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Earth Day

## Rethinking our footprint: Local residents, groups strive to balance society and environment

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Dave Sticha walks through his several acres of restored prairie in southern Scott County in July 2019, when black-eyed Susans and other wildflowers and grasses weren't yet at their full height. Several people and groups have restored some of Minnesota's native ecosystems, with benefits for people and the environment.

Photo by Dan Holtmeyer

We have transformed Minnesota. Each of its 87,000 square miles in some way bears the effects of humanity's development and its leftovers, according to researchers and advocates around the state.

That development has built a bustling system of millions of people living their lives and doing hundreds of billions of dollars in business each year. It has also frayed the state's living fabric, damaging its iconic lakes and woods and creating ecosystem problems that swing back around to harm us.

Farmers, retirees, elected officials, scientists and other residents in the southwest suburbs — people from distant political and personal backgrounds, in cities and rural areas alike — are working to create a better relationship between Minnesota's humans and its other inhabitants.

Some focus on shrinking the human footprint, such as by planting gardens, restoring prairies and lakes or reintroducing vanished butterflies and shellfish. Others also look to change our sources of power and to build and farm with environmental concerns in mind.

Dozens of people over the past 16 months said they've stepped up on behalf of their children, out of nostalgia for their own childhoods outdoors, because of their morals or practical self-interest, for nature's own sake or for many reasons at once.

"The greatest artistry in the world is what nature makes," Duayne Wincell of Prior Lake said last October, when he and others hacked away several tons of invasive European buckthorn shrubs during a Prior Lake-Spring Lake Watershed District cleanup at Woods at the Wilds Park.

The plants choke out the native forest floor by grabbing up water and sunlight. Park cleanups won't solve the invasive problem or other environmental issues on their own, Wincell said. But he saw several generations of participants getting engaged with the problem and passing that on to others.

"It's a little part of a big picture," he said.

Several residents also said the coronavirus pandemic won't stop their work, though it might slow it. An economic slowdown isn't a shortcut to environmental friendliness; the virus is hurting that goal in many ways on top of its toll in misery and lives. But some also see ecological lessons in the crisis.



A volunteer hauls fallen invasive buckthorn during the Prior Lake-Spring Lake Watershed District's cleanup at Prior Lake's Woods at the Wilds Park last fall. Invasive plants like buckthorn can disrupt local ecosystems, compete with native plants and affect water quality, according to the district.

Photo by Dan Holtmeyer

## Re-engineering Minnesota

Of course, people have always interacted with and changed their surroundings. The Dakota and other indigenous communities around the continent, far from passive residents of the wild, long used fire to maintain and extend grassland and to keep forests' understory clear.

Minnesota's ecosystems evolved with lightning-caused burning that brought a reset and recharge for growth, said Ferin Davis, lead environmental scientist at the Shakopee Mdewakanton Sioux Community's land and natural resources department.

So the locals learned to use it to ease travel and foster game in a sustainable way, she said. Davis and the community carry on their ancestors' tradition today with regular controlled burns around the community's hundreds of acres of natural space and in neighboring cities.

Europe and the U.S.'s seizure of the land brought a different kind of relationship. The past 200 years' development domesticated much of the state, data from the Minnesota Department of Natural Resources and other state and federal agencies show.

Prairies — grasslands that brim with hundreds of species of insects, birds and plants — once covered roughly one-third of Minnesota as part of one of the largest continuous habitats on the continent, said Erik Runquist, a butterfly conservation biologist at the Minnesota Zoo.

Those grasslands now cover less than one-hundredth of the state and are still shrinking, with today's farmland surpassing the prairie's former spread.




Farmland covers more than one-third of Minnesota, which powers a big chunk of the state's economy and provides food but also depletes natural habitat and increases runoff and water pollution, researchers say. Many farmers have looked into ways to help, such as with cover crops.

Photo by Dan Holtmeyer

"Instead of this ocean of grassland, it's really individual islands," said Runquist, who works to rebuild endangered prairie butterflies' numbers in some of the remnants.

Roughly half of the state's forests and most of its wetlands were cleared or filled for logging and agriculture and cities, including nearly all of the maple-, oak- and elm-heavy Big Woods that centered around Scott and Carver counties.



With the past century's industrialized agriculture came livestock in far greater numbers than their wild counterparts. Cattle outnumber white-tailed deer 2-1, by the U.S. Department of Agriculture's count. A few thousand lingering elk, bison and moose are a tiny blip next to millions of hogs.

We've brought much of the water cycle under our command, pumping tens of billions of gallons a year and altering or damming around half of Minnesota's rivers and streams' lengths — most notably along the Mississippi River for shipping. On land sit around 140,000 miles of road, thousands of miles of rail and pipeline, more than 400 golf courses and scores of landfills.

At the same time we've removed other undesirable elements, such as by suppressing fire and buying tens of millions of pounds of pesticides each year for lawns and fields, according to the Minnesota Department of Agriculture's online tally.

In one vivid example, the regional Metropolitan Mosquito Control District pours swirls of yellowish bacteria into the Minnesota River each year to kill millions of waterborne pest larvae, said John Walz, who works on black fly control with the district. Last year's floods delayed the treatment, spawning headline-making clouds of gnats.

With all of these actions and others, Minnesota's people grew to more than 5 million strong and created one of the nation's largest agricultural exporters and top producers of iron ore and other minerals.

The state's farmers grow hundreds of millions of bushels of corn, soy and other crops and ship millions of tons of them each year down the Minnesota and Mississippi to other states and countries, according to the Minnesota Department of Transportation.

Fertilizer, eroded sediment and other pollution from farms and towns also flow down those rivers — so much that the state Pollution Control Agency considers the Minnesota unsafe for recreation and fishing and harmful for aquatic life.

“Our goal is that within 10 years, our children will be swimming, fishing, picnicking, and recreating in this river,” former Gov. Arne Carlson, a Republican, said of the Minnesota River in 1992, when he called for a cleanup of its clouded waters.

Urban rivers that were “putrid, lifeless sewers” a few decades ago, the U.S. Army Corps of Engineers and other agencies wrote in a report released in February. The PCA and other observers say wastewater treatment and other regulation has improved dramatically since, a boon to river quality.

But three decades after Carlson’s speech, the same Corps report said the Minnesota’s drainage basin, which stretches from South Dakota to Iowa to the southwest Cities suburbs, is “the most degraded region of Minnesota.”



Wastewater from the southwest suburbs goes through the disinfecting tank, one of the last treatment stages before it's released into the Minnesota River, at Blue Lake Wastewater Treatment Plant in Shakopee in October 2019. The water's clean enough to swim in and even gets an added boost of oxygen for aquatic life, plant Manager Dave Simons said.

Photo by Dan Holtmeyer

## Unintended consequences

Radar and radio chirps from transmitters implanted in several common carp’s skin showed the invasive fish had clustered in a shallow cove of Prior Lake on a bright day last March. That meant conditions were ripe for a fish removal, or seine, despite the foot of ice still covering the lake.

The Prior Lake-Spring Lake Watershed District, which works to improve those lakes' water quality with construction regulations and erosion control, for years has also been trying to scoop out their carp. The fish are native to the Eastern Hemisphere. Here, unchecked by natural obstacles, they foul Lake Minnetonka, Prior Lake and others by guzzling aquatic plants and stirring up sediment.

Commercial fishermen began this day by laying the trap, unfurling two sides of a football-field-size net under the ice by pushing it with long slats of wood like knitting needles through a series of holes. Then the hunt began.

Strategically placed underwater speakers blared harsh white noise to startle and discomfort the fish into moving toward the net. Half a dozen district workers and other drivers on the surface added to the racket, skidding their vehicles around in a crackling dance of wide loops and figure-8s.

After several minutes, the radio signals seemed good: The school of fish was in.

Crews swung the net shut behind them and slowly reeled it through a truck-sized hole near the shore, releasing frantic bluegill, northern pike and crappie to the side to purify the catch. The men only wanted the heftier, writhing, pinkish-gold carp — 10,000 pounds of them for market in the end.



Fishermen sort through their catch of invasive common carp and native fish during a Prior Lake seine, or carp removal, in March 2020. The Prior Lake-Spring Lake Watershed District uses seines and other measures to fight the carp, which harm water quality.

Photo by Dan Holtmeyer

Carp like these are one point in a spiderweb of human tampering's intertwining consequences.

People intentionally introduced them to the area more than a century ago for fishing, according to the DNR. They've competed ever since with local fish, setting nutrients loose in lakes that eventually reach the Minnesota and Mississippi. There the nutrients feed algae and make the water less safe for people and other organisms.

Nature's filtration system isn't there to help. Native mussels, little filter-feeders that snatch passing E. coli and other food from below, once coated river bottoms, DNR aquatic ecologist Mike Davis said last year. Dams, water pollution and past harvesting by the ton to make buttons cratered their numbers. More than half of their 51 native varieties are endangered or otherwise under threat.

Above them is a changing climate, prodded by carbon dioxide from fossil fuels and land use, according to the National Oceanic and Atmospheric Administration and climate scientists around the world.

## The more times change

The average yearly weather has gotten 2 or 3 degrees warmer and around 4 inches of rain wetter since 1895 throughout the state, with even more likely on the way, the DNR State Climatology Office reports. The Corps said the lower Minnesota River's rainfall in 2019 was the highest since 1895 at around 42 inches, almost a foot above the new average.

More rain is also coming in big floods, per the state Department of Transportation. The agency keeps tabs on the issue because it can require multimillion-dollar projects to fix washed-out roads and flooded bridges, like the \$54 million Highway 101 elevation and bridge construction project between Shakopee and Chanhassen five years ago.

These weather trends coupled with more runoff have almost tripled the Minnesota's average flow volume since the 1940s at Jordan, where repeated flooding has led the city to plan levees, floodplain property buybacks and other actions. The flow two years ago was five times the 1940s mark, according to the Corps of Engineers.

That means, among other things, more water to carry nutrients and sediment pushed up by those carp.

"This is the reality, this is not something that's hypothetical anymore," said Scott Haas, emergency management director for Scott County. "We just have a lot more moisture now."

Flooding also pushes the Minnesota into the defunct, non-waterproof Freeway landfill and dump in Burnsville, which the PCA considers the top risk to water quality and safety among the state's 100 or so closed waste facilities. The state's cost to fix it will range from \$85 million up to several times that, according to the agency.

A few degrees aren't much on a given day, but over years and decades they're enough to chip at Minnesota's frigid shield against invading pests.



Buoyed by a longer growing season, eastern larch beetles are killing wide swaths of tamarack trees in the north, said Brian Aukema, a University of Minnesota associate professor of entomology. Gypsy moths were thought to be too cold-intolerant to persist here but are also on the march, he added. Emerald ash borers, an Asian import, are aimed squarely at Minnesota's 1 billion ash trees.

"It's almost like chasing ambulances, the next major invasive insect," Aukema said. "My colleagues 100 years ago never had to deal with these things."

Sometimes our imports are relatively mundane, as with the success of dandelions (from Europe) and hostas and ginkgo trees (both from Asia). But even something as seemingly harmless as non-native earthworms, absent from the state for thousands of years, can transform a landscape, turning forest floors from fluffy and fertile to dry and barren.

These issues are tied to processes that would carry on without us. Earth has always eroded, species have always moved into new territories, habitat has always changed, carbon dioxide has always drifted among plants and animals and atmosphere.

Humans have supercharged each of them, deliberately and otherwise, several state researchers said.

As a result, bats and pheasants have plummeted, wild rice has washed away, and aspen and birch woods are at risk of dying out. Cold-water fish called cisco, food for pike and walleye, have decreased, and some butterflies have vanished.

Farmers have asked where all the meadowlarks have gone, said Steve Weston, a member of the Minnesota River Valley Audubon Chapter who coordinates the annual statewide Audubon bird count.

And the losses could pile up more, said Elaine Evans, an assistant extension professor at the university. She works with volunteers and other researchers to gauge populations of endangered rusty-patched bumblebees and other species around the metro.

Once common, rusty-patched bees have retreated to maybe one-thousandth of their former territory because of pesticides, habitat loss and other causes, according to the U.S. Fish and Wildlife Service.

Hundreds of other native bee species could help fill the rusty-patched niche, Evans said. But ecological gaps have a way of spiraling, as one species might depend on another that depends on two more.

"We're losing those connections," she said. "We also don't know how much can be taken."

## People at risk

In daily life, traditions like ice fishing tournaments and ice skating could suffer with climate change, since they get cancelled more often when winters are just a few degrees warmer on average, according to research published last year by university biologist Lesley Knoll and other

researchers.

Tick-borne Lyme disease and heat-related illnesses are more widespread with more heat and humidity, too, according to the state Department of Public Safety.

Such health effects are more likely to affect people in minorities or with less money, who also tend to live closer to environmental hazards, several researchers and advocates have found. There's more exhaust pollution to affect your lungs if you live along Highway 169 near Chaska or Interstate 35 east of Savage, for example.

Members of the Prairie Island Indian Community in the Mississippi in southeast Minnesota, who share ancestry with the Shakopee Mdewakanton, for almost 50 years have lived a few hundred yards from Xcel Energy's Prairie Island Nuclear Generating Facility and its sealed casks of radioactive waste.

Xcel has said it invests heavily in keeping the facility safe and that it helps drive down carbon emissions. Community members have told the Star Tribune and other outlets that they had no say in the plant's construction and that no other community in the country lives so close to one.

"There doesn't appear to be a whole lot of justice," said Lea Foushee, a co-founder of the North American Water Office, member of the Pollution Control Agency's Environmental Justice Advisory Group and an activist opposing the nuclear plant's operations.

"The first principle of environmental justice is that Mother Earth is sacred. Most people do not treat the earth in that manner," Foushee said.

There's hope of reining in at least some of our consequences. Some reintroduced butterfly and mussel populations seem to be propagating on their own, researchers said.

Last month's carp seine wasn't the Prior Lake district's biggest haul, but it's enough to help chemical treatments for waterborne nutrients, which are more effective without the carp's sucking mouths, said Prior Lake-Spring Lake Water Resources Project Manager Maggie Karschnia.

The watershed district is stocking more bluegill to eat up young carp, she said, and farmers and developers are improving their methods more and more. If all goes well, Prior and Spring lakes could be off the state's list of impaired waters within the decade.

"I don't think it is a losing battle," Karschnia said. "We're making good strides."

## Reclaiming natural history

On a sunny June morning at Prior Lake's Grainwood Senior Living apartments, a small group of residents and one grandson dug their trowels into the raised garden beds outside the back door.

Young native milkweed and purple prairie clover sprouts waited for placement; every few moments the women rechecked the plan laid out in color-coded marker by Mary Yaeger, a longtime Scott County master gardener.

"These are self-reliant," so they'll survive without a lot of attention, she said of the plants while the group worked. And they're good food sources for pollinators; milkweeds are essential to monarch butterfly caterpillars.



Mary Yaeger, left, and Jean Markham, residents of Prior Lake's Grainwood Senior Living, plant milkweed and other native flowers in the apartments' gardens in June 2019. The previous plants died from lack of attention, Yaeger said, but "these are self-reliant" and good for pollinators.

Photo by Dan Holtmeyer

"You can't have apples if you don't have a pollinator," gardener Jackie Johnston chimed in.

Restoring habitat, even by simply planting some native plants, can have cascading beneficial effects, according to Audubon Minnesota, The Nature Conservancy, local governments and several other groups conducting this type of work.

A patch of intact prairie flowers and grasses, for instance, can all at once teem with countless insects and mites, anchor a food web of birds and mammals, catch sediment and rainwater before they flood and pollute rivers, and lock away carbon as efficiently as a forest with roots reaching deeper than 10 feet — and all with no pesticides, fertilizers or irrigation.

All of that has happened on Dave Sticha's land in south Scott County, where in the past few years his family has grown 14 acres of goldenrod, black-eyed Susan and Canada wild rye with help from the Scott Soil and Water Conservation District. The district covers some costs and gives advice for county landowners' restoration projects.

Walking from the Stichas' mowed yard to the prairie is like crossing an invisible force field: the hum of bees and mosquitoes and the songs of birds, the blossoms and grass blades that reach an adult's height by July, the flutter of pale, fingernail-sized butterflies, even the humidity.



A dragonfly rests near the edge of Dave Sticha's restored prairie last summer. "It's just buzzing," said Sticha, who also runs a conventional landscaping business. "It's really alive even during the winter, but summer is just fantastic."

Photo by Dan Holtmeyer

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Restoration isn't as simple as leaving a place alone. Formerly cropped lands even after decades of disuse lag intact areas in biodiversity and productivity, University of Minnesota researchers reported in the journal *Nature Ecology & Evolution* last year.

Oak savannas, a combination of grassland and spacious oak woods common around the southwest suburbs, fill in with buckthorn and cedar without fire, said Vicki Sherry, a biologist with the Minnesota Valley National Wildlife Refuge along the river.



Grace Dougan, an intern from the University of Minnesota, and Cooper Crose, biological science technician for the Minnesota Valley National Wildlife Refuge, record the heights of little bluestem grasses and other grasses in July 2019 near Rapids Lake, where they and others with the refuge have reintroduced controlled burns and other measures to protect the landscape.

Photo by Dan Holtmeyer

She and others have gradually returned fire and cutting to several of the refuge's units to mimic natural burning and grazing that used to be done by bison. Their success was clear last summer in the lavender-colored harebell and white whorled milkweed blooms growing among charred cedar stumps in an oak savanna near Carver.

The Department of Transportation also uses fire for some of the prairie remnants along its roadways. Green infrastructure can help keep roads clear in blowing snow or heavy rain on top of their environmental benefits, members of its roadside vegetation management unit wrote in an email last year.

Many conservationists want more — Steve Eggers, a senior ecologist with the Corps of Engineers, has pushed for more burns at the Savage Fen, a protected wetland biodiversity hotspot that hasn't been burned in decades.

But burns are finicky and take a great deal of planning, said Davis, the Mdewakanton community environmental scientist. They need the right planning and the right dryness and wind to burn hot enough to work but not threaten houses and people nearby.

Restorations have other challenges as well, including fragmented locations and the astronomical cost of buying or setting aside a significant amount of land, researchers and advocates said. Plants and animals need connected habitats, and progress rebuilding a habitat can falter if its neighbors are in worse shape.

There's still value in smaller steps, said Heather Holm, an author and restoration consultant in Minnetonka. She and a couple dozen of her neighbors remade a half-acre, city-owned corner lot in their neighborhood over the past few years using muscle, the city's hauling services and a \$5,700 grant from the Nine Mile Creek Watershed District.

They tore out invasive buckthorn and honeysuckle, sowed and planted native plants and eventually cultivated the little plot from 17 native plant species to more than 100, Holm told an Eden Prairie crowd in January during a meeting for Wild Ones Prairie Edge, a sustainable landscaping advocacy group.



Native flowers can be essential to native pollinators and other species, scientists say, including, clockwise from upper left, long-necked coneflower, fleabane, blue vervain, wild bergamot, whorled milkweed and butterfly milkweed.

Photos by Dan Holtmeyer



Humans have deliberately and accidentally introduced many foreign, invasive species that then became common in Minnesota, including, from left, leafy spurge, Canada thistle and Queen Anne's lace.

Photos by Dan Holtmeyer

Wasps, birds and rusty-patched bumblebees have followed, as have dog walkers and kids. And several of the volunteers said they've planted local plants and taken saws to the buckthorn around their own homes.

"You kind of feel like you have this obligation to fix it. We've been royally screwing it up for 200 years," Holm said. "I look at it as an opportunity."

## A political balancing act

Orderly rows of new rye sprouts waved in the wind on Paul Krueger's second-generation dairy farm near Spring Lake last October. Krueger had planted the winter cover crop a few weeks before on around 150 acres after harvesting some of his corn for silage.

The grasses are part of an increasingly self-contained, water-friendly operation. By May the rye will be waist-high, and Krueger can harvest a couple of tons per acre to feed several hundred dairy cows.



Sprouts of rye stand in orderly rows on Paul Krueger's Scott County dairy farm in October 2019. Krueger and other farmers have begun growing cover crops over winter and taking other steps to help protect the area's water quality from agricultural runoff.

Photo by Dan Holtmeyer

The rye's roots hold onto the cows' manure — Krueger buys very little fertilizer — and onto rainwater, especially the 3- to 4-inch rains he's noticed come through more often. Those roots also let him go without tilling or loosening that acreage for other crops without losing yield.

"My dad would've probably rolled over in his grave if he found out how little tillage we did," said Krueger, who's also tilling less on his non-rye acres. Machinery has advanced enough to make it feasible.

"Livestock allows us to do a better job of soil conservation," he added. Not every farm can mesh as well with the conservation techniques as his — that rye would be hard to sell if he couldn't use it for feed, for example.

Still, he said, "It's something that more people should be trying."

His cover crop is also helping store carbon. Cover cropping throughout the state could absorb or prevent millions of tons of Minnesota's yearly carbon emissions with no impact on crop acreage, for example, according to a 2018 study on potential widespread carbon-cutting techniques in *Science Advances*.

With an economy to run, the state's lands can't go back entirely to their pre-modern condition. But many farmers and other experts have found ways to balance society and environment and prevent some of human activity's side effects, such as by using less pesticide or road salt or making less trash.

Carbon is the epicenter of this push. The Minnesota Legislature's 13-year-old renewable energy standard requires state utilities to get more than one-fifth of their power from wind, solar and other non-fossil-fuel sources by this year.

The state cleared that goal ahead of time. Energy-related emissions are down about a third since 2005, according to the PCA, and coal use is falling. Xcel plans to go further and reach 100% renewable or nuclear-powered within 30 years.

Carbon is also the epicenter of political controversy. Many Republicans rejected the 100% plan out of cost concerns or because they prefer a more hands-off approach. Some don't see a need for any of the fuss.

"This is a scam," said James Kuiper, a voting precinct chair for the Republican Party in Savage, said of the alarm over climate change. He spoke during the GOP caucus night at Prior Lake High School in February, calling climate scientists the boy who cried wolf with faulty past predictions.

"We are not going to destroy the planet," Kuiper added. "Man cannot alter the climate."

State Sen. Dan Hall, R-Burnsville, who represents Savage, shared Kuiper's belief that climate is out of human power, though he's all for clean air and water.

"I think there's bigger issues than climate change," like housing and jobs, he said in an interview. "Matter of fact, I am concerned they are scaring a lot of kids in schools that in 12 years we won't be around," he added, a reference to a United Nations warning in 2018 that catastrophic climate change could be inevitable without a major emission drop by 2030.

Each of Hall's three potential Democrat challengers this year — nonprofit director Lindsey Port, attorney Kevin Shea and auditor Robert Timmerman are competing for the race — said climate is among their top priorities.



They and other state Democrats, including the governor, have pushed to take the state's emissions goals further, such as with 100% renewable energy by 2050 and more electric vehicles, in response to climate change.

"We're not going to regulate our way out of the climate crisis; we need to innovate our way out of it," Port said. "But I do think, at the core of all that, we need to make sure we are putting the climate crisis, actually putting that first."

At least some local residents said they're determined to vote out Hall because of his climate views.

"Definitely it's my No. 1" issue, said Paula Thomsen of Savage. She was one of a handful of people who attended a January caucus training event at City Hall hosted by the climate advocacy group MN350 Action, which wants to flip Hall's district.

Thomsen grew up running around the Minnesota and seeing wildlife, she said. She saw taking action on carbon as a matter of faith and her moral compass, so she took an uncomfortable leap and asked a bunch of her neighbors to come to the meeting. A few took her up on it.

Less carbon-intensive energy sources also draw disputes.

Minnesota's community solar program offers energy customers the ability to subscribe to relatively small, independent solar gardens around the state and receive bill credits from Xcel. It's become the biggest such program in the country with more than 650 megawatts installed as of last year, according to Xcel, enough for tens of thousands of homes.

But those solar arrays have to go somewhere — often rural areas in the metro's outlying counties. Carver County required panels to be hundreds of feet away from residences and at least a mile apart from each other after several gardens in a row drew opposition from neighbors in the past couple of years. County planners denied some construction permits before being overruled in court.

"Our hands have been, for the most part, tied," Waconia Town Board Chairman Tom Notch said. Residents opposed the arrays for several reasons, he said, including because they wouldn't directly benefit locals and are essentially power plants in the middle of farmland.

New proposals seem to have trailed off, he added. "We're glad it's calmed down."

David Woestehoff and his family were targets for some of that ire after leasing part of their Carver County farm to a U.S. Solar array. He said the opposition was a mix of reasonable concerns from some neighbors and sour grapes from others.

Woestehoff saw community solar as a dependable source of income and a way to help preserve the land for future generations. But he also has concerns about the program, particularly its speed and costs.

Xcel says community solar electrons cost around three times as much as utility-scale solar, tacking a few extra dollars on residential customers' monthly bills.

Some supporters have said the program might need some adjustment but is overall worth it. The company and several legislators, including Republican state Sens. David Osmek of Mound and Eric Pratt of Prior Lake, have called for larger changes, such as a yearly limit in new construction.

The senators also oppose the 100% mandate idea and want the state to open the door to more nuclear power and carbon capture. They said in interviews that energy affordability and reliability should be the top priorities while nudging carbon emissions downward.

"Minnesota has chosen to take the lead at the expense of the consumers," Woestehoff said, adding it's still important to him to treat the environment as well as we can. "But you have to look at the current-day economics and integrate that in."



A monarch butterfly enjoys a meal at the Savage Fen, a protected wetland and biodiversity hotspot, in September 2019.

Photo by Dan Holtmeyer

## New ways of business

The local search for balance is nevertheless a source of unity across social groups.

The Scott-LeSueur Waterfowlers and their supporters make hundreds of wood duck boxes each year to compensate for lost habitat, and trout-fishing enthusiasts helped get Savage's Eagle Creek under state protection from development in the 1990s.

Some area Republicans and U.S. Rep. Angie Craig, a freshman Democrat, have pushed for a bipartisan proposal to tax fossil fuel use and share the revenue with every citizen, which they say will kickstart new energy technology.

Jim Dubbe, a dairy farmer in central Scott County, in February said he was glad President Donald Trump had recently drawn back how many waterways are subject to federal pollution protections. But he and other farmers had just been honored by the Prior Lake watershed and Scott conservation districts for lake-friendly management practices they've adopted with the districts' help.

"We got a good thing going here," said Dubbe, no more regulation needed. "We as farmers want to take care of our land, because we want to keep our soil."

Cooperation, relationship-building and social momentum are crucial ingredients to preventing the kind of pollution that comes bit by bit from every direction, several experts said. That means talking with farmers and other residents, learning their priorities and values and working within those goals.

Dubbe, Krueger and others are on the conservation districts' Farmer-Led Council, for instance, which aims to bring farmers into the water-friendly fold, set an example and advise the districts' work.

The Forever Green initiative at the University of Minnesota takes a similar tack in a bid to change the agricultural system while maintaining farmers' livelihoods. Researchers there are working with farmers to breed hardy, perennial grains that could bring a profit to marginal cropland, for example, and to build a market for extracts from native plants, such as cosmetic ingredients from coneflowers or antimicrobials from wild licorice.

Relationship-building can also help bring minority and low-income voices into the picture, said Amit Pradhananga, a research associate at the university whose research has covered Scott County and other parts of the metro.

Those groups are often left out of development decisions and conservation drives because of a long history of discrimination and a lack of resources, he said. So agencies and others must go to them and painstakingly rebuild trust.

"Everything environmental, in a sense, is also social," Pradhananga said. "You really cannot separate those two."

Good-faith discussion can help create a compromise between human and non-human needs, Prior Lake city planners said. The city, developer Winkler Land Company and concerned residents found that compromise this year around a plan to build around 100 homes on the west side of Spring Lake.

The plan from the start would have preserved the wetland and open space on half of the property, project manager John Anderson said. When neighbors still worried about its impact on the lake and wildlife, Winkler removed a planned dock, kept more trees and made other changes.

"I won't consider it a failure when the homes get built. Already it's been a success," said Christopher Crowhurst, who kayaks the lake and sees natural and human habitat as equally important.

# The pandemic

The coronavirus pandemic has led to restricted movement and economic slowdowns around the world, driving down carbon emissions and other pollution.

Cities in Kenya and India can see distant mountain ranges through newly clear air for the first time in decades, CNN and other outlets reported. And China's drop in coal burning saved roughly 150 million metric tons of carbon dioxide in three weeks, or about the same as Minnesota's total emissions in 2016, according to the Centre for Research on Energy and Clean Air in Finland.

There are some hints of a similar effect in Minnesota, though it's hard to say given certain weather patterns, PCA meteorologist and scientist Daniel Dix wrote in an email. The Department of Public Safety has reported state traffic has dropped by about half in recent weeks.

The virus and environmental concerns are bound in more complicated ways, however. Several researchers have said it likely came from bats, a type of jump that seems to be happening more often as cities sprawl and people eat or otherwise encounter wild animals.

"We're driving disease emergence through less sustainable use of nature," Dr. Aaron Bernstein, interim director of the Center for Climate Health and the Global Environment at the Harvard School of Public Health, told the Los Angeles Times.

Health officials around the country have said they believe COVID-19 is deadlier to people with other respiratory diseases, which are also linked to the environment. Air pollution from vehicles and other sources contributes to thousands of asthma and pulmonary disease hospitalizations each year in Minnesota, according to the Department of Health, and they affect non-white populations more.

The pandemic is also halting or curtailing prescribed burns and other environmental work. The EPA and PCA have announced a degree of lenience for companies who can't monitor or control discharges because of limited staff, for instance, though they expect laws and regulations to still be followed.

Hannah Texler manages a DNR team installing a network of plant species monitoring stations throughout the state, which will help measure their movements and changes for years to come. That project is on pause for the year, she said this month. With a team of four in a van and needing lodging and food, "there was just no way" to do it safely.

Tyler Kistner, a Prior Lake Republican looking to challenge Craig this year, and others have criticized House Democrats for considering some climate-related proposals in coronavirus relief bills, such as emission controls for airlines receiving government support.

Even Rick Olson, another Prior Lake Republican in the race who supports the carbon tax bill, wrote in an email that now isn't the time to "muddy the water with members' pet issues or party positions."

Others have said environmental concerns still have a place. Craig in an email said supporting the country's millions of clean-energy jobs is a worthwhile part of economic recovery measures. Tim Reckmeyer, who leads the Scott County chapter of the Citizens' Climate Lobby advocacy group in favor of the carbon tax, said he hopes people learn to heed experts' warnings about health and climate alike.

Several other locals said they have taken to picking up more trash and doing some service for the outdoors as they spend their days close to home.

"It's not only good for my soul but my mental health to be out in nature and appreciate its wonders and delights," Millie Clough, one of the Minnetonka buckthorn-busting neighbors, wrote in an email.

A dip in pollution is typical with downturns like the Great Recession or the 1970s oil crisis, and typically temporary, according to the International Energy Agency. Only some longer change, such as less commuting in the future, will make it last, said Stephen Polasky, a professor of environmental economics at the university.

"When society is forced to do something to confront a threat, we do make changes that would have seemed almost impossible a little while ago," he said.

Polasky also saw parallels between the pandemic's controversies over isolation measures and environmental disputes. Public health and the economy are linked rather than opposing needs, he said, and so are the economy and the environment.

That was the lesson some researchers highlighted before the pandemic.

"If we try to make the whole planet artificial, it's just not going to be successful," Lee Frelich, director of the university's Center for Forest Ecology, said in August.

"I think people need to recognize that we are a part of nature and we live within it."

## Mechanics of climate change

Minnesota has warmed by 2 or 3 degrees in the past century or so, according to state officials.

Climate scientists say one of the primary reasons is humanity's emissions of carbon dioxide from fossil fuels. It works by letting sunlight pass through the atmosphere to the planet's surface but catching the heat that results, like the warmth you can feel from concrete after a hot day.

But the state hasn't warmed up evenly. Most of the extra heat has warmed winter more than summer, night more than day, even the northern part of the state more than the south.

Kenny Blumenfeld, senior climatologist at the State Climatology Office, said several factors explain this tilt. For example, for any amount of warming, winter's snow will melt just a little quicker and sooner, leaving darker ground that absorbs more sunlight.

Canada and the Arctic are warming even more quickly than northern Minnesota, so there's also less frigid air to blow through in the winter.

"Our reservoir of cold is shrinking a bit," Blumenfeld said.

Carbon doesn't magnify sunlight itself to make it any warmer, so the daytime warming effect is somewhat blunted, he added. At night, when the radiated heat escapes to space without more sunlight to replace it, more carbon means a thicker blanket to get in the way.

This seasonal segregation could change within the next several decades and begin raising summer highs more, Blumenfeld said. But it's unclear when that will happen.

Climate change is a global problem with global contributors, so Minnesota's role in its own warming is small. On the other hand, its emissions contribute a tiny bit to everyone else's climate change, too.

"Everyone is really on sort of the same team," Blumenfeld said.

## Conservation groups and assistance

Want to join local conservation efforts or learn more? Here's the contact information for a selection of local groups and agencies that accept volunteers or donations or provide helpful information, such as how to get native garden plants.

- The Nature Conservancy in Minnesota: [nature.org](http://nature.org), [minnesota@tnc.org](mailto:minnesota@tnc.org), 612-331-0700.
- Audubon Minnesota: [mn.audubon.org](http://mn.audubon.org), [audubonminnesota@audubon.org](mailto:audubonminnesota@audubon.org), 651-739-9332.
- Great River Greening: [greatrivergreening.org](http://greatrivergreening.org), [greening@greatrivergreening.org](mailto:greening@greatrivergreening.org), 651-665-9500.
- Wild Ones Prairie Edge: [wildonesprairieedge.org](http://wildonesprairieedge.org), [wildonesprairieedge@gmail.com](mailto:wildonesprairieedge@gmail.com).
- Find your watershed district: [mnwatershed.org](http://mnwatershed.org) under "About Watersheds."
- Find your soil and water conservation district: [bwsr.state.mn.us/soil-water-conservation-districts](http://bwsr.state.mn.us/soil-water-conservation-districts).
- Minnesota Bee Atlas, Elaine Evans: [evan0155@umn.edu](mailto:evan0155@umn.edu).
- Minnesota Adopt a Highway Program: [dot.state.mn.us/adopt](http://dot.state.mn.us/adopt).
- Minnesota Department of Natural Resources volunteering: [dnr.state.mn.us/volunteering](http://dnr.state.mn.us/volunteering), [info.dnr@state.mn.us](mailto:info.dnr@state.mn.us), 651-296-6157, 888-646-6367.

Source: Staff report

## Where this story came from

This article was reported over the course of 16 months by interviewing more than 100 people and reviewing thousands of pages of reports and studies.

It's easy to find reporting out there on a particular endangered bird or one stretch of one river that's in trouble, but as I hope this article makes clear, issues like these all interact and mix together. So I wanted to try to bring it all into one place, to take a good look at our relationship with the rest of nature.

This story owes a lot to the previously published work of many other journalists, including my fellow editors and reporters at Southwest News Media and others at the Star Tribune, MPR News and MinnPost. Colleagues and friends also read over my shoulder.

Thank you all.

*-Dan Holtmeyer*

## Dan Holtmeyer

Community editor

Dan Holtmeyer is the community editor for the Prior Lake and Savage papers. He grew up in Nebraska and worked as a journalist in Oklahoma, Missouri and Arkansas before coming to Minnesota in 2018.

