the Cedar and Iowa River valleys," says State Climatologist Harry Hillaker. It walloped Cedar Rapids. On June 13, 2008, the Cedar River flood crest in Linn County obliterated the 1993 flood crest by an additional 11.9 feet. No other river crest levels in the state came close.

That spelled C-A-T-A-S-T-R-O-P-H-I-C for Cedar Rapids. As the flood crest poured south, a long litany of emergencies faced city, county, state and federal emergency managers as they worked to evacuate 10,000

people plus 300 hospital patients.

Complicating recovery efforts, the island housing city hall, the courthouse and the jail went under. Flood waters took out power when Alliant Energy lost its six-story-high Sixth Street Power Plant—never to reopen.

Familiar landmarks disappeared. The waters spread, inundating homes—often more than 8-feet deep—in historically significant Time Check and Czech Village neighborhoods. Flood waters spread, covering more than 10 square miles along the river and flooding the Czech Museum, a major tourist attraction and city icon.

Rising waters closed streets, highways, bridges and businesses. Downtown industries were partially under water. Alliant tower, Green Square Park, Quaker Oats, the public library, grain warehouses—flooded.

The river soared so high all that could be seen of the Union Pacific bridge were the rail cars placed on top to keep the bridge from floating away. Another railroad bridge was heaped with house boats broken loose from their moorings at Ellis Park and thrown against the bridge as if some giant were tossing Legos around.

The same scenario occurred up and down the Cedar and Iowa rivers, many smaller rivers and the Mississippi River floodplain. Statewide, 40,000 people in 85 counties were affected by tornadoes and flooding in 2008. In Cedar Rapids alone, some estimates peg the damage at $8 billion (for comparison, Iowa's state budget is $7.2 billion).

RESPONSE TO FLOOD DEBRIS—COMPLICATED

In some ways, the biggest challenge came not while adrenaline flowed and emergency response reached full peak.

As waters receded, people lined up for blocks to return to their homes and businesses. Anxiety and anger

mounted as they were delayed at check points.

Entering flooded neighborhoods was a nightmare. Some homes—on the water's edge—were salvageable. For others, recovery was impossible. To their dismay, residents found mold-covered walls, ceilings and possessions. After rotting for days, the smell was indescribably nauseating. Even treasures placed on second floors were ruined. Foundations collapsed. Homes shifted off their foundations.

For many, nothing but a pile of trash remained of a lifetime of memories.

As people tossed ruined belongings—separating furniture, books, clothing and other household goods from electronics, appliances and hazardous wastes—the curbside piles mounted. The stench grew. The vermin moved in. Flies buzzed. Mosquitoes whined, raising concerns about West Nile Virus.

It took months to determine the extent of the damage, decide which buildings were unsafe and estimate the amount of debris. As the city reeled from disrupted communications and multiple needs, it still had to respond to an estimated 10,000 displaced people and businesses. City estimates determined there were 18,623 people living in the area affected by flooding, along with 310 city facilities.

In the meantime, what do you do with the contents of nearly 6,000 homes? What do you do with 1,300 demolished homes? Where to put household belongings, furniture, roofs, framing, dry wall—the structures? Initially, the answer was, "We don't know."

The quick and easy disposal answer, the recently closed downtown Cedar Rapids landfill—Site 1 of the Cedar Rapids/Linn County Solid Waste Agency's facilities—was a no go. Remember? Site 1 closed forever in 2006, meeting federal regulations to cap the top with an impermeable layer.

WHERE TO MOVE A MOUNTAIN OF WASTE?

The newer Linn County landfill in Marion, opened in 1972, met federal requirements. But it was not designed to handle the massive daily traffic needed for cleanup.

"From the minute they started hauling stuff in, there was such a traffic jam at the Marion County landfill it was obvious another solution was needed," says Joe Sanfilippo, supervisor of DNR's Manchester field office. "They would have needed a staging area to hold the debris until it could be hauled in. That doesn't work well with flood debris due to the buildup of odors, mold and vermin."

The haul distance was another limiting factor. "It's probably an hour to drive up to Marion and back," Sanfilippo says. "So that's eight loads in an 8-hour day, versus a downtown site in the middle of the flood zone. We were in a hurry to move the debris as quickly as possible to avoid health issues for the public."

Downtown, Site 1, was close, but had no liner. The idea to reopen an unlined landfill was complicated. The downtown site closed in 2006 after a rule change required liners under all landfills. About half the landfills installed heavy plastic liners on the hill sides to stay open. About half decided to close.

After the flood, the Cedar Rapids authorities evaluated everything—even hauling all the flood debris to Illinois.

But time was a factor. Hauling debris to Illinois would be limited to maybe one or two loads per day. While Site 1 didn't meet federal rules, it was a quick destination for trucks. Eventually, following many discussions between the city, the landfill commission, DNR and the U.S. Environmental Protection Agency, Site 1 was allowed to reopen for three months. "The urgent need to dispose of moldering, varmint-infested trash for the good of public health and safety won out," says Karmin McShane, agency executive director.

As disposal proceeded, Site 1 gained extensions to stay open. Eventually it stayed open five years, accepting wave after wave of debris as the Federal Emergency Management Agency approved tearing down homes. By the time it closed (with a proper cap) in 2013, a line of 44,401 dump trucks had carried 417,474 tons of trash to Site 1. Another 27,855.42 tons had gone to the newer Marion landfill.

That's a lot of trash.

Just to put that into perspective it's about 70,000 Asian elephants in tonnage. Or, if you parked 44,401 dump trucks, nose to tailpipe, they would form a line more than 210 miles long—about the distance between the Missouri and Minnesota borders.

That's a lot. To be exact: 834,948,000 pounds. Enough to raise the landfill height 33 feet.

VIEW FROM THE TOP

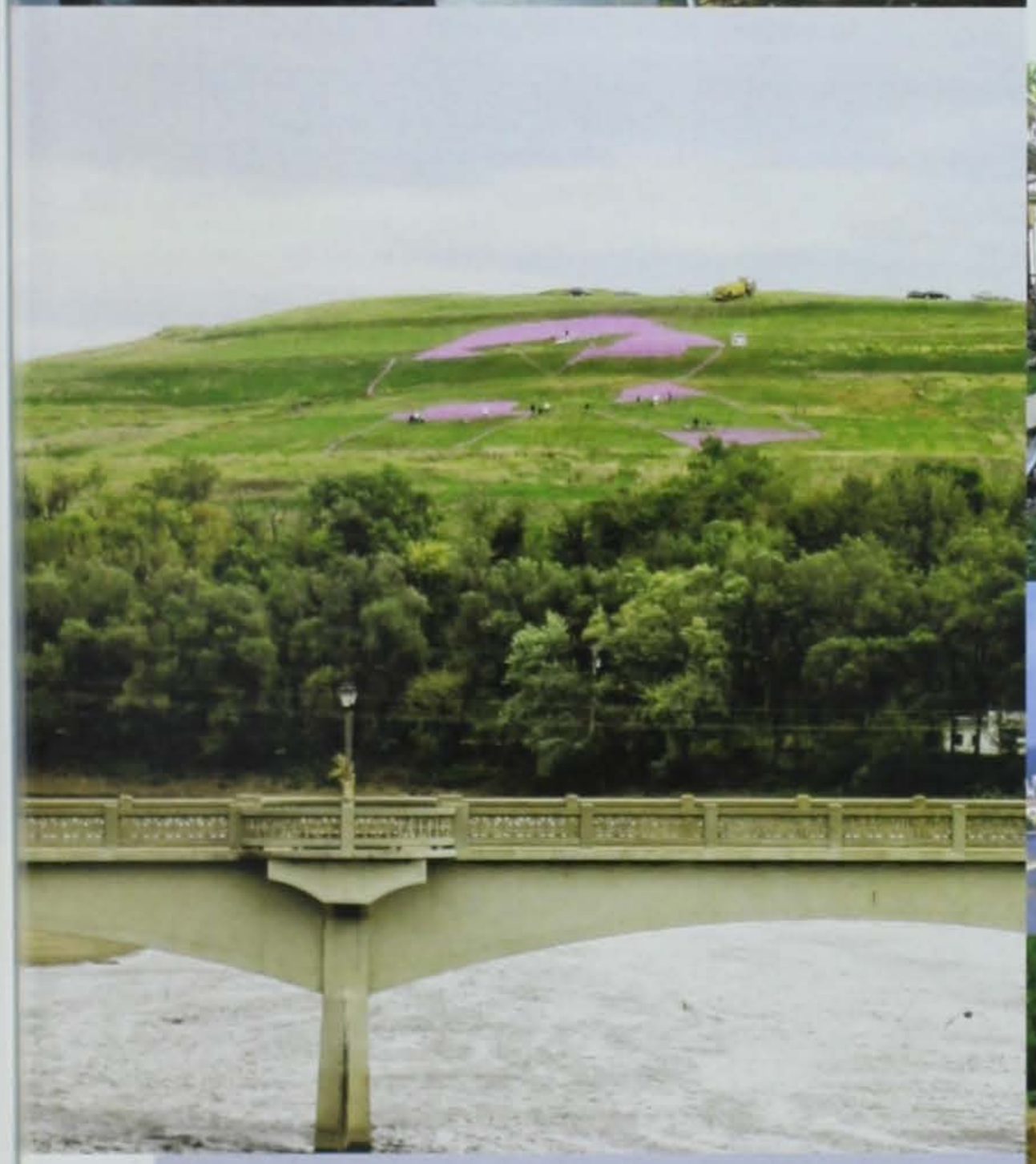
Now the 208-foot-tall resting place for discarded homes and dreams is the second highest spot in the city—only the spire at Mount Mercy University is higher. It's also awe-inspiring or grief-reminding, depending upon your outlook.

If you climb to the top, you can see Cedar Lake, the Cedar River winding through downtown, City Hall and the island, I-380 and wide expanses of farmland and the wooded corridor of the Cedar River. If you look west or north, you can see the 5-mile long, nearly 2-mile-wide swath the Cedar River carved through the city in 2008. Whole city blocks in downtown neighborhoods like Time-Check and Czech Village, once home to people since the early 1850s now stand empty, sporting grass and weeds, not much else.

Downtown is not the same. But this spunky city celebrates its recovery from the flood of 2008, hosting events like Cruisin' the Mount, an event for Classic Car enthusiasts. Or join neighbors at Meet Me at the Market, where walkers and cyclists meet at NewBo City Market, share conversation and caffeine, then take

PEOPLE PHOTOS BY KAREN GRIMES

DNR boats took to the streets for reconnaissance and rescue during the flood of 2008. Debris lined streets as residents worked to make homes habitable, and the closed landfill reopened to accept residents' heartbreaking losses as trucks lined up to deliver nearly 835 million pounds of flood debris. View from Lion's Bridge captures the growth of the landfill during five years of flood recovery.



PEOPLE'S PHOTOS BY KAREN GRAAS

Now closed, Site 1 of the Cedar Rapids/Linn County Solid Waste Agency remains a working recycling center. Residents can drop off everything from curbside materials to appliances, asphalt shingles, scrap metal, tires, electronics and clean wood waste. It's also the spot to pick up nutrient-rich compost for gardens and yards.

New job for DNR — *Broker of Flood Debris and Wastewater*

On June 13, 2008, the Cedar River shattered all flood records, smashing the previous record crest not by inches, but by 11 feet—31 feet above flood stage. Mandatory evacuation affected about 14 percent of the city's land area. At its peak, more than one million gallons flowed through Cedar Rapids per second with devastating effects. (Envision a pool almost a football field long, 50 feet wide and 10 feet deep flowing by every second or 20,000 bathtubs.)

In a city known for manufacturing, electronics and food processing, including the world's largest cereal mill, those industries were hit hard along with homes.

Flooding closed city bridges, inundated downtown and I-380 and threatened drinking water wells. Providing basic services—power, drinking water, wastewater treatment and emergency housing—wasn't immediately possible.

Some 1,500 volunteers sandbagged well fields. Residents conserved water after three of four drinking water wells shut down.

Devastating to residents, some also worried if downtown industries and jobs could survive:

- Downtown Alliant tower, Quaker Oats and grain warehouses flooded. Alliant Energy's six-story-high Sixth Street Power Plant flooded—never to reopen.
- Near the city: flood waters surrounded Alliant Energy's Prairie Creek power plant which eventually went under water for a week, leaving some industries without power.
- The swift loss of the Bertram Road wastewater treatment plant left businesses up a creek—trying to find alternatives for wastewater treatment.

"When ADM found out the city plant was shutting down, they called DNR even before the flood peaked," says Joe Sanfilippo, supervisor of the DNR's Manchester field office. "They were bringing in portable wastewater treatment equipment from California and other places and needed permits to operate."

DNR responded swiftly, issuing special authorizations for affected wastewater facilities in 42 counties. The first allowed industries in cities with damaged treatment plants to work with DNR to find the best alternatives to discharging to a stream. The second allowed communities with damaged wastewater equipment to make repairs or provide alternative treatment without a construction permit.

By June 19, DNR posted information on flood recovery help on air quality, asbestos, beach monitoring, debris disposal, electronic waste, household hazardous materials and underground storage tanks.

In the meantime, DNR field staff toured affected cities to help with drinking water, wastewater and debris removal. As waters receded, cities and DNR urged residents to sort trash to aide in recycling and composting as much as possible.

Larger trash piles needed bigger solutions. That's when DNR became a trash broker, finding elegant solutions as staff worked with industries to minimize waste headed to landfills. For example, Penford Products, a Cedar Rapids corn starch company since 1895, couldn't sell flood-tainted grain. With truckloads of unusable grain, Penford looked to DNR for solutions. DNR's solid waste group gave permission to dispose of it on farm fields. Then field offices came up with another solution, checking with ADM to see if they could use Penford's spoiled grain. "They could use it in their coal-fired boilers, so it was used for energy, not waste," says Sanfilippo.

When water began encroaching on coal piles at Alliant Energy's Prairie Creek power plant, potential pollutants included: oil and grease, suspended solids, copper, nickel, zinc and acidity. Unable to use the plant for a week, DNR facilitated the company's efforts to move temporary steam boilers up the hill, tapping into them to provide power for DuPont, Cedar Rapids Paper Company and others.

Flood recovery has long-term implications. The wastewater treatment plant had to close swiftly but wasn't designed to do so. "As waters rose, a lot of pumps, wiring and a walkway below ground were flooded. So all that electrical equipment had to be replaced. They also had to get beneficial bacteria used to treat waste going again, too," says Sanfilippo who adds the city brought the wastewater flow back online in stages.

In 2010, trash continued to plague the city. So the Cedar Rapids/Linn County Solid Waste Agency investigated ways to keep debris from flooded homes out of the landfill. Mold made salvaging wood and other materials impractical. But it was possible to burn in a biomass plant.

The agency challenged contractors to tear down three flood houses with the goal of capturing wood that met fuel specifications, and competed—in time and costs—with demolition designated for the landfill.

The solid waste agency continues the innovation that helped Cedar Rapids recover from the floods. Recently completed, a landfill gas-to-energy facility produces electricity and sells the energy and carbon credits to Central Iowa Power Cooperative. Production in the first three months could power 75 homes a year.

the family on a walk, run or cycling tour. Twice a year they trek or ride to the top of the heap and back to the market. Check out the prairie grasses and flowers where milkweed provides habitat for monarch caterpillars as part of the agency's planned pollinator zones.

An annual event, Houbys (pronounced HOE-Bee) Days, features Czech music and folk dancing at a May carnival to celebrate mushrooms. Enjoy traditional Czech and Slovak food, a parade on Saturday, flag raising and a Maypole. Or stick around for limited rides to Mount Trashmore.

MOUNTAIN OF MISERY BECOMES MOUNT FUN

The agency's usual events on Mt. Trashmore are on hold in 2017 as construction work is underway, but expect participation and events to expand once the walking and bike trails are completed in 2018.

The agency planned to kick off work at Site 1 last fall, but a flood in September disrupted those plans when Mount Trashmore became a staging area for the National Guard and Urban Search and Rescue Team. They set up a mobile command center at the peak, taking advantage of great reception for their antennae to monitor rising flood levels and later recovery efforts.

Despite the flooding, plans to transform Mount Trashmore proceeded. Cyclists starting at the foot of the hill will choose from a wide crushed rock trail, with an easy grade for cyclists and walkers, or a narrow, steeper, more challenging dirt trail designed for mountain bikers. Either way, it will be a long trek to the top where visitors can enjoy the panorama from a specially designed overlook—built to accommodate changes in elevation as the mountain settles over the next few decades.

Near the summit, hikers and cyclists will wind through art, educational displays and sculptures that highlight Cedar Rapids' unique history, industry and culture.

It's all laid out in the Cedar Rapids/Linn County Solid Waste Agency's master plan.

Cedar Rapids is resilient. After the 2008 flood ravages, some thought the city might never recover. Instead, this feisty city turned mounds of heartbreaking debris into treasure and is celebrating its recovery by making the mountain of trash a place of celebration.

In 2014 for example, the Susan G. Komen Race Against Breast Cancer was rerouted to go past Mount Trashmore. Sherwin Williams donated 440 gallons of pink paint to embellish the side of the landfill with a giant ribbon, showing support for the fight to end breast cancer.

Since the landfill receives no public money, the solid waste agency will rely on income from garbage and yard waste fees, and perhaps grants. On the plus side, the agency can tap into vibrant groups of local trails enthusiasts. One group, Friends of Cedar Lake, is working to raise the Sleeping Giant, planning to reconstruct a pedestrian bridge on existing piers that run from the old Sinclair Meat Packing Plant to the closed landfill. The bridge would unite Mount Trashmore with the Linn County trails system, including the 97-mile segment of the American Discovery Trail running from Davenport to Cedar Rapids and 62-mile segment running from Cedar Rapids to Waterloo.

Greenway trails circle the base of Site 1. As the city and solid waste agency collaborate on trails leading to Mount Trashmore's entrance, Horaney reminds us, "Part of the historic Czech Village, the neighborhood was devastated during the floods of 2008. Entering Site 1 is a constant reminder of the forces of nature, seeing Mount Trashmore shows the role we play in affecting our environment, and the agency's plan for the future displays commitment to sustainability and an environment we can enjoy.

"While offering one-of-a-kind views, it will remain a working resource recovery facility where residents can go to recycle, get nutrient-rich compost, and then enrich their own wellbeing by taking a walk," he said.

Runners, hikers and cyclists can look forward to this artist's conception of the future scenic overlook. Near the summit, walkers and runners stop to admire the view during the 2016 Trashmore 5K—Dash to Bash Epilepsy.

Iowa's Deadliest Flood

The hamlet of Rockdale washed off the map July, 4, 1876, killing 39

BY *BRIAN BUTTON*

Iowa Rain Events of 1-inch per Hour or More

According to state climatologist Harry Hillaker, Iowa and other areas of the upper Midwest are unique worldwide for heavy rain events. "Around the world, most heavy rains occur during daytime hours," he says. "But in Iowa, most heavy rains occur after sundown and overnight. That is very unusual worldwide—it really only happens here." It is especially odd, since summer has the shortest hours of darkness. June for example, has over 15 hours of daylight and just nine hours of darkness compared to the opposite in December.

Eight hours of daytime (7 a.m. to 3 p.m.) has 14.7 percent of all rains of one inch per hour and greater. But just four nighttime hours (9 p.m. to 1 a.m.) hold 27 percent of those same events. And 8 p.m. to 3 a.m. yields 52 percent of all heavy rains.

The data shows heaviest precipitation of one inch per hour and greater rainfalls occur June, July and August, followed by May, then September.

In 1876, Rockdale was a village just south of Dubuque. The tiny town was home to one of the area's first flour mills, powered by Catfish Creek, which physically divided the little community. The small creek flows gently about two and a half miles eastward, through present day Mines of Spain State Recreation Area, before it empties into the Mississippi River.

Today, the site is entirely within the City of Dubuque. A driver's license station, Casey's, DQ and McDonalds are not too far away—common sights in many towns that mask this area's uncommon tragic events. All that is left to hint at the past are several street names—Old Mill Road, Miller Road and Rockdale Road.

Although the Rockdale flood affected a very small, isolated geographic area, it remains Iowa's deadliest flood. A record hopefully never broken.

On July 4, 1876 many Americans were celebrating the Independence Day, an extra special year, marking the nation's first Centennial. By evening, festivities concluded when a summer shower began. Starting as a drizzle, it intensified to a downpour. Within an hour, Catfish Creek was out of its banks.

RAIN PHOTO BY ISTOCKPHOTO.COM

Rockdale Mill sat just upstream next to a small wooden dam. The swollen creek put immense pressure on the dam, which broke, sending a surging wave and wall of watery destruction 20 feet deep and hundreds of feet wide charging toward town. As it swept into town, around 40 people—nearly every person in the hamlet—perished. A few survivors were found in treetops where the floodwaters had swept them. Only two buildings were left standing—the Rockdale Mill and one house. The village lost a saloon, hotel, two stores, a post office, several houses and a blacksmith shop.

One survivor was saloonkeeper Charles Thimmesch. After warning others about the flood, he climbed to the roof of the post office. He eventually swam naked to higher ground with his money clenched in his teeth.

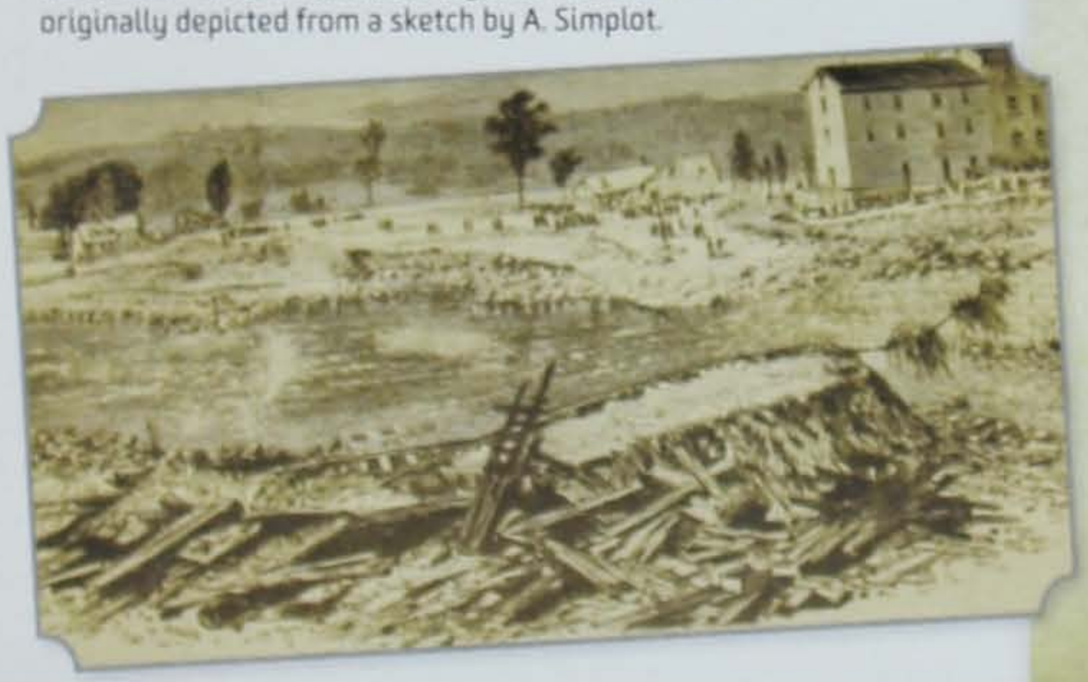
The village never recovered. Eventually U.S. Highways 151 and 61 were built and bypassed the area. Later, it was annexed and became part of Dubuque.

Several factors make such modern occurrences far less likely. The National Weather Service monitors, anticipates and warns of flash flooding in real time. A system of river gauges also provides real time data. Emergency management and the media distribute timely, important information when flooding or other hazardous weather threatens lives and property. Storm spotters also give timely, "boots on the ground" updates about potentially hazardous conditions.

Dams are better engineered to withstand extreme events versus wooden structures built in the 1800s. Statewide, modern dams are evaluated by a DNR dam safety inspector. The DNR also creates maps for local emergency planners that show predicted flood impacts should a dam fail. The DNR also led production of new floodplain maps to help Iowans learn of local risks.

Technology and communication allow for better safety measures to protect lives. In the record 2008 floods, approximately 1,300 blocks (10 square miles)—including most of downtown Cedar Rapids—was inundated. More than 5,200 homes were affected with no loss of life in Iowa's second largest city.

BELOW: Published in *Frank Leslie's Illustrated Newspaper* on July 29, 1876, this antique woodcut engraving titled "Iowa—The Disastrous Flood at Rockdale on the Night of July 4th-5th. Scene Near the Dam the Morning After the Storm." It was originally depicted from a sketch by A. Simplot.



RAIN PHOTO BY ISTOCKPHOTO.COM

Sabula Gazette, July 15, 1876

THIRTY-NINE PEOPLE DROWNED

Terrible Fate of the Village of Rockdale, Iowa—The Town Swept Away by a Flood, and Every Inhabitant Drowned.

Dubuque, Iowa, July 6—On the night of the Fourth, the little hamlet of Rockdale, three miles southwest of the city was swept away as with the besom of destruction. Every building in the little town save the Catfish Mill was washed from its foundation and torn into a wreck that defies description. The dozen buildings—all that were located on the bottom lands of the Catfish save the mill—were carried off as if they were so many cockleshells and whirled down the surging and boiling current, crushing them into fragments.

Thirty-nine human beings were swept hurriedly from life into the great maelstrom of death. Men, women and children to that number were drowned, and their stiff bodies—those of the thirty that have been rescued up to this hour—were ranged side by side along the shady side of the mill awaiting the last sad funeral rites. In one instance we saw an entire family of four lying dead; in another every member of the family but one lay dead. The bodies of some were found in the debris of the crushed buildings near the scene of their death, while others, and the greater part of them all, were found along the banks from a few rods to a mile down the stream. Some were almost entirely hid from view by the floods of mud that had been swept along by the maddened waters, with perhaps a hand only exposed to sight, or a foot or a portion of the face, or perhaps only a small portion of their clothing. A large number of little children, boys and girls, ranging from 3 to 12 years old, were the victims of the dread avalanche, and altogether the scene was a most sickening one.

Through the day the people of the village had joined more or less in the festivities of the Centennial Fourth. In the evening the rain began to fall, and all took shelter in their homes or at the stores or saloons. At about a half an hour after midnight the Catfish was discovered to have become so swollen that the streets were overflowing, and escape to the surrounding highlands cut off. Higher and higher rose the rushing waters, while the storm kept pitilessly on. Down rolled the surging waters several feet high and the smaller buildings were swept away. At about 1 o'clock a portion of the dam gave away. Now the stream had grown to 1,000 feet wide and fully twenty feet deep. As the buildings were swept into wrecks, the inmates were buried into the surging torrent, their voices crying out for help amidst the roar of thunder and storm and crash, while lurid lightnings flashed every minute, lighting up the dreadful scene for an instant, and leaving it blacker than before.

Altogether the scene was one to touch a heart of stone. Thousands of people have visited it during the day, and people are going and coming constantly. The neighbors wished kindly alacrity, opened their doors to such of the afflicted as remained, and afford every comfort in their power. The bodies of the dead were washed by kind hands, and many of them taken into the dwellings nearby. The members of the Board of Supervisors were early on the ground, working like Trojans to recover the dead and give care to the living.

Reach Out and Touch Someone

BY *DAN MAGNESON* PHOTOS BY *JAKE ZWEIBOHMER*

"Reach out and touch someone" may have been Ma Bell's catchy 1970s slogan, but the bur-bearing plants of Iowa literally live it: with the same fervor and tenacity with which Arnold Schwarzenegger's movie character in *The Terminator* pursued Sarah Connor, their single-minded purpose is solely that of seeking out passers-by to hitch a ride.

Designed to snag and cling to fur, burs also catch quite well onto the weave of many types of apparel—especially fuzzier clothing like flannel, knitted sweaters and fleece.

Burs are the bane of outdoor enthusiasts, but for those going off-trail, they come with the territory.

This ingenious method of seed dispersal is called epizoochory, and gives stationary plants a set of "legs" to travel and colonize new, sometimes distant locales.

So here are some common hitch-hiking plants you may—I can't resist it—tangle with.

These plants all produce hitchhiking seeds, and are all commonly found in disturbed habitats; places where environmental conditions are unstable, in flux or transition.

I refrain from broader terms like "stick-tights" or "beggar ticks" as many of these quite different plants are known by these very same names.

BURDOCK
(ARCTIUM MINUS)

COCKLEBUR
(XANTHIUM STRUMARIUM)

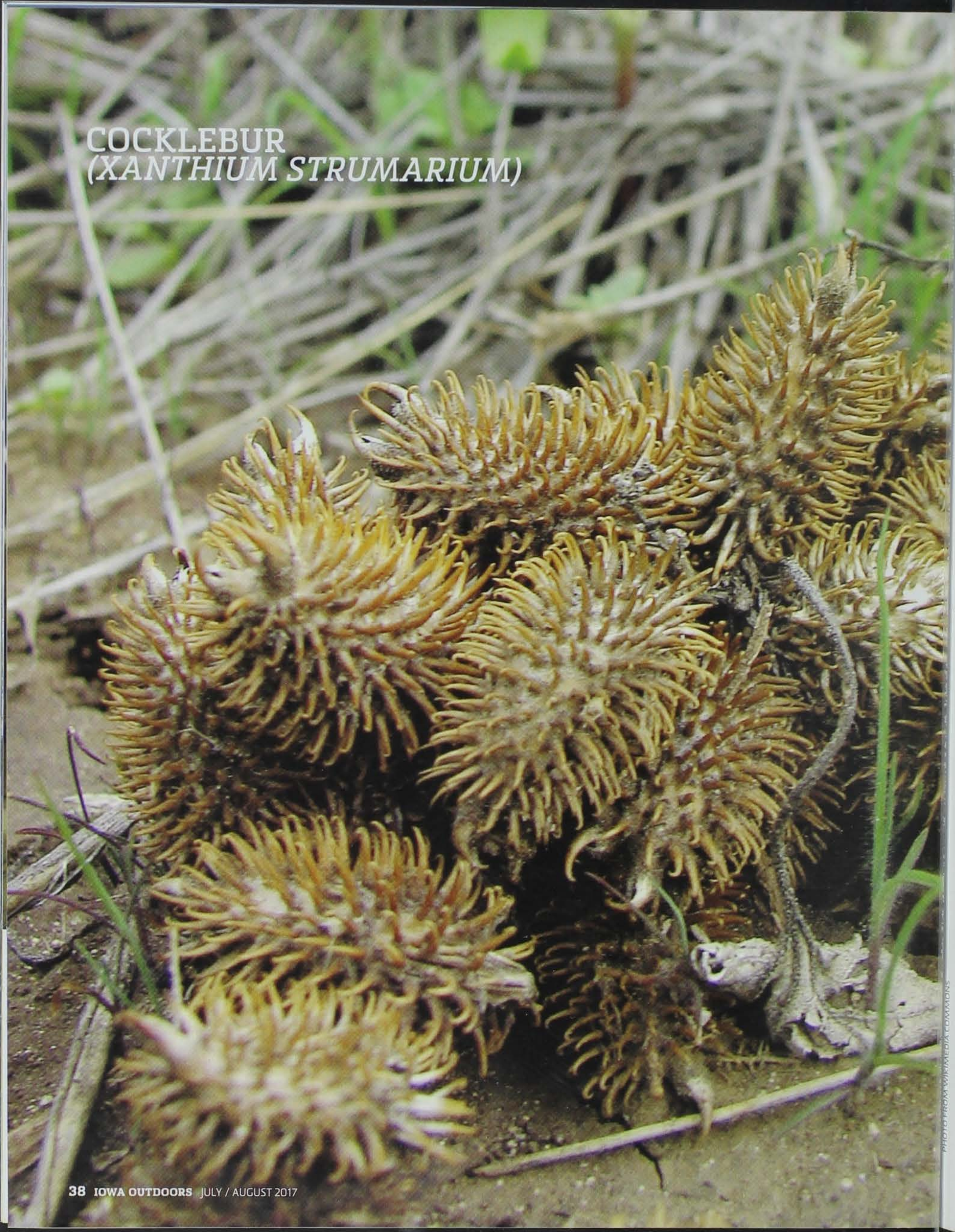


PHOTO FROM WIKIMEDIA COMMONS

Cocklebur (*Xanthium spp.*): This rough-to-the-touch native plant has stems sprinkled with short and minuscule purplish-darkish streaks and deeply notched leaves that lend them a strongly lobed appearance; in overall shape, they subtly remind me of grape leaves. These leaves have three prominent veins and a sandpapery feel on the upper surface, and the underside is also rough. The leaves are attached by long leafstalks, or "petioles," to the main stems.

Careful excavation beneath a newly-emerged young plant will reveal the bur from which it sprang forth.

Cockleburs rely on wind-pollination, with white male flowers and green female structures borne separately on the same plant; no floral scent is emitted. Bur ripen and fruit late summer through autumn, triggered by shorter daylight. Growing near a streetlight may "confuse" the cocklebur into failing to bloom.

The burs are oval or oblong and around an inch long, having a pair of longer and wider pincher-like prickles projecting from one end. Inside is a pair of seeds "pre-programmed" with clever codes: one seed will germinate the following year, while the second is delayed from germinating for at least two years.

Cocklebur seeds contain toxins (though the oil is said to be edible), most potent during the two-leafed seedling stage when the young plant is extremely poisonous to livestock. The toxicity diminishes as it matures.

An Extinct Beauty With A Taste For Poison

Iowa was once home to a native species of colorful parrot, the gregarious, raucous Carolina parakeet. While extinction of that feathered tempest called the passenger pigeon is sad and shocking, considering the sheer magnitude of its original population, the demise of the grackle-sized Carolina parakeet meant our most beautiful indigenous bird vanished into oblivion.

Cocklebur seeds were its favored food. The Carolina parakeet's heavy consumption of toxic cocklebur seeds rendered it poisonous to other animals that dined upon the bird. The famous ornithologist, naturalist and artist John James Audubon had heard of seven cats as succumbing from eating as many Carolina parakeets. As noted in a Dec. 29, 1820 journal entry, Audubon decided to test the effects by feeding 10 boiled Carolina parakeets to his hunting dog Dash, and although Audubon kept a very thorough and meticulous journal, he never again mentioned Dash.

Cockleburs are fond of growing in low-lying, poorly-drained bottomland mudflats and other previously-submerged shorelines. Where flooding and water fluctuations occur, conditions are ideal and cockleburs may form nearly-pure stands, covering large expanses of exposed earth.

In past generations, some children were told by prank-pulling adults that cockleburs were "porcupine eggs." And kids once "incubated" them in an attempt to hatch!

Burdock (*Arctium spp.*): A good-looking but rank-smelling artichoke relative, the appearance of the lower leaves of this Old World plant reminds me of rhubarb. The leaves are woolly beneath, at least while young, and the petiole is often hollow. Blooms are similar to thistle flowers, and the magenta flowers are pollinated by insects. Around August, after clover declines, but before goldenrod is available, burdock helps tide over honeybees with their crucial pollen and nectar supplies.

Burdock's genus name, *Arctium*, was derived from the Greek word for "bear," likely referring to the scruffy, shaggy brown-tan burs; the angular, elongate seeds contained within burdock's orb-like burs have a prominent ridge running their length. Burdock prefers rich, moist soil of barnyards, perhaps due to animals congregating for long periods of times, dislodging accumulations of burs from their coats.

Peeled burdock roots are edible—and quite tasty. Though not as popular in Europe as it once was, burdock remains a common root vegetable in Asian cuisine. Before widespread use of hops, burdock was a bittering agent in European beer. Soft drinks concocted from burdock roots and dandelion leaves have long been a popular beverage in Great Britain, and are available in North America health food stores, along with burdock-based teas, pills and drops. I find the soft drink so tasty it ranks among my favorite.

Burdock's biggest fame is inspiring invention of the miniaturized hook-and-loop fastener Velcro, thus creating "zipperless zippers" as an alternative fastener.

In 1941, George de Mestral, a Swiss electrical engineer, returned from an Alps hunting trip with his dog. His inventive, curious mind—and a microscope—examined the hooked tips of burdock burs that plagued him and his dog. He shrewdly realized if he could mimic burdock's ability to bind surfaces together, it could result in a practical product. After experimenting with cotton, he found success by turning to recently-invented synthetic materials.

Clad in a Velcro suit, television host David Letterman once performed a humorous demonstration of the clinging properties of Velcro on the Feb. 28, 1984 episode of *Late Night* by jumping from a trampoline wearing Velcro and sticking to a wall (look for this on YouTube).

Given a choice between which I'd rather have latch onto me—cocklebur or burdock—I'd choose cocklebur: their robust bur is tougher on fingers, but more likely to remain intact on removal, while weaker burdock tears and shreds, leaving pieces in clothing that irritates skin.

Stickseed (*Hackelia spp.*): Never has any plant been so accurately named. The upper portions bear stems where burs grow; upon seed maturity stems dry, turning brown

and brittle. In a somewhat wavy fashion, seed-bearing branches extend horizontally outward to increase their "reach" to better achieve a successful "catch."

Stickseed tolerates shade, and adds greenery to forest floors. Burs are evenly spaced like birds perched on a power line, but hanging downward like bats. Each fruit is subdivided into four nutlets.

Often an entire bur-bearing stem breaks away and adheres on contact, in turn shattering into smaller components. If several stems are brushed against and snagged all at once, the entire plant is uprooted. From personal experience, despite being tall plants, stickseed seems drawn to shoestrings like a magnet to steel; picking shoestrings clean after an encounter is tedious. Though stickseed doesn't bond as strongly to apparel as other burs, they make up for it with generous helping of small seeds that are difficult to pluck off with fingers.

If you are looking to quickly find an example of this plant, it is entirely possible that you might find stickseed growing under a clothes dryer discharge vent (how do you suppose it ever got there?).

Tick-trefoil (*Desmodium spp.*): These pea family members have attractive foliage, and pretty, but small, flowers, suggestive of sweet pea. Tick-trefoil is the most esteemed of Iowa's bur-bearers.

Tick-trefoil is often a minor nuisance, rarely so prevalent to menace agricultural or other endeavors. Their fruits consist of a short series of two to six flattened, fuzzy, segments linked end-to-end, resembling a string of green pearls, called "loments." Individually, each little seed-capsule is triangle-shaped, with well-rounded sides and "corners."

Tick-trefoil can be a farmer's friend as well as a boon to wildlife: they fix nitrogen with their root systems to enrich the soil and are very palatable to domesticated grazing animals. The plants are a preferred food of white-tailed deer and rabbits too; gamebirds relish the single kidney-shaped bean contained within each little pod. Tick-trefoil is especially quail-friendly, and is commonly found in the bobwhite's crop. They provide great brood-rearing habitat for tiny quail chicks, and are highly attractive to insects that provide protein for the chicks.

Globally, Desmodium has proven beneficial in agricultural "push-pull" technology. Plants that attract organisms harmful to the crop are planted around the farmed field, and within such a field Desmodium is planted between crop rows to inhibit organisms that induce disease or damage to cultivated crops themselves.

Tick-trefoil is probably the easiest bur to remove: besides their fuzzy surfaces adhering relatively weakly, they are flat and relatively large, so you can pry up an edge with a fingernail and peel them off with ease.

Devil's Pitchforks (*Bidens spp.*) are members of the enormous sunflower family, and among the different species can vary from two, three and four "prongs" at one end of the seed, although all I ever encounter in Iowa are two-pronged seeds.

The different species can be difficult to distinguish afield, but the very common and widely-distributed *Bidens frondosa* is most typically-encountered. It is evocative of the Dahlia plant, and the leaf arrangement is reminiscent of poison ivy, and most commonly found in damp locations. They generally have reddish stems. Often found near water, they fall victim to muskrats, which consume the entire plant, while ducks eat the seeds. It's reputed an outstanding herbal remedy, especially relative to urinary tract mucosa.

Sand bur (*Cenchrus longispinus*): The majority of U.S. species inhabit the coastal southeast and southwestern deserts, but this particular species occurs both well to the north and far inland.

True to their name, they love growing in sandy soils—though not restricted to growing in such conditions. In nutrient-poor sandy soils they grow in a low, sprawling form, numerous enough to take on a mat-like presence. Like many burs, sand burs are more common in recently-disturbed areas.

The elongated, spike-like cluster of seeds is known as a "panicle" and may have a zigzag appearance. Two bur types are produced: those arising from upper areas usually germinate within the first year, while seeds produced further down may remain dormant for over three years. Inside each fruiting bur are one to three edible seeds.

While most bur-producing plants are broad-leafed herbaceous plants, sand burs are in the grass family. Their smooth and straight prickly spines—finely-slender

STICKSEED
(HACKELIA VIRGINIANA)

DEVILS PITCHFORK OR BEGGARS TICKS *(BIDENS SPP.)*

PHOTO BY FRANK MAYFIELD, WIKIMEDIA COMMONS

and well-honed sharp needles—strongly discourage the sensitive lips of grazing animals. Small wonder sand bur increases in abundance as grazing pressure increases.

I wince at the mere thought of these burs, the meanest bur of the whole bunch: their sharp points sting upon penetration, and can draw blood.

Unlike other burs encountered while hunting in heavier late autumn and winter clothing, sandbur seems painfully more prevalent during warmer late summer or early fall fishing weather. Maybe this is due to wearing less clothing—and thinner fabric—with more skin exposed to stay cool.

Here are more bur-bearing plants you may happen across in Iowa, albeit sporadically—at least for now.

Puncture Vine or "Devil's Eyelashes" (*Tribulus terrestris*): With scattered records from numerous counties; puncture vine is a secondary noxious weed in Iowa. I first encountered these burs in Idaho's Magic Valley, walking barefoot—indoors in the dark. Switching on the light and squinting closely, I thought at first glance it was a vertebra from a small rodent. The next day, an Idaho native clued me in—"goatheads," she said.

And indeed that is their general shape.

Stepping on these little guys in your bare feet in the middle of the night wakes you up quicker than a whole pot of coffee. With the advent and nearly-universal use of rubber for tires and shoe soles, puncture vine seed dispersal is amplified.

Arising from small lemon-yellow blossoms of five petals, these tough, rock-hard burs have short, stout, sturdy spines that imbed tenaciously into hooves, paws and rubber and can easily flatten bicycle tires. When enough are stuck into your shoe bottoms, it feels—and sounds—as though you are walking on gravel.

Each bur separates into five segments, each containing two to four seeds. Each seed has variable dormancy, and simply bide their time until the right sprouting conditions. When a seed is past its prime, another may be coming into its prime. They can survive up to 20 years, but usually three to seven years.

Native to warm climates of southern Eurasia, north Africa and Australia, puncture vine doesn't compete well in lawns. It thrives in tough places—hard, highly-compact soils or lightly-used gravel parking lots and cracks in concrete. Stems and foliage radiate outward several feet from where the taproot penetrates, similar to a spider's web or a starfish shape to form a mat. The taproot's extensive network of fine rootlets enables puncture vine to survive dry conditions. It is a perennial in the Deep South—but an annual up north.

This species has its long-term survival dialed in: seeds function like a caltrop—the family name is Caltrop—a metal device deployed in military operations. A caltrop has three metal "legs" arranged to form a triangular-shaped, stable base with a fourth point sticking straight up. In this manner, any "side" set onto the ground results in the fourth point sticking up. In ancient times, caltrops were effective against war elephants and the soft feet of camels. Their use continues today to puncture and flatten vehicle tires.

There are numerous tales how puncture vine entered the United States, perhaps most colorful, is that wardens planted them around the Old Idaho Penitentiary to deter prison escapes. On a macabre note, puncture vine has been a murder weapon, its burs coated with poisonous juices of the African genus Acokanthera and strewn onto paths used by intended victims.

One way to remove puncture vine bur consists of rolling a pumpkin over the plant and throwing away the bur-covered pumpkin.

Tall Sock-Destroyer (*Torilis arvensis*): A member of the carrot family, tall sock-destroyer is also known as spreading hedgeparsley. Some sources say it's an Old World plant—others say it's from British Columbia.

The "spreading" portion of its nickname derives from the way the weight of its flower clusters causes the plant's slender stems to sprawl. The leaves resemble small-scale fern fronds. Unlike cocklebur or burdock, its straight or slightly-curved bristles lack hooks at the end. Despite this, the smallish, oblong burs easily—and stubbornly—attach to clothing. Often whitish to rosy-green, it browns at maturity. Stems remain erect after the plant dies. Tolerant of alkaline soils, it forms colonies, and courtesy of its own clinging burs, is distributed far and wide, with occurrences in Iowa.

The World's Most Successful Hitchhikers

Just as burdock traveled from Europe to North America, the aptly-named common cocklebur made it from North America over to Europe, to become even more common. Looking at those clever curved hooks at the ends of those sturdy spines, it doesn't take gazing into a crystal ball to figure out how they migrated such a long distance.

Indeed, with the global exchange of humans and domesticated animals, many bur-bearing plants now enjoy world-wide distribution, providing testimony that this method of seed dispersal is very successful.

The next time you are muttering under your breath, cussing and cursing burs as you pick them from your clothes or your pet's coat, take a moment to at least respect them for having devised such a canny way to pioneer into new areas and perpetuate their kind, and be grateful that within the plant kingdom, it is a rare phenomenon: less than 5 percent of plant species use epizoochoric means to spread seeds.

Just imagine what your life would be like if it was how all plants dispersed seeds.

PHOTO BY FRANK MARTINELLI, WIKIMEDIA COMMONS

OUR TOP 9 PICKS FOR TROUT STREAMS BEGINNERS

BY SHANNON HAFNER PHOTOS BY BRIAN BUTTON

More than 300,000 catchable-sized rainbow and brook trout, and 110,000 fingerling brown trout, are stocked in hundreds of winding, limestone-strewn miles of gin-clear, gurgling northeast Iowa streams through October.

Here are several streams ready-made for those new to trout fishing or a little rusty. Find out why it's said "trout don't live in ugly places." Here are our picks for the best beginner streams, listed alphabetically by county:

Clayton County

1) BLOODY RUN CREEK, two miles west of Marquette—lots of wild brown trout with 10- to 12-inch fish common. Near the parking areas, stream access is fairly easy for anglers with limited mobility. Or, hike beyond where

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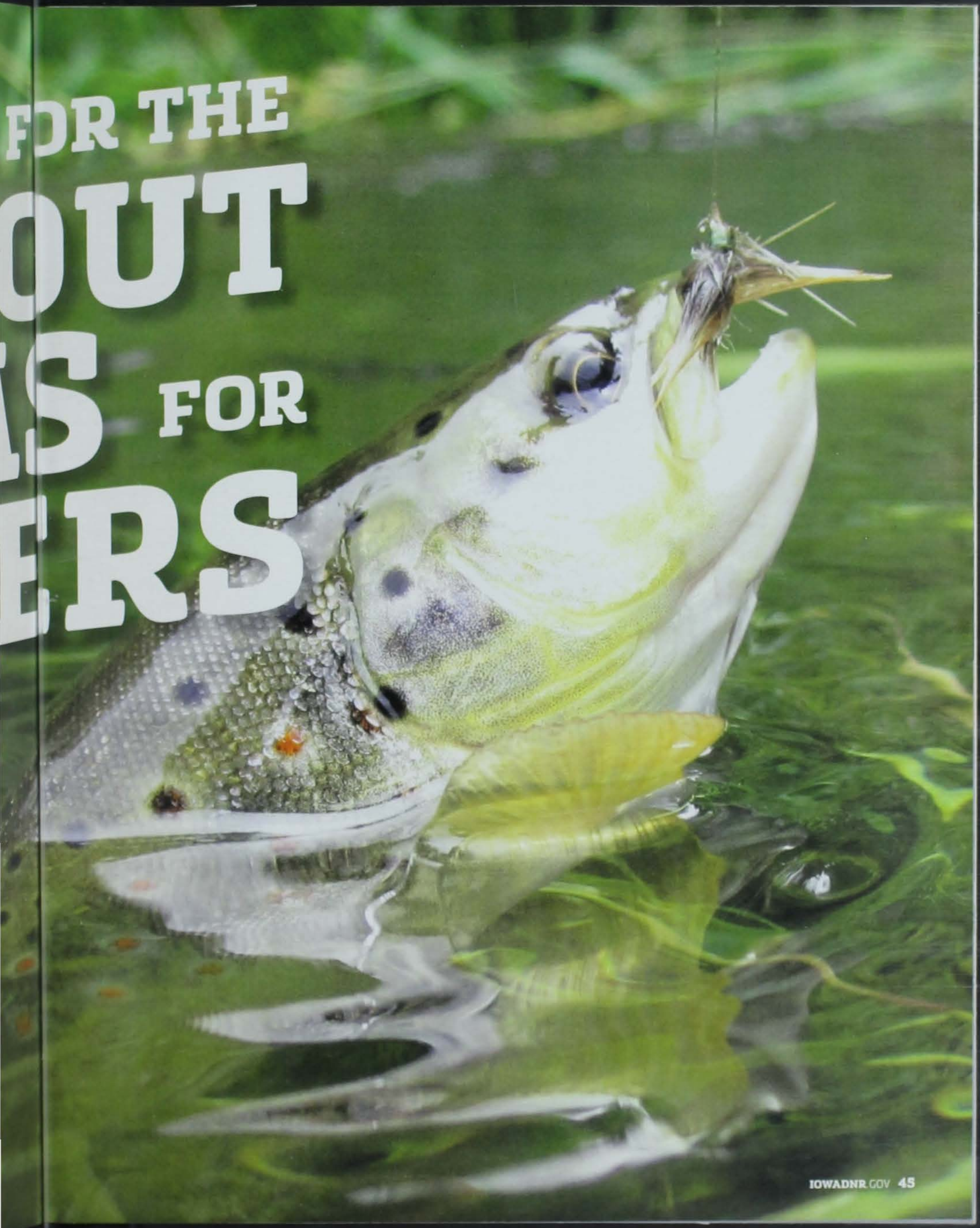
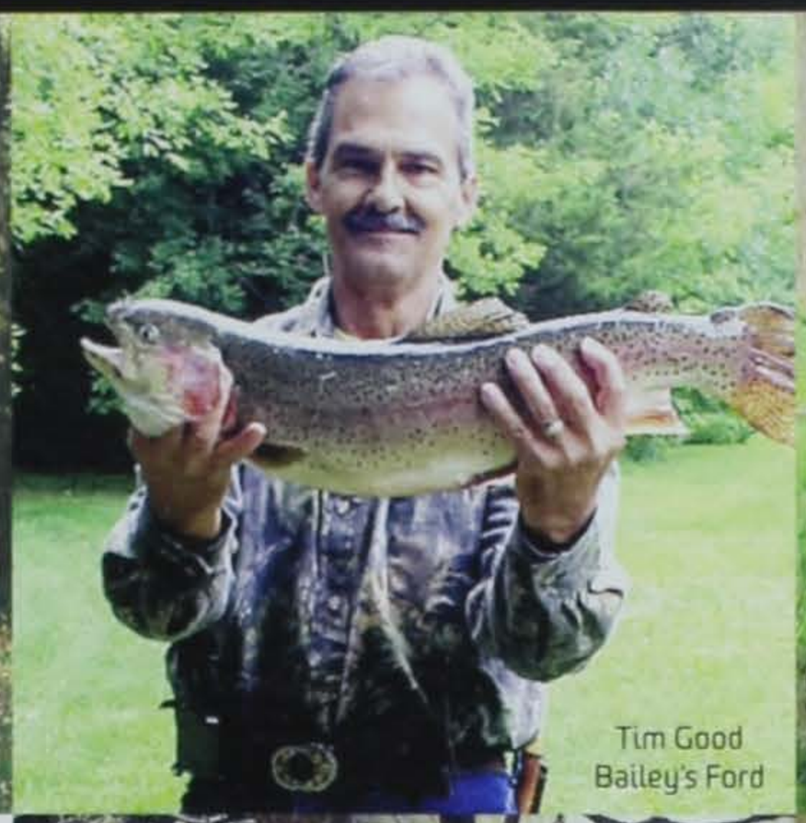
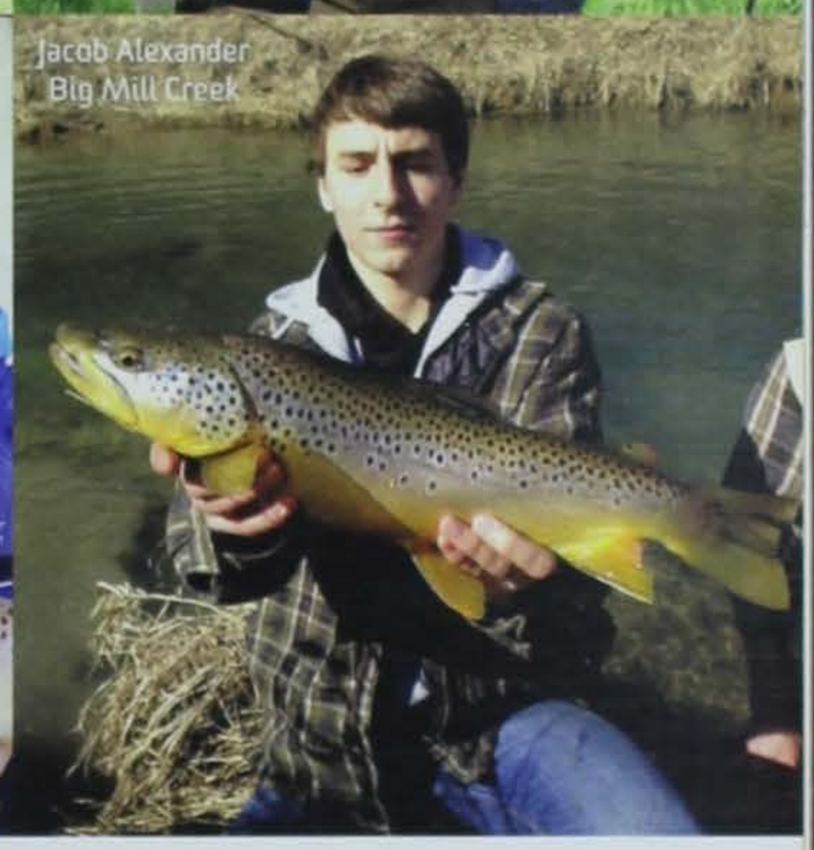


Coldwater Creek

ANGLER PHOTOS FROM MASTER ANGLER PROGRAM—IOWADNR.GOV





Visit a Trout Hatchery

Think of trout in terms of just going from the stream to the frying pan? It all starts in reverse, from a pan filled with fertilized trout eggs, to hatching, rearing, then release to streams and back to the pan of a skilled angler. To learn more, schedule time during your next trip to northeast Iowa to visit one of three trout hatcheries at Manchester, Decorah or Big Springs (upriver from Elkader). The grounds to each facility are open to the public year-round sunrise to sunset. Fisheries employees are available during office hours to answer trout fishing and hatchery operation questions.

most anglers tread to find an artificial lure-only stream portion where all brown trout must be more than 14 inches to keep. Try dangling a worm under a bobber in dark, deeper pools. Cast a lure in front of a series of bank hides and let it drift downstream for adrenaline-spiked hit-and-run action.

2) JOY SPRINGS, about three miles west of Strawberry Point, this popular spot to catch brook and rainbow trout is just a little off the beaten path; it takes a short walk to get to the stream. It boasts large and deep pools usually fished with live bait, jigs or spinners, but fly anglers can try weighted nymphs. Most trout here run 10 to 12 inches—perfect eating size—with an occasional larger wily, wild brown trout lurking to test your skills.

Delaware County

3) BAILEY'S FORD, 3 miles southeast of Manchester—catch stocked brook and rainbow trout along with an occasional wild brown trout. Easy access and a full-service campground stream-side make this one of the most popular trout waters in Iowa. Use jigs, spinners, prepared bait, and live bait in pools or in-stream habitat features. Most trout here are 10 to 12 inches. Avoid large crowds with trips on days without announced stockings.

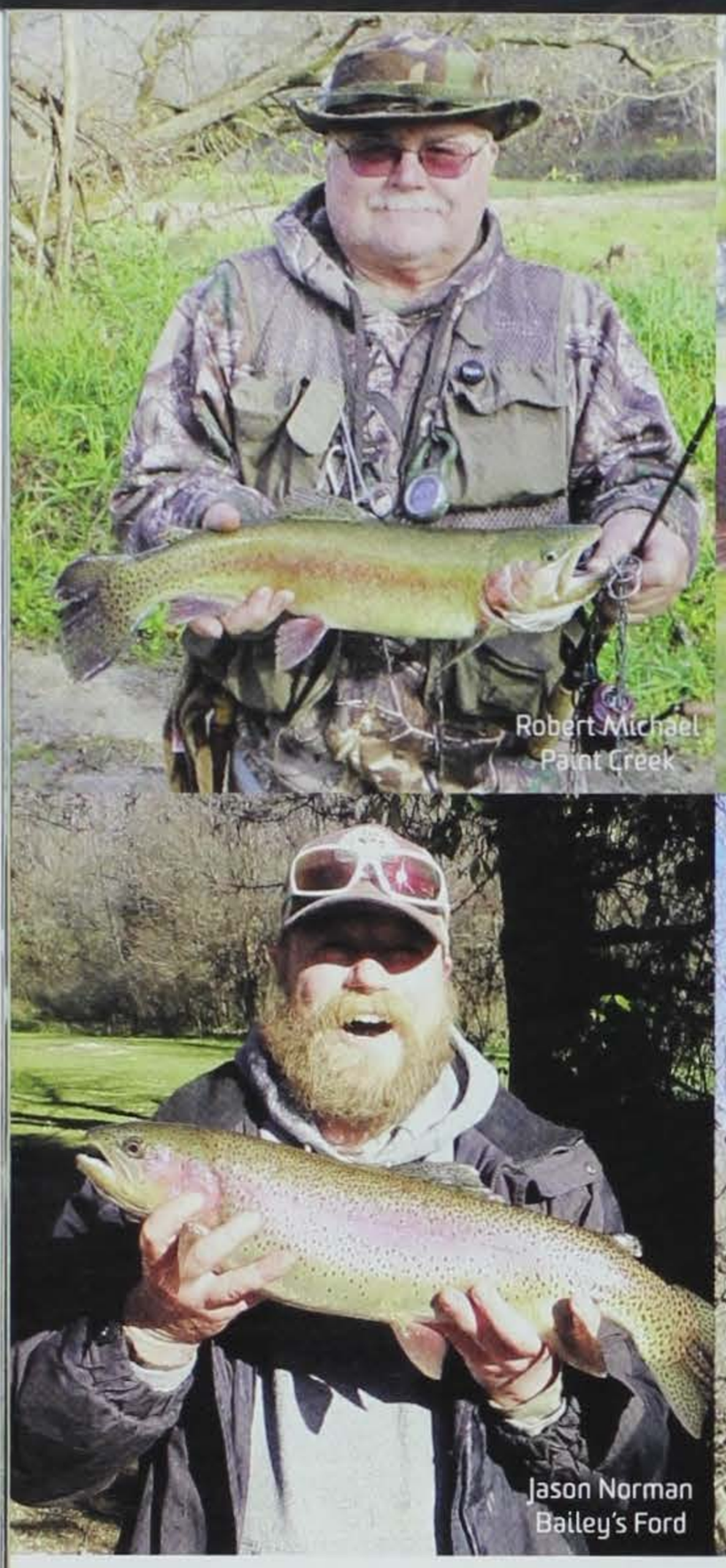
4) FOUNTAIN SPRINGS, two and a half miles northeast of Greeley—this drive-through park and stream, only a few miles off paved roads, is stocked with brook and rainbow trout and also has a few wild browns. You don't have to walk too far to fish. The few deeper pools and runs hold most of the larger trout in this small water with long stretches of shallow bedrock riffle. Trout here are mostly 6 to 12 inches. Use live or artificial baits.

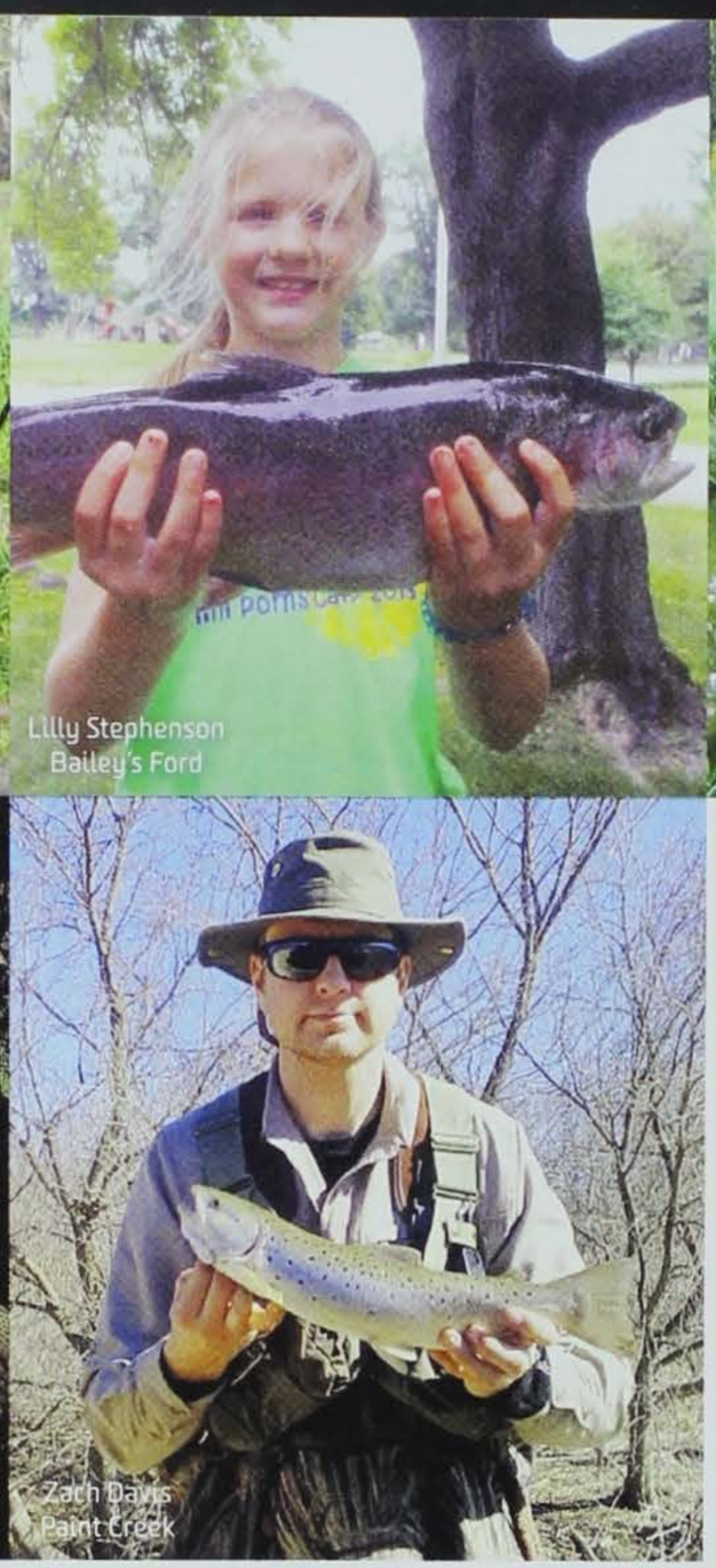
Dubuque County

5) SWISS VALLEY, three miles south of Dubuque—catch stream-reared browns as well as stocked rainbows at Catfish Creek in Swiss Valley Preserve and Campground. The preserve features a nature center with interpretive displays about local wildlife, ecology and natural history. After fishing, explore more than 10 miles of self-guiding nature and hiking trails radiating outward from the center through forest, prairie and wetland areas. Use nightcrawlers, plastics, spinners and jigs in large pools and along bank hides. Most trout run 8 to 13 inches with a few large (16-inch) browns.

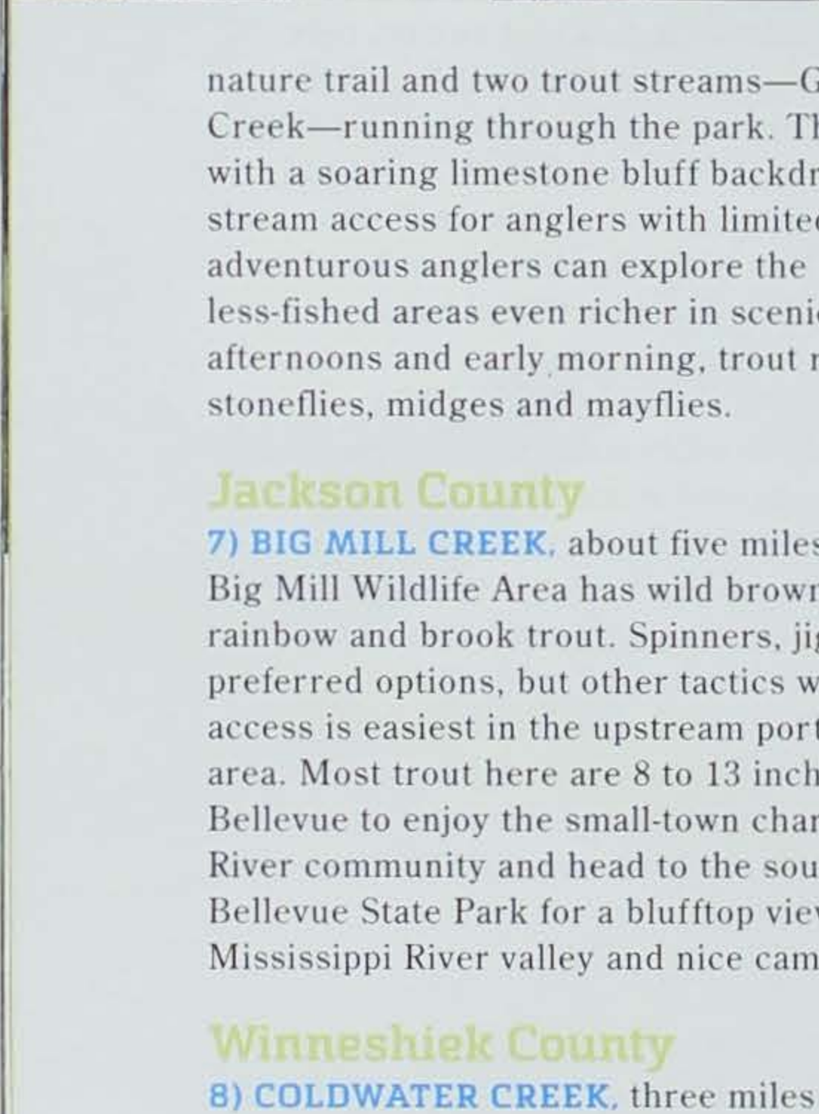
Fayette County

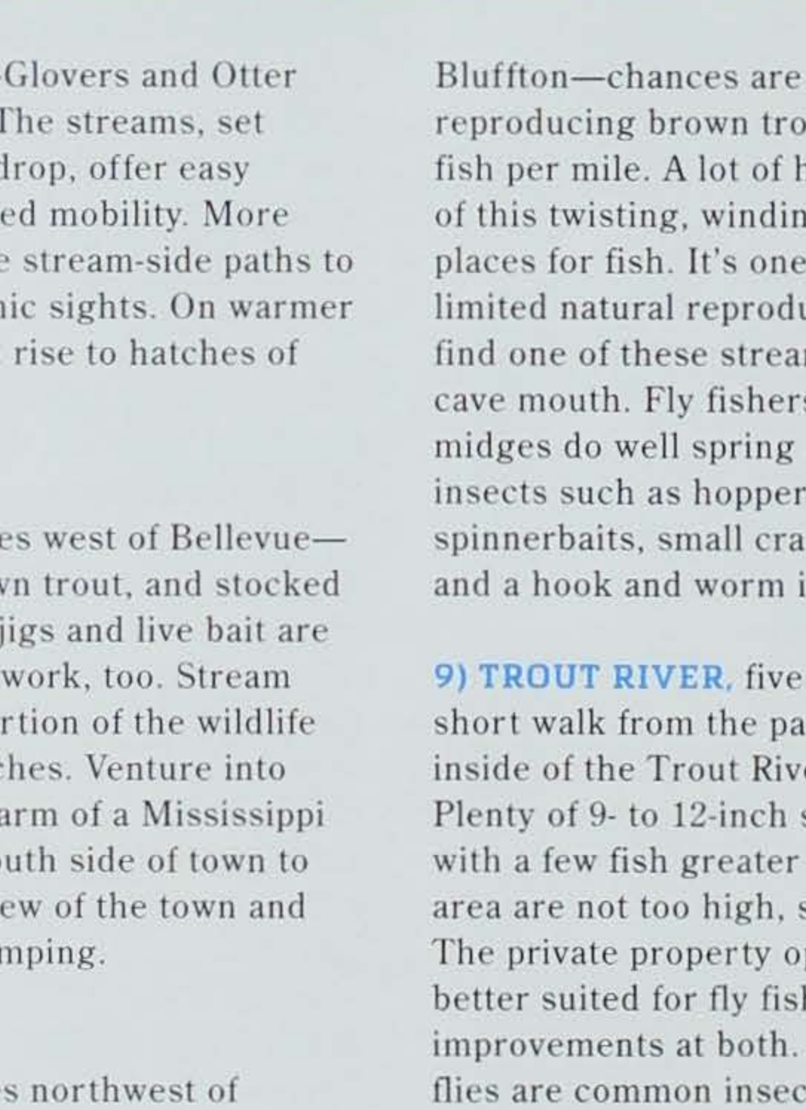
6) GLOVERS CREEK, three miles southeast of West Union—Echo Valley State Park features a 2.5 mile


Robert Michael
Paint Creek


Lilly Stephenson
Bailey's Ford


Alex Shepard
Joy Springs


Jason Norman
Bailey's Ford


Zach Davis
Paint Creek

Get Stocking Information

Check conditions before you go with the free and weekly Iowa Fishing Report (sign up at *iowadnr.gov/fishing*) or the 24-hour trout stocking hotline at *563-927-5736*.

Learn more about Iowa's trout streams, including maps, stocking calendar, amenities, regulations and fishing tips on the DNR's trout fishing page at *iowadnr.gov/trout*.

nature trail and two trout streams—Glovers and Otter Creek—running through the park. The streams, set with a soaring limestone bluff backdrop, offer easy stream access for anglers with limited mobility. More adventurous anglers can explore the stream-side paths to less-fished areas even richer in scenic sights. On warmer afternoons and early morning, trout rise to hatches of stoneflies, midges and mayflies.

Jackson County

7) BIG MILL CREEK, about five miles west of Bellevue—Big Mill Wildlife Area has wild brown trout, and stocked rainbow and brook trout. Spinners, jigs and live bait are preferred options, but other tactics work, too. Stream access is easiest in the upstream portion of the wildlife area. Most trout here are 8 to 13 inches. Venture into Bellevue to enjoy the small-town charm of a Mississippi River community and head to the south side of town to Bellevue State Park for a blufftop view of the town and Mississippi River valley and nice camping.

Winneshiek County

8) COLDWATER CREEK, three miles northwest of Bluffton—chances are good you will catch a naturally reproducing brown trout here with more than 1,000 fish per mile. A lot of habitat work installed along much of this twisting, winding stream creates many hiding places for fish. It's one of the few streams that has limited natural reproduction of rainbow trout; you may find one of these stream-reared fish near the impressive cave mouth. Fly fishers using caddis flies, mayflies and midges do well spring and fall. Use a variety of terrestrial insects such as hoppers and crickets in the summer. Try spinnerbaits, small crankbaits, jigs tipped with plastics and a hook and worm in deeper holes.

9) TROUT RIVER, five miles southeast of Decorah—a short walk from the parking lot will get you to the stream inside of the Trout River Wildlife Management Area. Plenty of 9- to 12-inch stream-reared brown trout await with a few fish greater than 16 inches. The banks in this area are not too high, so fishing from shore is possible. The private property open to fishing downstream is better suited for fly fishing. Find a great deal of habitat improvements at both. Mayfly, midge, gnats and caddis flies are common insects in these areas.

ANGLER PHOTOS FROM MASTER ANGLER PROGRAM—IOWADNR.GOV

Great Campgrounds for Trout Anglers

Plan your northeast Iowa trout fishing adventure with a stay at one of the region's great state parks—Pikes Peak, Backbone, Volga River, Bellevue and Yellow River State Forest. Find out more details and make reservations at *iowadnr.gov*.

Coldwater Creek

Rough-seeded fameflower

ATLAS OF DISCOVERY:

THE QUEST FOR IOWA'S ROUGH-SEEDED FAMEFLOWER

STORY AND PHOTOS BY *BRIAN GIBBS*

When I was younger, my father gave me one of the best gifts any adventurous kid could receive: a *National Geographic Atlas*. For many years of my youth, I was lost in between the states of its pages and then reality happened. I moved to college, got a job and tried to settle down. All the traveling dreams the atlas held were subsequently packed away until the summer of 2013 when I rediscovered the atlas during a journey back home.

After browsing through it, I asked my father if he would take a two-week vacation with me. It had been quite some time since just the two of us had done anything adventurous. As he always has been, Dad was open to any travel suggestions. It wasn't long before we had the truck packed and were heading west.

We drove all day until we reached Great Sand Dunes National Park in Colorado to traipse up and down the massive dunes with sunshine and smiles on our faces. Not a care in the world, just happy to share the unexpected joys found in this new and strange landscape.

Reflecting back on this moment always makes me smile, knowing how rich we were in those infant moments of endless discovery. I feel the same sensations of elation and love every time I venture into Iowa's Fish Farm Mounds State Preserve and Wildlife Area.

Located along the Upper Mississippi River between Lansing and New Albin, Fish Farm Mounds is a unique combination of a 3-acre state preserve and 912-acre wildlife management area. I had first read about Fish Farm Mounds in *The Guide to Iowa's State Preserves* and had heard about its rich plant diversity from fellow botanists. The sandy soils there are home to many unique plants, including one exceptional plant—the rough-seeded fameflower, a 4-inch beauty that only blooms once a year in the late afternoon. The plant is a rarity in Iowa and only occurs in a handful of places. On my first visit to Fish Farm I went with one thing in mind: to become famous by photographing a fameflower in Iowa.

It's early July and the sun-baked drive to Fish Farm has already taken a toll on me. The air conditioning in my car has been broken for a month, and to complicate matters, my passenger side window does not roll down. I arrive at the forest in mid-afternoon, slam the car door shut and walk briskly up a set of steps to a sandy terrace above the Mississippi. Immediately, I am shaded under the branches of twisted oaks, and humbled in the presence of 30 conical burial mounds. Every heated worry of mine seems outrageously pointless in this moment of time. After admiring the mounds, I hike the trail west into the heart of an unfamiliar forest.

As I walk further into the sandy valley, the surrounding 300-foot bluffs quickly turn themselves into mountains. The sandy floodplain I am walking on formed thousands of years ago when the Mississippi River was nearly 100 feet higher than its present day level. Older yet, the surrounding sandstone and limestone bluffs formed when the area was once a shallow sea. Over millions of years, the sea and its animals eventually dried out and now compose the towering rock layers beside me.

There are numerous plants and shrubs growing on the forest floor, many of which I have never encountered before. However, one of the shrubs resembles a huckleberry plant I have seen out west, while another shrub looks like a blueberry bush found in northern Wisconsin. Upon closer inspection of the fruits, I notice one plant, reminiscent of a mini pine tree, rising from the sandy soils.

Ground pine, or club moss, is a type of lycopodium that dates back to the Carboniferous Period 300 million years ago. During this time, Earth was dominated by massive insects and amphibians, swamps and high concentrations of carbon dioxide. In order to support their tall trunks, the earliest lycopods were some of the first organisms to grow wood. Over time, these large lycopods fell into the swamps to leave behind their woody debris. In the absence of decomposing fungi, the lycopods would eventually turn into the material we know today as coal. I wasn't sure what could top the discovery of lycopods until I climbed up to a nearby blufftop.

From a sandy outcrop above the mounds, mature trees stretch as far as the human eye can see. Different shades of green are contrasted by the location of the forest canopies. To the south and west, dark green and silver undersides of oak trees stir in the breeze. Below the oaks, lighter shades of green arise from hackberries, basswoods and black walnuts. The ghostly paper birch glows on top of distant bluffs. All the trees seem to be serenaded with a chorus of birdsong. The "sore-throated robin" song of a scarlet tanager, the "drink your teaaa" of the eastern towhee and a lone field sparrow are among the most recognizable.

Looking over the floodplain of the Mississippi, silver maples intermix with cottonwoods. Off in the distance, two shiny tops of corn silos stand aloof over the river. The highway drags on with seemingly small model cars and replica bikes cruising on its concrete path. I can see my tiny car baking in the hot sun below and wish I had brought the sunscreen along.

I lay my head down to catch some shade under a gnarly cedar tree. An eagle glides effortlessly above a warming sea of prairie grass. On a branch of side oats grama, a single firefly rests. I drift asleep in the compressed late afternoon heat and wake to a setting sun. My first visit to Fish Farm Mounds has come to an end without a sighting of the fameflower, yet I will be back again to seek out this legendary plant, and next time I will bring help.

My second visit to Fish Farm Mounds was not nearly as easy as the first. I had convinced a coworker that a rarely observed plant was growing somewhere deep in the middle of the sandy forest. We took the work truck and headed north for a day of what I called "professional development."

The July day was one of the hottest of the year. The moment we stepped out of the vehicle, the thermometer read 95 degrees. Combined with the excessive humidity, the heat index was well over 100. Thankfully, this time I brought sunscreen and bug spray. Shortly after entering the forest, I stop to show my cohort the blueberry and huckleberry bushes I discovered on the last trip. We don't linger long; the heat and potential discovery drives us forward. Eventually, we come to a place in the forest where a stand of black oaks have succumbed to oak wilt.

Typically, red oak is the dominate tree species in northeast Iowa, but in these sandy soils, black oak reigns king. Black oak is quick to regenerate in these oak wilt stands and dozens of interesting plants are growing in the opening, including the uncommon, but sun-loving, wild lupine. Running across this flower's path immediately transports me back to Rocky Mountain meadows where in early summer, wild lupines turn the valleys into seas of glowing lavender. Not only is lupine an incredibly beautiful plant but it also host plant for the federally endangered Karner blue butterfly.

The Karner blue is a specialist dependent on wild lupine for its survival. The butterfly produces two hatches of eggs per year, with the first emerging in April. After rapidly feeding on lupine leaves, the insects pupate and transform into an adult butterfly around mid-May. In sandy forests and pine barrens, these adults gather vigor by sipping on flowering lupine. When they're full on sweet juices, the butterflies reproduce and lay their eggs on the showy lupine plants. The tiny caterpillars eventually emerge to feed on the lupine leaves for the next 21 days. This marvelous cycle of renewal is completed in July when the second generation of adults take to the freedom of flight.

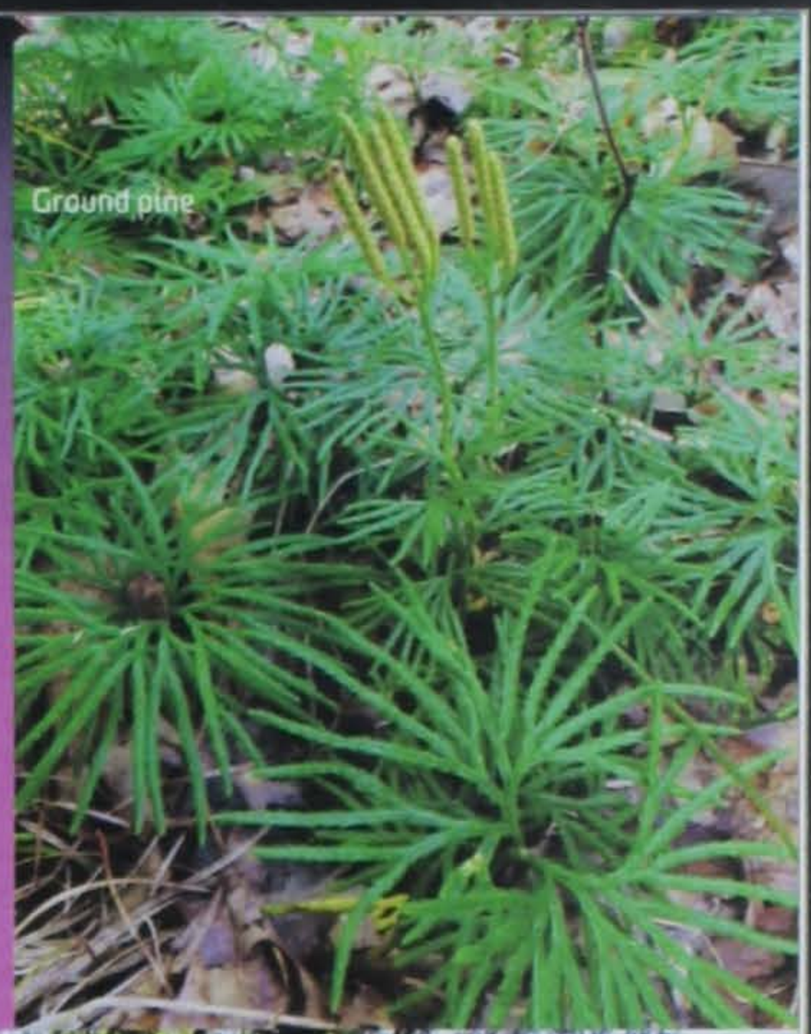
Daydreaming too much about butterflies in the skies prompts me to get tangled up in a bramble of berries. I lose my balance and fall face first into the thorny thicket. As I begin to pull myself up, I notice a species of berry I've never seen before.

Prairie phlox

Fish Farm Mounds State Preserve is a three-acre prehistoric cemetery (mound group) located in the southern portion of the 576-acre Fish Farm Mounds Wildlife Area. The area is 6 miles north of Lansing on Highway 26 in Allamakee County.

The Preserve contains 30 conical mounds of various sizes, built by Native Americans from 100 B.C. to 650 A.D. This land was donated to the state in 1935 from the Fish family. It became a preserve in 1968 and is listed on the National Register of Historic Places.

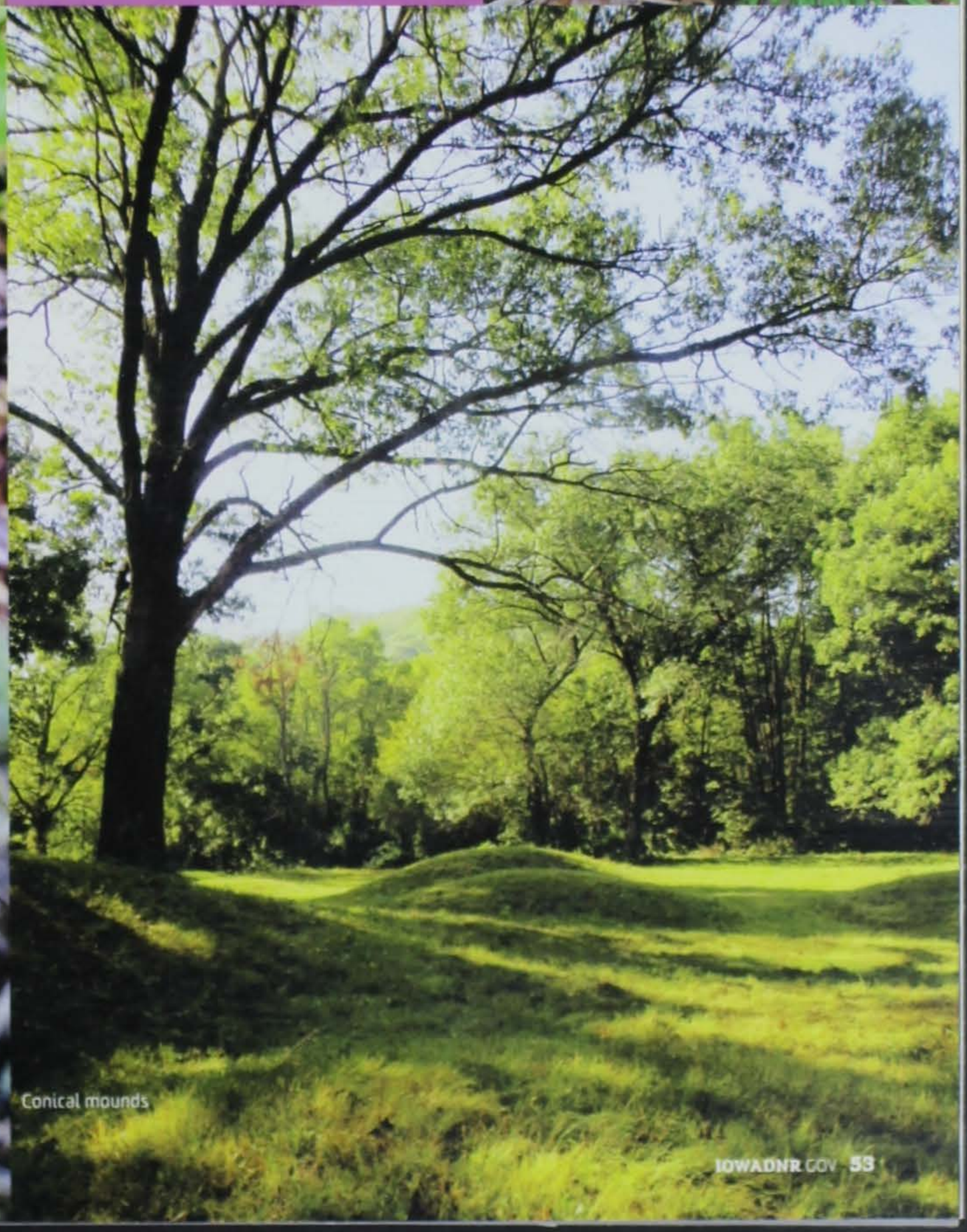
A Lycopod called ground pine or clubmoss, grows in clumps in the preserve. Fern-leafed false foxglove blooms late summer and is an Iowa endangered plant. Find large tracts of young black oaks where oak wilt has killed off mature trees.



Ground pine

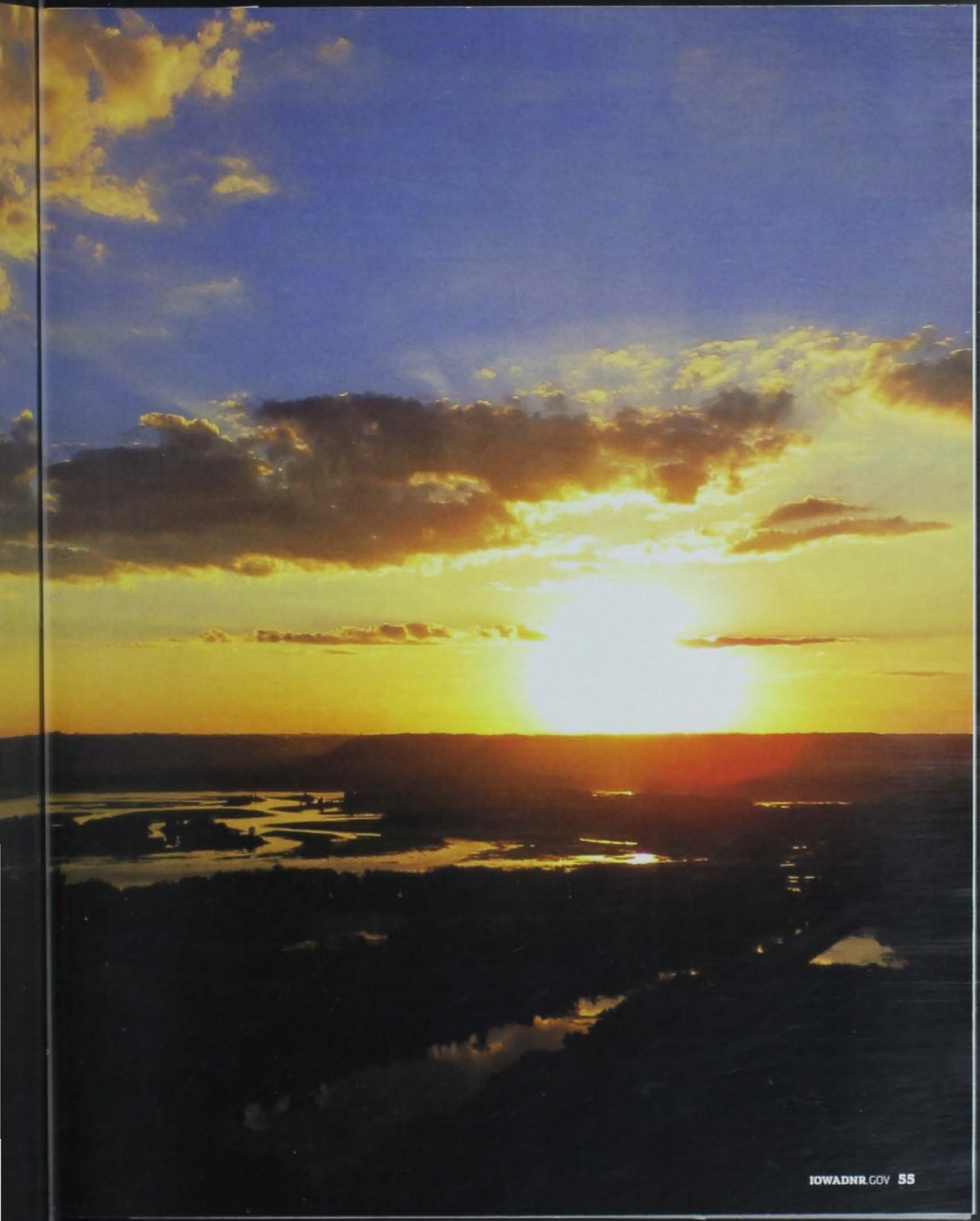
Young black oak

Fern-leaved false foxglove



Conical mounds

Adventurous hikers who make the trek up the bluffs at Fish Farm Mounds State Preserve and Wildlife Management Area are rewarded with spectacular sunrise and sunset views of the Mississippi River which flows about 3 miles to the east. Three miles to the north, the Upper Iowa River empties into the Mississippi.



Much like a raspberry at first, then growing purple as it ripens, dewberries are a unique type of fruit that can grow in Iowa's sandy soils. They differ from raspberries and blackberries because they are trailing plants, whereas the other berries grow upright thickets. The low-lying dewberry has literally wrapped itself around my foot. I try to untangle myself, but end up feasting on its fruits instead.

With scratched legs and raspberry-stained hands, I smile in the abundance this forest provides. Judging from the red and purple stains on my co-worker's face, she must have delighted in the berries as well.

After 30 minutes of rambling the hills, we make it to the sandy barrens where fameflower was last recorded in the park's floristic inventory. On this open hillside, the enthusiasm for the botanical adventure is quickly muted by sweltering heat and the realization we are both out of water. The berry scratches on my legs sting painfully in the midday sun.

Searching for the plant on my hands and knees rewards me with burning salts of disappointment. It doesn't take long before I call off the search. In dehydrated stupor we race back to extra water left in the truck.

To this day, I'm not certain if my coworker viewed the day more as a "professional development day," or as a day of tolerance for her adventure-addicted coworker. During the next quest to find the fameflower, I went alone and made sure to take a full "mental health" day.

A friend of mine who works as an interpretive park ranger in Minnesota shares a similar love of the fameflower. One day from her park, she sent me a photograph of the tiny flower blooming. After this exchange, I took off the next day to go search Fish Farm Mounds for the rare opportunity to see the fame in bloom.

I made sure to be more organized this time around. I packed extra water and wore a hat to keep sweat and sunscreen running down into my eyes. It's the simple things that often get overlooked during the feverish search for something new.

Feeling more prepared, I re-visited the sandy knoll where fameflower was thought to be growing. After exploring the ground for nearly an hour without any luck, I was unsure of how the plant's unique succulent leaves could have eluded me. Yet out of the corner of my eye I discovered a new plant blooming yellow from the sandy soil.

Fern-leaved yellow false foxglove is a beautiful sun-kissed plant that mingles with oak trees and feeds the bumblebees. Listed on Iowa's endangered species list, this plant prefers sandy upland woods where its roots parasitize oak roots for water and nutrients. The foxglove then counts on bumblebees or hummingbirds for pollination.

Drawn to its gold flowers, I lay on my stomach and quietly snap a few pictures of the foxglove. It was not until the next day's shower that I discovered there must have been a large patch of poison ivy growing next to the foxglove. As a result, the following week was spent at home itching ivy instead of soothing the itch to travel.

Upon returning from a recent vacation out west, I stopped with a friend to explore Pipestone National Monument in southwestern Minnesota. It was a glorious late July evening. A rainstorm had just raced through the area, dark clouds hung in the distant prairie skyline. Inside the park, the sun was softly illuminating the pink and red rocks from which generations of Native American have made their sacred pipes.

On my way out of the monument, an eerie force took over my senses and made me stop in my tracks. I paused to look back at the setting sunlight being peacefully absorbed into the rosy cliffs. I reflected back gratitude for all the gracious migrations shared with friends. Joy was then reciprocated back to me in a small rock pool, where several tiny fameflowers bloomed at my feet.

I'm not sure if I shouted or cried in the moment of their discovery. I was humbled to be in a treasured place with such great company as fameflowers and friends.

After doing some research, it turns out the species of fameflower found at Pipestone was not the exact one I'd so vigorously been looking for in Iowa. Instead it was a subspecies commonly referred to as prairie fameflower. Yet, I still carried the beauty of the moment with me on my next visit into Fish Farm Mounds.

The most memorable journey into Fish Farm Mounds was shared in the light of my companion. I had prefaced the trip to her with all my previous faults and failures in looking for this famed flower. I'd warned her of the sweltering heat, stinging nettles, sandy shoes, poison ivy and swarms of biting insects, and yet she still chose to come with.

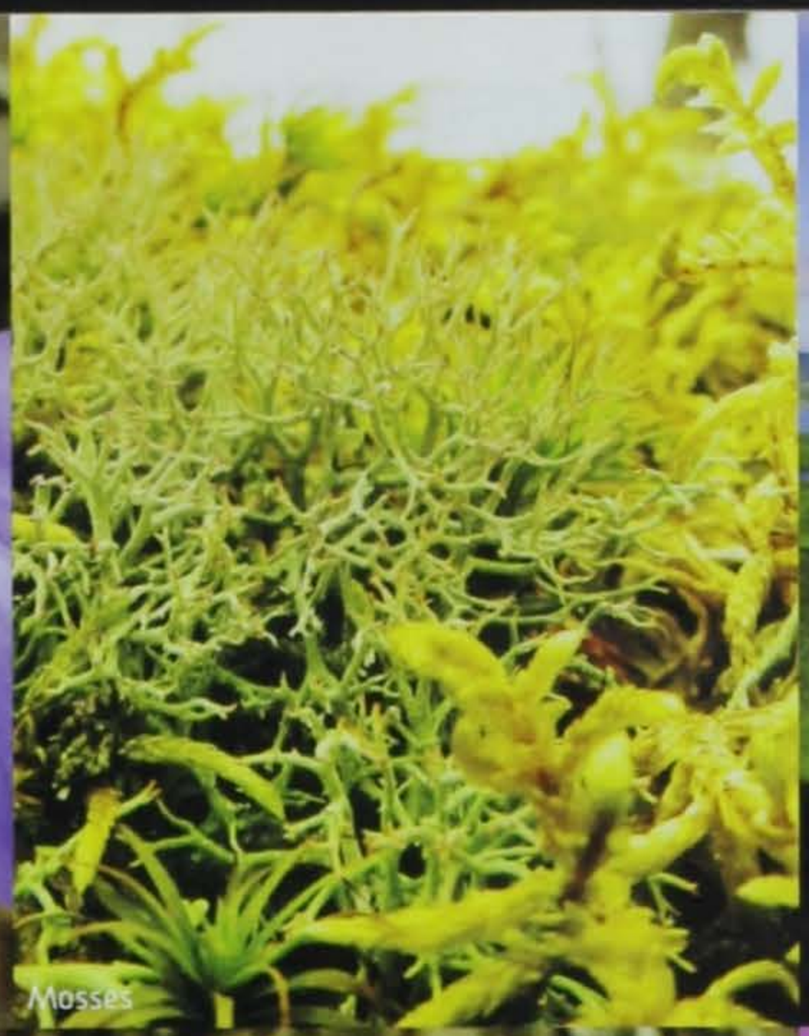
We had not traveled very far into the forest when I noticed a giant cloud of mosquitoes circling over her head. I went to swat them away but wound up swiping her head instead. I apologized, then applied bug spray around the two of us. Unfortunately I didn't communicate that I was going to be using the repellant, subsequently leaving her in a fog of bug spray.

We weren't even half way to the fameflower and my partner was covered in mosquito bites. She was also red in the face from being half soaked in sweat and half covered in DEET. Yet, without hesitation, she forgave me.

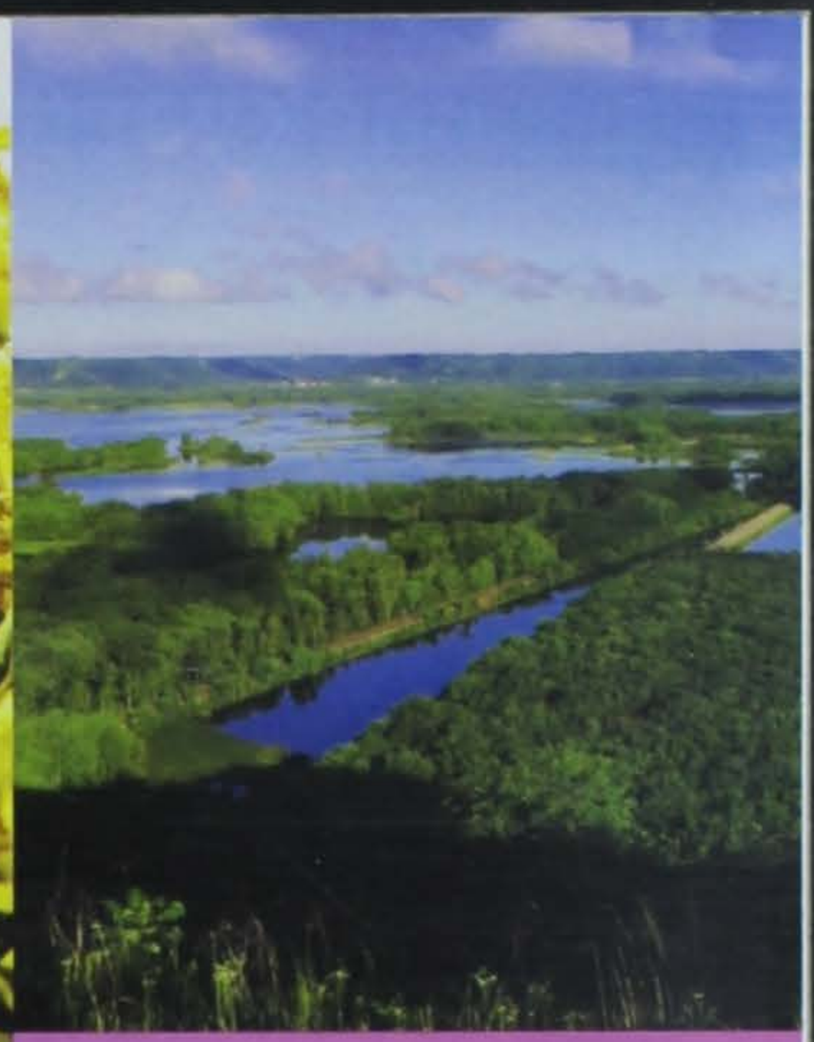
We continued traveling through the forest until the bugs finally drove us home. I never asked her what she felt about that day, but I do know that it was a transformational moment for me. For once, I was vulnerable long enough to allow her Karner blue eyes to grace my sylvan soul. We still continue to explore the infinite atlas of discovery together, and plan to wed this summer at Bellevue State Park.

In the end, despite years of searching, I have never found the infamous rough-seeded fameflower in Fish Farm Mounds. Maybe its little flowers burst open too briefly for me to ever grasp, or perhaps the plant doesn't exist in this woodland anymore. Yet, I still return to this forest on occasion; it's the rush of a new voyage and nostalgia of falling in love all over again that always makes me smile.

Bird's Foot violet



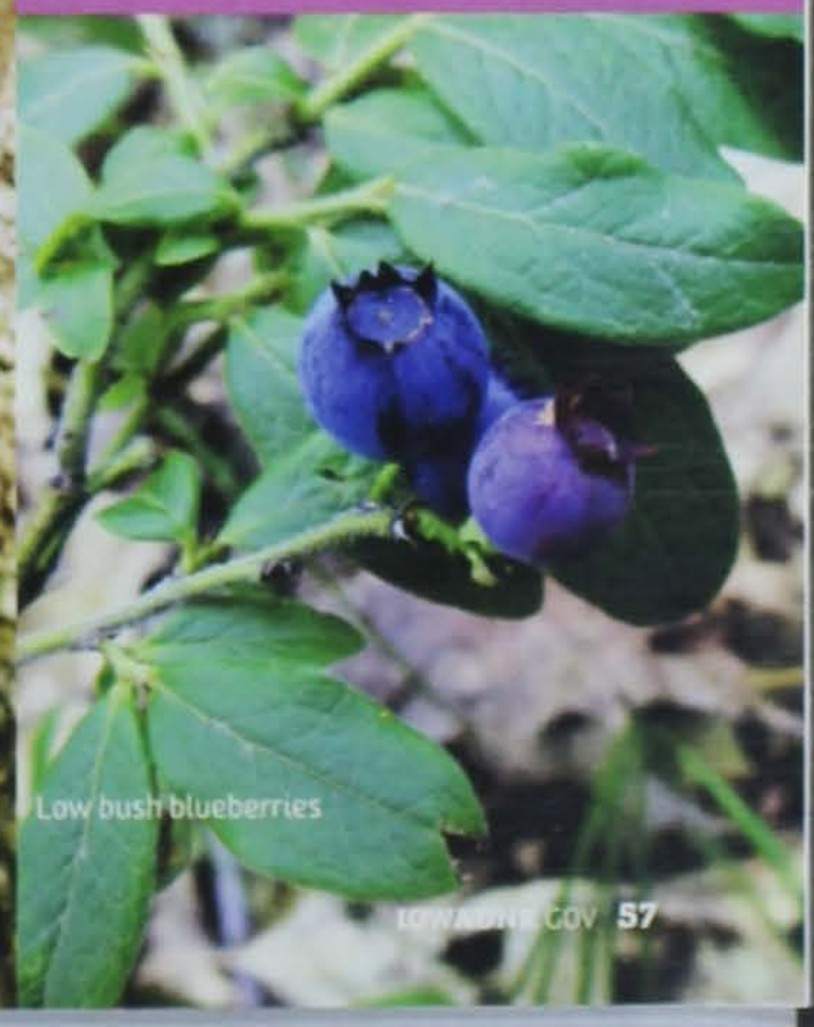
Mosses



Birds foot violet and fascinating collections of mosses can be found on sandy outcrops at Fish Farm Mounds State Preserve. Hikers who exert themselves to reach the area's higher vantages are well rewarded with summer scenes of the Mississippi River as it pushes onwards towards the Gulf of Mexico.

Shown below left, the wild lupine plant is also the host plant for Karner blue butterflies which are believed extirpated from Iowa, but populations exist in Wisconsin.

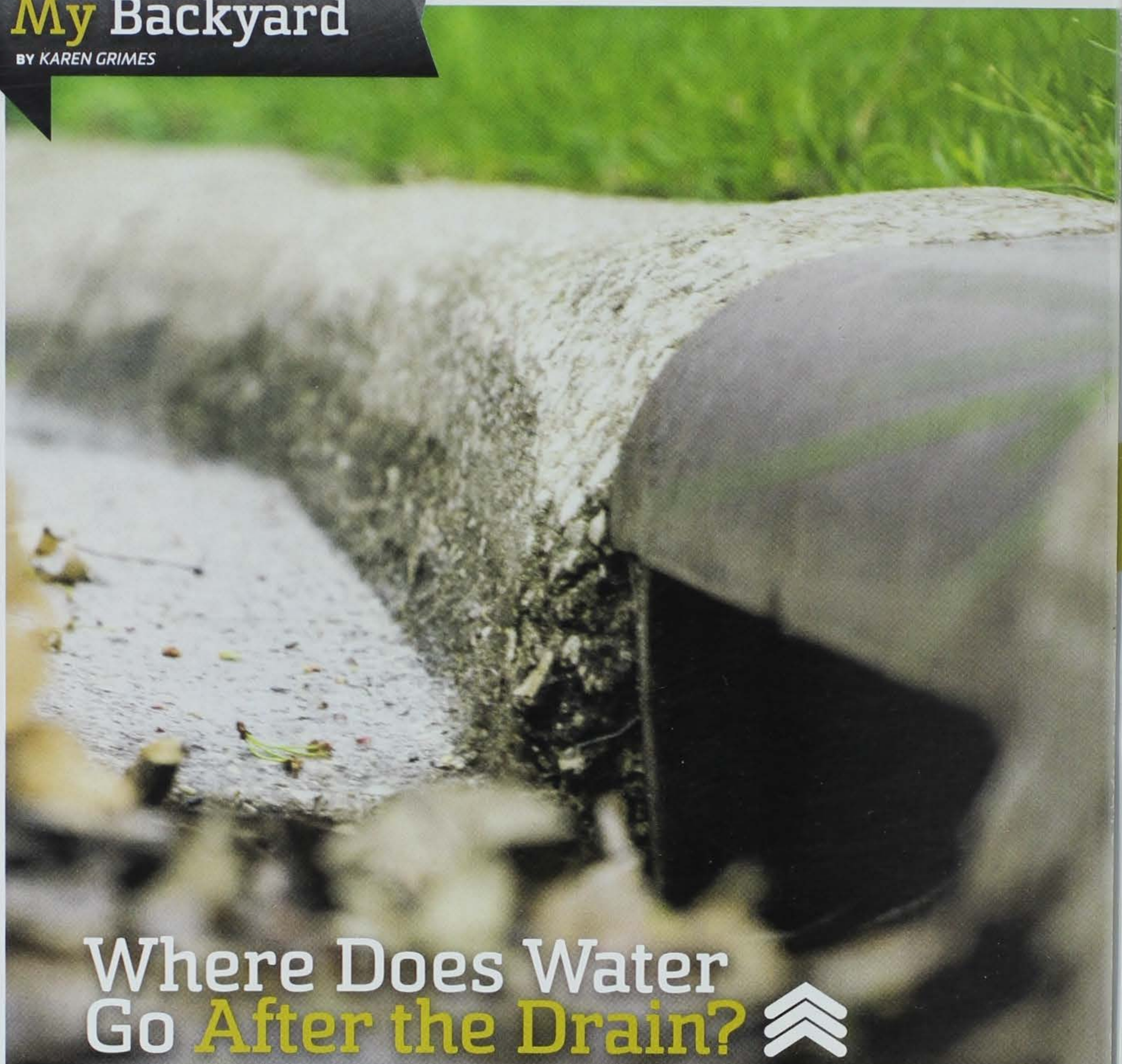
Wild lupine



Low bush blueberries

My Backyard

BY *KAREN GRIMES*



Where Does Water Go After the Drain?

Whether it's rainfall from a summer storm roaring across the land, or wastewater from your household, all water heads downhill, often into a drain.

When it rains, each tiny raindrop is powerful, smacking bare ground like a mini-bomb, dislodging soil and tossing it into the air. Whether in a farm field or yard, it can carry soil particles into nearby ditches or streams. Often, rainfall picks up nutrients, pesticides and waste from livestock or pets, as well as runoff from roofs and oily sheens from roads and parking lots.

In towns and cities, rain flows into storm sewers along street curbs, beginning an underground journey, down the drain and to the stream. Anything you put in your yard, driveway, street or storm drain flows directly to a nearby river or lake. Protect those favorite spots and the fish, crayfish and aquatic insects that live there by preventing spills and proper use and disposal of household chemicals, medicine, paints, litter and lawn care products.

Flush It or Dump It

Dirty water from your bathtub, sinks, washing machine and toilet takes a similar journey, down the drain. Wastewater contains potentially harmful substances,

PHOTO BY JAKE ZWEIBOHMER

PHOTOS COURTESY ONE WASTEWATER SECTION

Wastewater is cleaned before returning to the environment. Clarifiers allow fecal matter and toilet paper to settle to the bottom to be scraped away for sludge treatment. Fats, grease and soaps are skimmed off the top. Remaining liquids pass to secondary treatment in aeration tanks where bacteria consume wastes before final treatment. Sludge solids go to oxygen-free tanks, called digesters, heated to at least 95° for up to 20 days. This stimulates anaerobic bacteria growth, which consume organic materials and emits methane gas. Some facilities capture the gas to produce energy.

Get Involved

For ideas on how to be eco-friendly at home, check out our Earth Day Every Day and In Your Own Backyard boards at *pinterest.com/iowadnr*

The DNR's wastewater engineering section issues wastewater permits which are required for construction of any municipal or industrial treatment facility that discharges treated wastewater to a river or stream.

Sewage first runs through a bar screen (not shown) to remove garbage that shouldn't be flushed—rags, plastic bags, baby wipes, diapers, etc. These damage pumps and cause clogs. Bar screens are cleaned by mechanical rakes in large facilities. Small or older facilities may manually-scrape the bar screens.The removed items are stabilized with lime and landfilled.

PHOTOS COURTESY DNR WASTEWATER SECTION

including suspended solids such as human waste, food scraps, oils, chemicals, soaps and industrial byproducts. Since 1972, the federal Clean Water Act requires sewage to take a wastewater treatment tour before release back into a stream.

In rural areas, wastewater treatment is also required. For many homes, that's an individual septic system, an underground tank where most solids settle out. Liquids then flow into a leach field where holes in buried pipes allow liquids to seep into the soil—a natural biological treatment that protects groundwater.

In a city, all household drains connect to a larger pipe in the basement that runs below your yard and empties into the city's underground system of sanitary sewers below the streets. Sanitary sewer pipes get bigger as they near the wastewater plant in order to carry all of the loads from homes, businesses and industries.

Cities must meet water quality standards using different options to remove pollutants from wastewater before returning it to the environment. Some communities use primary treatment to screen and settle out about 40 or 50 percent of solid material, like fecal matter, toilet paper and things that never should have been flushed. All communities

use a secondary treatment technology, which harnesses bacteria to break down organic matter like food particles or fecal material. The final settling process removes up to 99.9 percent of coliform bacteria. The last treatment kills significant amounts of remaining disease-causing organisms using chlorine or other disinfectants. An increasing number of communities use more advanced treatment to further reduce pollutants like nutrients.

Once water is clean enough to meet discharge standards, it leaves the wastewater treatment plant and flows into a nearby stream or lake and is used by boaters, anglers and perhaps even re-consumed later as treated drinking water.

Hazardous chemicals can harm the beneficial bacteria used in wastewater treatment plants to remove waste. Household chemicals—from pharmaceuticals to fertilizer to pesticides—can interfere with wastewater treatment. And, they might end up in your local streams and lakes. Please take these and other household hazardous chemicals to a Regional Collection Center. Find yours at iowadnr.gov (search "RCC locations").

Add only toilet paper and tissues to your toilet. Grease, diapers, plastics, baby wipes, Q-tips, personal hygiene products and rags can clog pipes, causing untreated sewage to back up into your home or overflow at a manhole. They also cause problems at pumping stations and wastewater treatment facilities where they require physical removal. These products are garbage, not drain material, and should be disposed of with household trash.

PHOTOS BY JAKE ZWEIBOHMER

Bee Watering Hole

All animal life needs water to survive, from the largest four-legged creatures to the tiniest ones. It's no different for our backyard insects, including honey bees, which are important flower and vegetable pollinators, and critical to the pollination of valuable cash crops. Bees use water in a variety of ways, and the number of bees foraging for water depends on the needs of the colony.

Sometimes the quest to conquer thirst, however, can be deadly. For those species not designed to survive in water, swimming pools, water bowls, even bird baths and hummingbird feeders can become drowning machines to smaller winged pollinators, especially bees. The issue is compounded when bees and other pollinators seek water from areas treated with insecticides. Bees collect water drops that naturally drip from the tips of stems and leaves, which can be contaminated if insecticides are used. Worse, pesticides can be carried back to hives, causing more problems.

Help our winged pollinators stay hydrated—and alive—with a simple, inexpensive bee waterer. Fill a pie tin with marbles or flat stones—think inexpensive ones from the home decorating section of your local department store—and add water to the top of the marbles. The marbles give the bees a spot to land so they don't drown. In return, you'll have ample bees to pollinate your fruits, vegetables and flowers.

DID YOU KNOW

Foraging bees exchange water to in-hive worker bees through trophallaxis—the direct transfer of water from one bee to another. If the water is accepted quickly, foragers sense the need is high and continue their collection. If in-hive workers are slow to use the water, fewer forager bees will leave for more.

In the heat of the summer, water cools the hive through evaporation. Water is placed atop a sealed bee cell, and worker bees fan the water vigorously. As the water evaporates, it cools the hive. Nurse bees feeding developing larvae need vast amounts of water to mix with pollen and nectar to produce the jelly used to feed larvae. In winter, stored honey tends to crystallize as it dries, and water is needed to dissolve it before bees can eat it.

Park Races

READY FOR A RACE IN THE PARK?

Combine some of Iowa's most beautiful areas with your love of fitness challenges. Check out a new DNR list of events at *iowadnr.gov/parksfitnessevents*.

Find 5Ks, triathlons, marathons and similar events open to the public.

"This is another great way for Iowans to discover and enjoy state parks," says Todd Coffelt, DNR parks bureau chief. "What better way than with a run or race in the natural settings our parks provide."

For overnight stays, enjoy 93 cabins and more than 4,000 campsites, all reserveable through the fitness event webpage or *iowadnr.gov/reservations*.

To add a new event, race coordinators wishing to host a state park race should first contact the individual park office for guidance. Most organized park events require special event permits, obtained 30 days in advance of the event.

BY *MARIAH GRIFFITH* PHOTO BY *AARON BREES*

Ruby-throated hummingbird

(Archilochus colubris)

Hummingbirds make up the entire family Trochilidae within the order Apodiformes, which they share with swifts ("apodiformes" means "without feet" because of their footless appearance in flight). Only five hummingbird species are documented in Iowa. Of the estimated 20 million ruby-throated hummingbirds worldwide, more than 80 percent spend time in the U.S. every year.

CHRISTMAS IN JULY

These festive colored birds are spotted in all 99 counties from early April through late September. Mature birds are iridescent emerald from the back, with a light belly. Males sport fancy red throat patches to flaunt during mating displays. Called a gorget, it looks similar to the armor plates of the same name that covered throats of medieval soldiers. Immature birds have darker brown tones mixed into their underbelly and black tails with white tips.

PROTEIN PREDATOR

Although nectar and pollen are calorie rich, hummingbirds get extra fat and protein from insects such as flies, ants, spiders, mosquitoes, aphids, gnats and small bees. They commonly steal meals from a spider's web or prey on insects caught in tree sap.

INVISIBLE DINNER MENU

Like many insects, hummingbirds can see ultraviolet light to view flower markings our eyes can't detect. These marks act as targets or runways that give aerial pollinators information about flower size and depth. They prefer orange and red tubular flowers such as bee balm, honeysuckle, jewelweed and trumpet vine, but also sip tree sap and sugar water from feeders.

BIRDIE WANT A FEEDER?

Inexpensive feeders can be purchased or made at home. Use a red design and fill it with a sugar water solution of ¼ cup sugar to 1 cup water. Avoid adding potentially harmful food coloring. Mix well, and change solution often. Cloudiness indicates fermentation and harmful alcohol production. Thoroughly empty, clean and rinse fermented solutions before refilling.

TINY BRAIN, GREAT MEMORY

Hummingbirds can be long-lived (the oldest banded bird lived more than nine years), and have excellent memories. They remember migration routes and feeding stations well, searching areas where feeders were in previous years, even if the feeder was removed or relocated. Females remember previous nesting sites, and reuse or rebuild a nest for the new breeding season.

BABY SOFT

Bowl-shaped nests built of dandelion or thistle down glued with tree sap or spider's silk are usually just big enough to hold a thimble. The mother stamps the bottom of the bowl flat, and gently molds the sides by tucking them between her chest and chin. The outside edge is usually camouflaged and stabilized with bits of sticks, moss and leaves. Females may repair and reuse the same nest multiple years. Nests are usually found amidst a single downward-sloping branch. Females lay up to three white, penny-width eggs and provide all parental care for three weeks, when chicks fledge.

MINE MINE MINE

Both sexes are aggressive, chasing other hummingbirds away from nests, feeders and flowers. A more aggressive species sometimes spotted in Iowa is the rufous hummingbird—documented chasing chipmunks and larger bird species. Both rufous and ruby-throated hummingbirds weigh about as much as a nickel and are about the length of two paper clips, so their spunk is astonishing.

MARATHON MIGRATION

Ruby-throats spend spring and summer here, then do a lot of flying to winter in Central America. Flying across the Gulf of Mexico requires more energy than their normal body mass provides. So, before departing, they double their body fat. That fat immediately burns to fuel the grueling, 20-hour non-stop trans-Gulf flight. For a bird that normally sips nectar every few minutes, that's quite a feat.

Warden's Diary

BY ERIKA BILLERBECK

FUGITIVE

Approximately once every three years I manage to be in the right place at the right time. And since I just spent my share of coincidental luck for the year, criminals around here should be pretty safe from my watchful eye for the next two. This would be tolerable if I had used my chance to catch a life-time poacher or nab the mastermind of a wildlife trafficking ring. But I guess beggars can't be choosers.

At first I was listening to the radio call purely for entertainment. While Cassie, a seasonal officer, and I were in the southern part of my county checking anglers coming off the river, a motorcycle chase was underway further north.

We listened to the action unfold as we drove toward the Hawkeye Wildlife Area in search of more boats and anglers. The chase, involving a blue "crotch rocket" motorcycle, began in Mount Vernon. The bike then sped down Highway 1, crossed the line into Johnson County and was, at that moment, proceeding across Mehaffey Bridge. Summertime weekend traffic on twisty Mehaffey Bridge Road is no joke. I cringed when I heard a deputy report that the motorcycle was traveling in excess of 100 miles per hour threading the needle through oncoming traffic while going uphill toward town. Deputies were no longer in pursuit, but that didn't seem to slow the motorcycle down. After surviving his wild ride on Mehaffey Bridge Road, the driver entered North Liberty where he proceeded to blow through several stop signs at dangerous speeds. Shortly thereafter, the motorcycle was out of sight. Police looked around town and checked on a couple of similar-looking bikes, but never found the correct one.

When I heard that the driver was nowhere to be found, I half-jokingly told Cassie, "Just watch, he's probably going to end up at Hawkeye." I say "half-jokingly" because virtually every time there is a pursuit in the county, I predict they will run to Hawkeye Wildlife Area. Hawkeye is as close to being "in the sticks" as you can get in an urban county. It is full of hiding places and is usually vacant of crowds, which seems to appeal to those running from the cops. But a crotch rocket? I doubted it. Crotch rockets are designed for high speeds and require the driver to lean over the body of the bike, hugging it like a toddler riding a rottweiler. The potholes and loose gravel roads of the Hawkeye Wildlife Area didn't seem like the ideal place to be on a bike like that.

So later, when we stopped to talk to

a fisherman at Hawkeye, my jaw dropped as he told us he was waiting for a guy riding a crotch rocket to come back down the road. He had driven by earlier, and since it was a dead end (if you don't count the water-crossing), he had to come back the same way eventually. According to the fisherman, who was chuckling at the notion of a crotch rocket on a pleasure cruise at Hawkeye, the motorcycle was likely still down the road.

"Was it blue?" I asked.

"Yeah I think so. The driver had his helmet tilted back on his head and he kept looking back like you were chasing him or something," the fisherman said.

"Well, someone was looking for him, it just wasn't me," I replied.

Cassie and I continued down the road. I pointed out what I thought to be the best hiding spot, which was off the beaten path. I told Cassie that we would check that spot on our way back if we didn't find the bike at the end of the road.

We reached the dead end and found the parking lot empty. Cassie agreed that if the driver was biding his time in the woods, the hiding place I pointed out seemed to be the most likely spot.

I pulled off the gravel road onto a dirt path near the hiding spot and got out of my truck. As I walked toward the river I checked the dense stand of willows along either side of the path. And that's when I saw it—in the trees, through a swarming haze of mosquitoes—a blue crotch rocket.

Immediately my heart rate increased. I hadn't caught enough of the radio traffic to know why this driver had fled in the first place. Was it a stolen bike? Did he have a warrant? Was he a suspect in a murder? I had no idea. All I knew was that I had found his bike, but I didn't see him. The willows were so dense, he could have been standing four feet from me and I wouldn't have seen him. I decided to retreat to my truck and call for backup.

As I called in my position from my truck, I kept watching the path ahead of me. Suddenly I saw the driver, wearing a teal colored shirt, briefly step clear of the willows and look toward my vehicle. When he saw me, he quickly ducked back into the trees. I jumped out of my truck and yelled at him to stop as I moved towards the woods where I had last seen him.

"DNR! Come out of the woods!" I yelled several times. The only response I heard was the sound of retreating footsteps through the willows.

To avoid contaminating the area with my scent, I returned to my car and called for a K9.

Backup arrived in the form of several deputies, troopers, DNR park ranger Nick Rocca and an Iowa City police officer with his K9, Luke (a very large and intense Czechoslovakian German shepherd). As Luke began searching the willows, Reed, another DNR seasonal officer, called to tell me that he was on his way with my jonboat just in case we needed to cross the river.

"Your jonboat has half a tank of gas," Reed said, "Do you want me to stop and fill it up?"

"No. That should be plenty," I said.

Warden's Diary

"Just get here as soon as you can."

Meanwhile, K9 Luke searched the woods where he picked up the driver's scent several times. It appeared that his trail led to the water's edge, indicating we should search the river bank. Reed, Nick and I launched the jonboat and proceeded upstream so we could pick up Luke and his partner.

After everyone piled into the boat (including a very excited Luke), we combed the shoreline. Though we found several tracks and the driver's discarded teal shirt, we otherwise came up empty-handed. The Iowa City officer said that he would have Luke search the willows again, but if they didn't find him, there wasn't much more he would be able to do. It was possible that the driver had fled through a pond, which would be hard to track.

Reed and I dropped the passengers off on shore and began our ride back to the boat ramp. As we moved downstream, I listened intently to the radio traffic. It wasn't long before the search was called off. We had the motorcycle, the keys and the helmet, so if the motorcycle wasn't stolen, the Mount Vernon officer would be able to find the driver eventually anyway. I was disappointed. It's always more fun to actually catch the person, especially after they have been hiding from you.

However, the disappointment I felt about the failed search paled in comparison to the disappointment I felt shortly thereafter, when the boat motor sputtered to a wheezing halt. Reed picked up the red gas tank and tipped it upside down a little too easily. We were out of gas.

"I guess a half of a tank wasn't quite enough," Reed said.

"Apparently not," I agreed.

Running out of gas on the river isn't something I necessarily enjoy. But it wasn't the worst thing that could've happened either. There was no dam nearby that we were going to go over, the truck and trailer were downstream from us which was obviously the direction we were floating and it wasn't like we were missing any action anyway since the search was called off.

I tried to chalk the experience up to the lesson I teach my seasonal officers on a yearly basis which is: "Do as I say, not as I do." Unfortunately these lessons are usually based solely on my blunders. In this case the lesson was, always fill your boat with gas when you are done using it so it is ready for emergencies.

Reed was standing at the bow of the boat push-poling us downstream with a willow branch, while I sat in the back pondering my wise teaching methods, when I received a phone call from the dispatcher. She was wondering if I could respond to a different part of the Hawkeye Wildlife Area to assist ranger Rocca. She told me that he had located the motorcycle driver again. This time the driver was in the woods about a half-mile east of our last search location.

I told her that I would do my best to get there but that I was stranded on the river and a good hour's float from my truck. I tuned back into my radio in time to hear Rocca call for the K9 to respond from Iowa City again.

Reed and I got busy paddling and poling our way downstream. I logged onto Google Maps to pinpoint our location. At one point I decided we would try walking out. We managed to get the boat tied to a snag along shore, then climbed up the steep bank. We set out through a wall of weeds, willows, stinging nettles and mosquitoes. After approximately 20 steps I was covered in burs, sweat was pooling under my body armor and mosquitoes were feasting on my face. We quickly retreated to the boat and back to Plan A—which was to continue floating to the truck.

It wasn't long before I received the phone call. They had him. After surrounding the driver and giving the dog announcement, the fugitive decided that he didn't want to be a mid-afternoon snack for Luke, and instead stepped out of the grass, giving himself up.

"This guy looked awful. He was barefoot and shirtless," Rocca told me over the phone. "He had mosquito bites on top of mosquito bites." Remembering my own 20-step expedition into the wild, I believed him.

Reed and I continued floating downstream. Finally, as we were rounding the last bend before the ramp, we saw another boat snaking its way upstream. The men on board were checking their ditty poles.

"Are you out of gas?" they asked.

"Uh. Yeah," I said sheepishly.

The fishing boat pulled us the rest of the way to the ramp. We loaded the boat and climbed into our air conditioned truck.

"From now," Reed said, "every time I go out on the river I am taking an extra gas can."

"Good. That's exactly what I was hoping to teach you," I said, scratching a mosquito bite on my face.