

IOWA NATURAL HERITAGE

Protecting and restoring Iowa's land, water and wildlife.

COPING WITH CHANGE

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Southern Wildlands

New wildlife habitat comes to central and southern Iowa **10**

Destination Whiterock

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Est. 1979

40
YEARS





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ON THE COVER

Spring green pops at Gateway Hills Park in Ames as trees bud and grow. *Photo by Sudhanva Kashyap*



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Natural Heritage
Foundation

Protecting and restoring Iowa’s land, water and wildlife.

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Looking to nature for answers

We all know somebody that

has been affected by flooding in Iowa in this early spring. It’s hard to imagine what the people in western Iowa are going through as they return to their flood-damaged homes and their silt-covered fields, their lives forever changed. As the floodwaters recede, we can turn our attention toward helping them put the pieces back together. We are fortunate that helping our neighbors comes naturally to Iowans.



JOE MCGOVERN
President

We also know this won’t be the last time. The entire state is at an elevated risk of flooding this year. We need to identify ways in which we can help those hardest hit to break out of this cycle of natural disasters. That is going to take us all — landowners, lawmakers, private entities like INHF — working together to find solutions.

Flooding has a way of making us feel powerless. The water is going to go where it

wants to go. Nature at its most extreme can be the ultimate antagonist. At INHF, though, we also look to nature to solve some of our most difficult problems. Natural cover, like wetlands, oxbows and prairies, help with flood storage and slowing down the water in extreme situations.

Over the last two decades, Iowa has lost millions of acres of grasslands. Those grasslands were not only important wildlife habitat, they were part of thousands of sustainable grazing operations across the state. Protecting existing grasslands and converting some areas back to natural cover is going to be an important part of making our landscape more resilient and helping our farmers and ranchers in the face of increasingly devastating natural disasters.

INHF serves not only Iowa’s land, water and wildlife, but its people, too. You are protecting and restoring the most vulnerable parts of our state through INHF, and that has a direct impact on communities across Iowa. Let’s continue to work together — and that includes working with nature, not against it — to solve our most challenging problems.

INHF recently protected this floodplain property along the South Skunk River in Story County. Seen here during flooding in March, these fields have consistently taken on water during high-water events in recent years. The property will eventually be restored to more natural cover that will help with water storage and filtration. *Photo by Emily Martin, INHF*

“It is an enormously complex subject, perhaps the most compelling drama in all of natural history.”

- Scott Weidensaul

A little more than a year ago, I found myself sitting in a bird blind at 4 a.m. along the Platte River in Nebraska, cold and waiting for the sun to rise.

Each year, millions of birds make their way across the Midwest as warmer weather approaches. First come the snowgeese, followed closely by the main event: Sandhill cranes. It was the cranes we were waiting for diligently in the bird blind that morning, anticipating a migration show people flock to see every year.

If you've never experienced a crane migration, it can be hard to describe. But when the sun rose and settled on scores of birds, it awakened them into one of the most natural scenes I've ever observed. The cranes circled each other, performing intricate dances and communicating through coded calls. To me, it didn't make much sense, but it didn't need to. Nature always knows more than we do.

When they were done, they flew away together by the thousands, in search of food and mates. Their journey continued, the way it has for thousands of years. It was humbling to catch a glimpse.

— KERRI SORRELL,
Communications specialist



Snow geese migrate over Central Iowa as they make their way north for the summer. Each spring, thousands of the birds move across the Midwest, traveling thousands of miles to the Arctic for breeding. Photo by Deb Shonning



Iowans honored at Capitol for gifts of land to the state

On Tuesday, March 12, more than 40 gifts of land, land value or conservation easements were recognized at the Iowa State Capitol. Gift to Iowa's Future Day is an annual celebration of private landowners and organizations for their contributions to conservation and recreational efforts across Iowa. In 2018, these gifts totaled more than \$6 million and protected 5,700 acres across 35 counties.

Gov. Kim Reynolds and Lt. Gov. Adam Gregg presented the honorees with certificates while descriptions of their donations were read. Of the donors being recognized, 16 worked with INHF, protecting 2,093 acres and donating more than \$2.8 million in land value.

"Gift to Iowa's Future Day is a special moment for all of us," said INHF President Joe McGovern. "It's important that we take the time to recognize and celebrate the generosity of these donors, and I know that Gov. Reynolds feels the same. It's truly an honor to work with landowners that protect our natural resources for our future generations."

Honorees that worked with INHF in 2018:

- Congregation of the Humility of Mary, Clinton County

Iowans who gave gifts of land and land value in 2018 were honored by Gov. Kim Reynolds at a ceremony at the Capitol on March 12. Sixteen families honored worked with INHF, preserving 2,093 acres and donating more than \$2.8 million in land value. *Photo by INHF*

- Aaron & Alysia Countryman, Jefferson County
- John Decker, Dubuque County
- Sherri Richardson Duey & Bill Duey, Monroe County
- Lon Horbach & Ted Halls, Warren County
- Gary & Deborah Howell, Cerro Gordo County
- Lawrence McTaggart, Clayton County
- Darrel & Middie Morf, Linn County
- Karen & Tom Nelson, Cherokee County
- The Family of Esther Wicks, Story County
- Eric & Peggy Peterson, Dallas County
- Pleasant Grove Land Preservation, Inc., Mahaska County
- Michael W. & Linda Rickert, Allamakee County
- VanKirk Storage Company, LLC, Dallas County
- Dick Schwab & Katherine Burford, Johnson County
- Fred & Emily Weitz, Polk County

UPCOMING EVENTS

MAY 4

Into the Wild, Out with the Mustard
Heritage Valley, Allamakee Co.
Join INHF for a day of woodland hiking and invasive species removal! The 7th annual Out with the Mustard event helps control garlic mustard, an aggressive invasive in Iowa's woods. Families are welcome. RSVP requested.

MAY 31

G.R.A.S.S. (Great Race Against Shrubs and Shade)
Turin Prairie, Monona Co.
Take to the Loess Hills and help restore prairie hillsides in one INHF's more intensive volunteer days. This event is in partnership with the Loess Hills Prairie Seminar.

JUNE 27, AUG. 28

INHF 40th Anniversary celebrations
Des Moines, Central City
Mark your calendars: Celebrate 40 years of protecting Iowa's land, water and wildlife with INHF members, staff and board. Two celebrations to choose from, a whole lot to celebrate. Ticket information available online.

For more information, visit www.inhf.org.

Reed's Run becomes new public area in Dickinson County

Comprised of 43 acres of restored prairie and wetlands, Reed's Run Wildlife Area lies just off the eastern shore of Big Spirit Lake and along the Dickinson County trail system. The property was bequeathed to the Spirit Lake United Methodist Church and through the help of the Spirit Lake Protective Association (SLPA) and INHF, the property was protected and has been transferred to Dickinson County Conservation (DCCB) for public use.

"This particular piece of property sits at the foot of a watershed that has some pretty profound impacts on the water quality of Big Spirit Lake," said SLPA Vice President Joe Ulman. "There's also a significant opportunity to enhance recreation in the area."

INHF helped SLPA complete a fundraising campaign to raise private and public funds to complete the transfer of the land to the DCCB.

QUARTERLY PROTECTION REPORT

A quick look at new INHF protection projects and land transferred between Dec. 2018–Feb. 2019.

Newly protected areas

Buffalo Creek WMA addition 
8 acres in Delaware County will be restored to native grasses and forbs to provide runoff filtration and increased water storage. *(Will be owned and managed by Delaware County Conservation Board)*

Loess Hills WMA addition 
162 acres of the Loess Hills of Monona County protects classic Loess Hills topography, scenic vistas, native prairie and reconstructed prairie. *(Will be owned and managed by the Iowa DNR)*

South Skunk River Greenbelt addition 
55 acres in Story County protects historical oxbows and a river buffer along the South Skunk River. *(Will be owned and managed by Story County Conservation Board)*

Tuttle Lake WMA addition 
179 acres in Emmet County protects upland grassland and an additional wetland near the Tuttle Lake Wetland Complex. *(Will be owned and managed by the Iowa DNR)*

Spring Run WMA addition 
110 acres in the Prairie Pothole Joint Venture priority area in Dickinson County will be restored to wetland and prairie. *(Will be owned and managed by the Iowa DNR)*

Leo Grau Wildlife Area additions 
40 acres in Buena Vista County will build a wetland under the Conservation Reserve Enhancement Program (CREP), and create more suitable wildlife habitat and benefit water quality. *(Will be owned and managed by the Iowa DNR)*

Warren County 
374 acres in Warren County will provide public hunting and recreation land to central Iowa along the North River. *(Will be owned and managed by the Iowa DNR)*

Pilot Knob WMA addition 
156 acres of Winnebago County will be restored to wetland basins and native vegetation for migratory birds seeking nesting and breeding habitat. *(Owned and managed by the Iowa DNR)*

Polk County 
27.5 acre conservation easement in Polk County provides habitat protection along the Raccoon River and maintains a scenic woodland buffer. *(Protected by Fred and Emily Weitz)*

Allamakee County 
20 acre conservation easement in Allamakee County protects the viewshed and water quality of the Upper Iowa River just two miles from INHF's Heritage Valley. *(Protected by Michael and Linda Rickert)*

Mahaska County 
479 acre reserve life estate in Mahaska County will remain as woodland and grassland, with long-term stewardship benefiting wildlife. *(Protected by Pleasant Grove Land Preservation, Inc.)*

Land transfers to public partners

Winneshiek County 
108 acres in Winneshiek County helps protect the Upper Iowa River viewshed, water quality, a natural spring and woodlands for wildlife habitat. *(Owned by private landowner)*

Clarke County 
17 acres in the City of Osceola provides access to a trail from Osceola Elementary to East Lake Park. *(Owned and managed by the City of Osceola)*

Woodbury County 
90 acres in Woodbury County boast the world's second deepest deposition of Loess soil and also contains Native American geoglyphs. *(Owned and managed by the Woodbury County Conservation Board)*

Big Marsh WMA addition 
139 acres near Boylan Creek in Butler County will be restored to native grasses and wetlands, providing flood control during frequent high water events. *(Owned and managed by the Iowa DNR)*

Heritage Hills addition 
152 acres of grasslands and native woodland in Clarke County will create critical habitat for state threatened species, such as the Henslow's Sparrow. *(Owned and managed by the Iowa DNR)*

Legacy Wildlife Area 
273 acres of Hardin County's prairie pothole region were protected through the Wetland Reserve Easement program. *(Owned and managed by the Hardin County Conservation Board)*

Reeds Run Wildlife Area 
43 acres of restored wetland and grassland located along Big Spirit Lake's eastern shore in Dickinson County. *(Owned and managed by the Dickinson County Conservation Board)*



CONSERVATION FEATURES

-  Woodlands
-  Prairies/Grassland
-  Wetlands
-  Trail
-  Park
-  Streams/Rivers
-  Agricultural land



LED BY THE LAND

Caring for Iowa's best places is about more than management. It's a relationship with the land.

BY KATY HEGGEN AND KERRI SORRELL
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For 40 years, INHF has worked to protect some of the best places in the state. But when the paperwork is signed and the land is protected, what comes next? For many of those protected places — especially the ones entrusted to or owned by INHF — the story is just beginning.

INHF calls this continuing relationship with the land “land stewardship” — the act of looking after, restoring and aiding the land to be its healthiest and most resilient. At INHF, the land stewardship department — assisted by eager INHF volunteers, interns and staff — are the caretakers of some of Iowa’s special places.

“My primary goal as land stewardship director is to ensure that the lands INHF owns or has worked to permanently protect are stewarded in a way that embodies healthy, native ecosystems in Iowa,” said Ryan Schmidt. “We’re always listening to the land, learning

about it and adjusting our work to guide it toward its healthiest version.”

Each piece of land INHF stewards has a management plan unique to its specific features and landscapes, guided by modern research and experience. But much of the stewardship team’s work is guided by the land itself, whether wild land, agricultural land or a combination of both.

“The management plan provides a framework for future work but is certainly not the ‘end all be all,’” said Schmidt. “We are continuously updating and changing our plans, simply because the land is leading us in a different direction. In our quest for understanding the lands that we steward, we realize that we must stay flexible. Something we thought may work in the past may not be the best option in the future.”

INHF employs many stewardship practices to help restore or maintain the health of the land. Those practices include using prescribed fire, managing invasive plant species and

“Stewardship is not about putting our human preferences or personal goals for a property first, but rather working with the land to better understand its needs. We’re not looking to force human-made solutions on land that may know how to care for itself.”

- RYAN SCHMIDT, INHF LAND STEWARDSHIP DIRECTOR

natural grazing. They strive to be as non-intrusive as possible, following the pace and processes that nature is familiar with. Human influence, from Schmidt’s perspective, should only be felt in service to the land.

“Our goal is to work with the land, not just on it,” said Schmidt. “We look at land management a bit differently. We ask, ‘How can we connect with or become a part of the land in a way that provides for the best interest of the land?’ Stewardship is not about putting our human preferences or personal goals for a property first, but rather working with the land to better understand its needs. We’re not looking to force man-made solutions on land that may know how to care for itself better than we do.”

In the end, stewarding lands is about learning our place in a larger ecosystem and encouraging Iowans to discover a connection with the land.

“Every day, we attempt to help people connect and understand the world around us through the work that we do, through volunteer events or our internship program,” said Schmidt. “I’m always learning and dreaming when I’m on the land, and we’re asking ‘How do we help people to believe that nature is part of all of us, it is in our blood?’ Only when we discover our personal connection to the land can we care for it in the best way.”

The land stewardship team at INHF consists of staff, interns and volunteers working year round to restore some of Iowa’s most special places. Each summer, INHF interns (top left and right) work across the state removing invasive species, working with landowners and learning about Iowa’s landscapes. This winter, staff spread prairie seed on three acres at an INHF property in Jones County (bottom right). Land stewardship is an active relationship with the land, restoring it to its healthiest state. Photos by Kerri Sorrell and Derek Miner, INHF



Connecting SOUTHERN WILDLANDS

New land protection is bringing more public land to central and southern Iowa, for wildlife and recreationists alike.

BY ROWAN McMULLEN CHENG
Communications intern | comminternrowan@inhf.org

As more Iowans are flocking to urban and suburban centers, the need for public land to explore and escape around these areas is ever increasing. Last fall, Iowa Natural Heritage Foundation, Pheasants Forever, Quail Forever and the Iowa DNR started a collaboration to provide more wildlife habitat and local greenspace to central Iowa hunters and outdoor enthusiasts.

Three new land protection projects will protect wildlife areas within an hour of the Des Moines metro area and increase public access to the outdoors. The new properties will be owned and managed by the Iowa DNR.

“All three of these areas have a little bit of everything for individuals to enjoy,” said Heath Van Waus, wildlife technician for the Iowa DNR.

When combined with the Heritage Hills Wildlife Management Area, a 1,021-acre area protected by INHF in 2016, the four properties make up the “Southern Wildlands” — and will total over 2,600 acres of wild land and wildlife habitat for central and southern Iowa.

River protection close to home

Only two miles south of Des Moines city limits, the 374-acre future wildlife management area lies along the North River, a tributary of

Lake Red Rock. Historically prone to flooding, permanent protection of the area provides water quality benefits to the North River floodplain and a new recreation area for central Iowa residents.

The previous landowners enrolled the land in the Conservation Reserve Program and planted it to native prairie before protecting it through INHF. The area will also provide critical habitat for creatures that require more space for breeding and foraging.

Wide, open spaces

Just south of the Clarke and Madison county line, the nearly 600-acre Heritage Hills Addition 1 serves as a haven for wildlife, offering diverse habitat that includes woodland, grasslands, a pond and remnant prairies. Breathtaking views of the South River valley, a major tributary of the Des Moines River, are served on the tallgrass hilltops.

Both the Clanton Creek Recreation Area and Heritage Hills west of the addition create large, unbroken tracts of protected land for species of great conservation need as determined by the Iowa Wildlife Action Plan, like Henslow’s sparrow, Bobolinks and Eastern meadowlarks. The addition will contribute to that goal.

“Diversity is the main goal the Iowa DNR

A view of the valley below on an addition to Heritage Hills in Clarke County. The addition, along with three other properties, make up the Southern Wildlands complex. Photos by Ross Baxter, INHF

The four properties that make up the “Southern Wildlands” total over 2,600 acres of wild land and wildlife habitat for central and southern Iowa.

strives for on all our public lands,” Van Waus said. “This large addition of grassland will give us the opportunity to implement grassland management tools like prescribed fire, grazing and mechanical removal of invasive woody trees. The use of these tools will increase the diversity of the grasslands and the species that depend on it.”

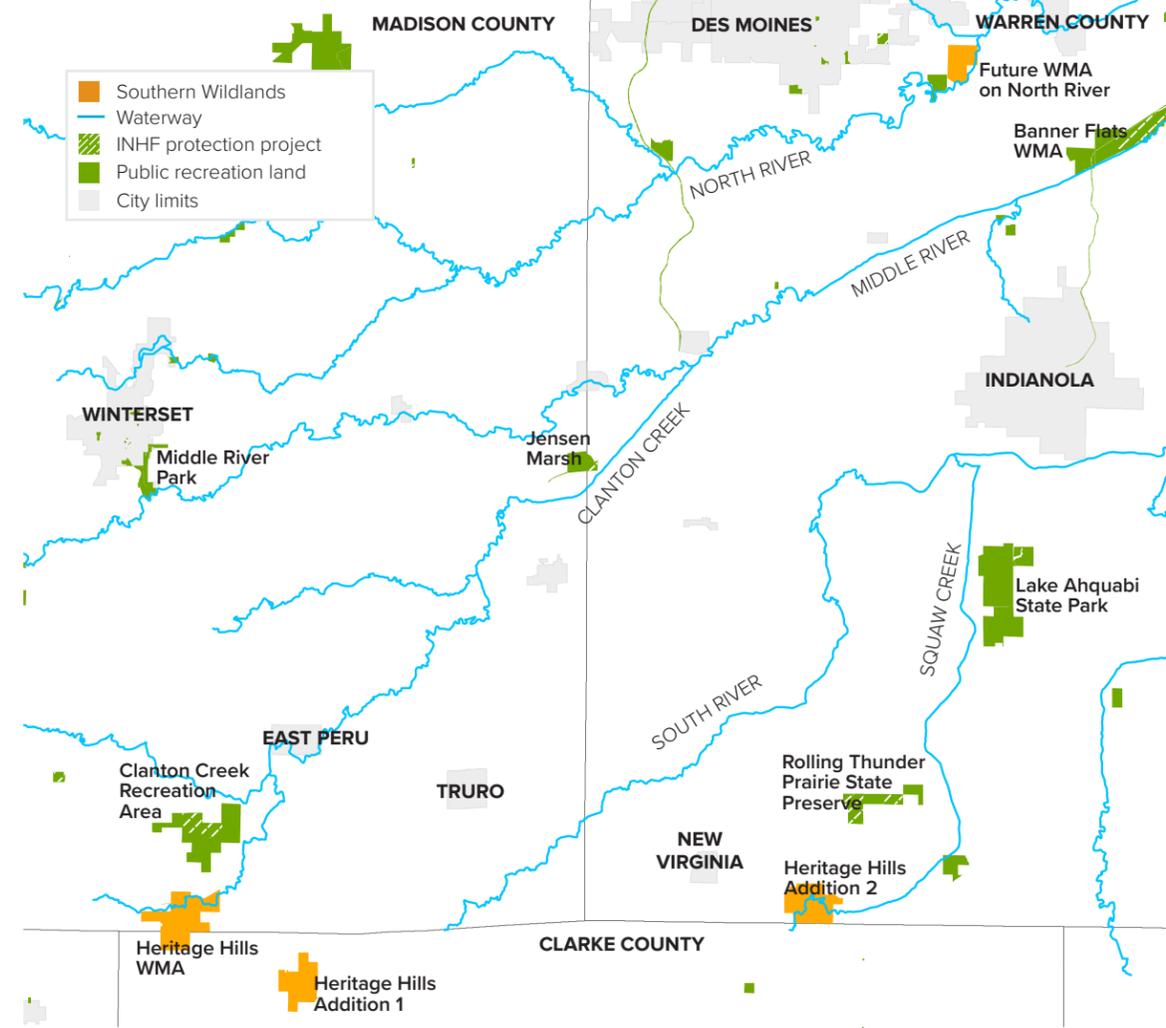
With a methodical grid pattern to Iowa’s roadways, it’s rare to be more than a half-mile from a road anywhere in the state. In the few places not intersected by this grid, these larger pieces of land are uniquely suitable for a particular species that require unbroken, larger landscapes. The large land size increases wildlife ranges and reduces ecosystem fragmentation.

“Most of Iowa’s habitat is very fragmented,” Van Waus said. “It’s amazing to see these large parcels of land harboring so many species of wildlife, and it’s my goal to enhance these areas for the public to use and enjoy.”

Water quality protection at the forefront

Two miles of Squaw Creek run through the 700+ acres of the second addition to Heritage Hills Wildlife Management Area. With the restoration of nearly 200 of those acres, the Iowa DNR hopes to reduce stream bank soil erosion along Squaw Creek, helping to improve and increase Squaw Creek’s aquatic life both in the area and further downstream.

Because of its size, Addition 2 is comprised of a multitude of different habitats. From river



bottomlands to scattered oak timber and cedar thickets, Addition 2 provides sanctuary for an extensive variety of wildlife. Small mammals, reptiles, migratory birds and even game birds will have access to stable, quality habitat.

All together, the Southern Wildlands are expansive, secluded and wild, and will continue to develop diverse and rich ecosystems. With wildlife protection and recreation both in mind, these sizeable areas reflect a larger conservation vision for Iowa.

“This large complex of land provides the opportunity to have quality resources for multiple species so close to the Des Moines metro while protecting water quality,” said Ross Baxter, INHF land projects director. “What this complex offers is a wild experience for future generations of recreationists and hunters.”

The four properties that make up the Southern Wildlands complex (highlighted in orange) encompass over 2,600 acres of habitat and recreation area in southern and central Iowa. Large complexes of land are important for game and threatened species that need wide tracts of habitat for nesting and feeding. The three properties offer a mix of landscapes, from remnant prairie, restored grassland and woodland to floodplain habitat. The four properties will be transferred to the Iowa DNR for public use. Map by INHF

Gifts to the Southern Wildlands complex will support restoration on these sites and speed up the process of opening them to the public.

Contact Abby Hade Terpstra at aterpstra@inhf.org or 515-288-1846 to learn more or to pledge support.

EDITOR'S NOTE:

When we started writing this story in early 2019, no one could have predicted the devastation and uncertainty floods would bring to our state early this spring. It has always been our goal to write about relevant conservation topics that bring awareness and push forward for protection and care of Iowa's land and water, and for some this story may hit close to home. Our hearts are heavy for those impacted by floods already this year.

B

rian Fankhauser was busy in May 2008, dreaming up visions for the newly-protected, INHF-owned Heritage Valley preserve outside Decorah. With three miles of the Upper Iowa River meandering through it, Fankhauser saw the valley as a future haven for wildlife, recreationists and scientists. That month, a 120-foot prairie buffer was planted along the river and 31,000 trees were rooted in the floodplain, taking a step toward Heritage Valley's next chapter.

Three weeks later, one of the largest floods northeast Iowa had ever seen ripped through Heritage Valley, leveling the new plantings, cutting



Extreme flooding in 2008 sent the Upper Iowa River to peak height and over INHF's Heritage Valley, leaving a wake of silt, scouring and damage behind. Seen here after the flood waters retreated, the floodplain was left bare. Restoration work in the years since have helped heal the damage. *Photo by Brian Fankhauser, INHF*

“WHEN THE WATER RETREATED, IT LOOKED LIKE A MOONSCAPE.”

- BRIAN FANKHAUSER, INHF

a new river channel through the floodplain and leaving scour holes big enough to engulf a pickup.

“When the water retreated, it looked like a moonscape,” said Fankhauser, INHF bluffslands director.

What happened to Heritage Valley in 2008 may sound familiar to others: That year saw some of the most devastating floods in Iowa history. And in the decade since, the issue of flooding hasn't seemed to subside.

“What seems fairly obvious is just how common flooding is now,” Fankhauser said. “And they're not just small ones, we're seeing fairly large events.”

A SWELLING PROBLEM

“We've seen floods impact our state throughout the last 10 years increasingly more so,” said Larry Weber, co-founder of the Iowa Flood Center (IFC).

The IFC was founded in response to the 2008 floods and has been tracking flooding data and impacts across the state since. In that time, the data they've collected is clear: Flooding is getting worse in Iowa, with vast natural and economic impact to Iowa's communities.



Some of the data is startling. Iowa has racked up 951 presidential disaster declarations due to flooding since just 1991, causing more than \$18 billion in infrastructure, residential and crop damage in that same time. 2018 was Iowa's second wettest year on record, with statewide average rainfall almost 10 inches above normal, according to the Iowa DNR Water Summary.

The facts bring up pressing questions for Iowa's future: What's causing such an increase in rainfall and flooding, and how can conservation help address the growing problem?

LARGE FORCES AT PLAY

“Iowa's streams and rivers were pushed out of their natural equilibrium when our land was being converted from prairie and wetlands to agriculture and human development,” said Peter Levi, assistant professor of environmental science and sustainability at Drake University.

Flooding as a natural phenomenon is normal — rivers and streams adjust their flow and size based on weather patterns and the land around them. Waterways are just one part of a watershed and come with their own

The benefits of natural land

When land is put into year-round vegetation, it is better able to absorb and hold water. Slowing water down helps prevent soil erosion, scouring and nutrients and pollutants from reaching Iowa's waterways (and beyond).

Below is a comparison of how different land uses impact the flow and nutrient loss of the water.

Data calculated by Emily Martin, INHF

RUNOFF FLOW

Native prairie	4.31 ft ³ min ⁻¹
Developed land	23.49 ft ³ min ⁻¹
Agriculture without buffer strips	9.59 ft ³ min ⁻¹

NITRATE LOSS

Native prairie	0 kg N yr ⁻¹ 0 mg N L ⁻³
Developed land	195 kg N yr ⁻¹ 0.55 mg N L ⁻³
Agriculture without buffer strips	4444 kg N yr ⁻¹ 10.24 mg N L ⁻³

PHOSPHORUS LOSS

Native prairie	0 kg P yr ⁻¹ 0 mg P L ⁻¹
Developed land	92 kg P yr ⁻¹ 0.26 mg P L ⁻¹
Agriculture without buffer strips	820 kg P yr ⁻¹ 1.89 mg P L ⁻¹

N = Nitrate
P = Phosphorus
L⁻¹ = Per Liter
kg = Kilogram

mg = Milligram
ft³ = Cubic feet
yr⁻¹ = Per year
min⁻¹ = Per minute

COPING WITH CHANGE

In an evolving environment, how can Iowa keep up and combat its flooding issues?

BY KERRI SORRELL
Communications specialist | ksorrell@inhf.org

The Iowa Flood Center was formed by the Iowa legislature in 2009 after devastating statewide flooding. The center, housed at the University of Iowa, is the country's only academic research center focused solely on flooding.

Experts at the flood center track flooding data across the state, collecting information vital to predicting and preventing flood damage. Through their Iowa Flood Information System (IFIS), the center is able to provide real-time information on stream conditions, precipitation and watersheds for more than 1,000 Iowa communities.

"The flood center is wholly unique to our state," says Larry Weber, co-director of the Iowa Flood Center. "The level of expertise we've compiled is unmatched anywhere else in the country, to huge benefit to Iowans and the whole Midwest."

The Iowa Flood Center and INHF collaborated in 2013 to help landowners better understand flooding on their land. Maps and models developed by the flood center show how likely it is land along Iowa's waterways will flood in any given year. The models help farmers and landowners better understand their risks and consider potential conservation measures they can implement.

INHF's Heritage Valley (outlined in orange) as seen through the Iowa Flood Center's floodplain mapping, showing potential flood levels at different flood stages. *Data courtesy of IFIS*



floodplains, land that allows for the natural filtration, dispersion and storage of water. But as development and agriculture have expanded into these floodplains, land along streams and rivers is increasingly utilized for purposes other than natural water retention, leaving nowhere for waterways to naturally flood.

"When we modify the land, we decrease the time water spends on the land, causing the water to get into streams and rivers much more quickly," Levi said. The effect, says Levi, is an increase in flooding and pollution from nitrate and phosphorous.

"We know we're impacting our land through land management and land use decisions, and the expansion of urban areas and urban development definitely contributes to that," Weber said. "But probably more so through the intensification of agriculture in the last decades, and especially agricultural drainage."

But there are even larger forces at play, ones that come with their own distinct challenges.

"As a composite, on the whole, the intensification of flooding is a definite result of climate change," Weber says.

"As climate scientists predicted, our springs and falls are becoming

wetter, our summers cooler, and we're seeing higher dew points and moisture levels, which are driving these large rain and flood events."

"Not only have we changed the landscape, we've added an additional layer of human impact with climate change," Levi says. "We're seeing intense rain events in shorter periods, large storm systems getting stuck as they move across the continent and a change in atmospheric conditions."

"Floods aren't unnatural, but the magnitude of them — the effects are amplified and more severe," Levi said.

SEEING THE EFFECTS

In Iowa, "we have to talk about water quality and quantity hand in hand," said Jamie Benning, water quality program manager at Iowa State University Extension & Outreach.

With less natural floodplain land



Severe flooding in western Iowa was front page news this March, as the Missouri, Platte and Elkhorn rivers reached record levels — feet above records set in 2011, breaching levees and submerging towns. Across the state, 56 counties were designated under disaster proclamations from the governor. *Source: The Des Moines Register*

“WE’RE SEEING INTENSE RAIN EVENTS IN SHORTER PERIODS, LARGE STORM SYSTEMS GETTING STUCK AND A CHANGE IN ATMOSPHERIC CONDITIONS.”

- PETER LEVI, DRAKE UNIVERSITY

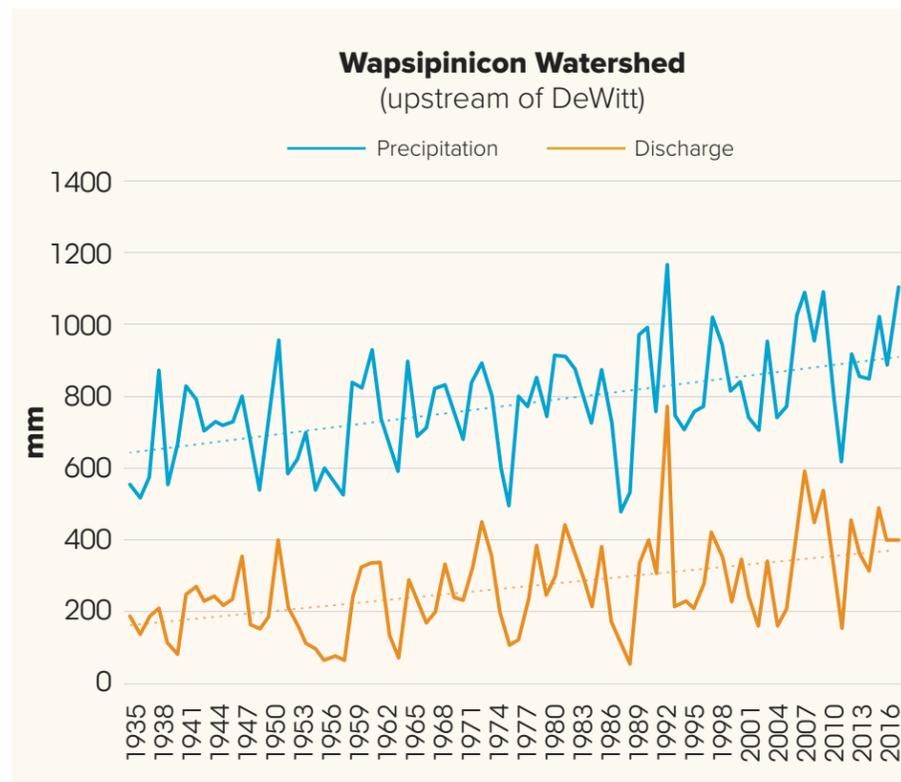
around our rivers and streams, water runoff from fields and developed areas is increasing in volume and speed. Chris Jones, a research engineer with IHR – Hydrosience & Engineering (formerly Iowa Institute of Hydraulic Research), studies the effects of this increased runoff across the state.

"When you look, for example, at the Wapsipinicon River, the average flow of the river has increased 204 percent since 1934," Jones said. "That river is on average twice as big as it was historically."

There's a direct relationship between increase in precipitation, flow and discharge."

And as more water runs off the land, it's carrying a higher load of harmful pollutants with it.

"When we look at five year averages, nitrogen pollution in the state is about 70 percent higher than it was in 2003," Jones says. "Phosphorous pollution has increased about 40 percent since 2004."



While the impact of flooding is felt across the state, river flow and water pollution have been increasing more rapidly in western and northeast Iowa, where land use has transitioned from year-round vegetation more dramatically than the rest of the state.

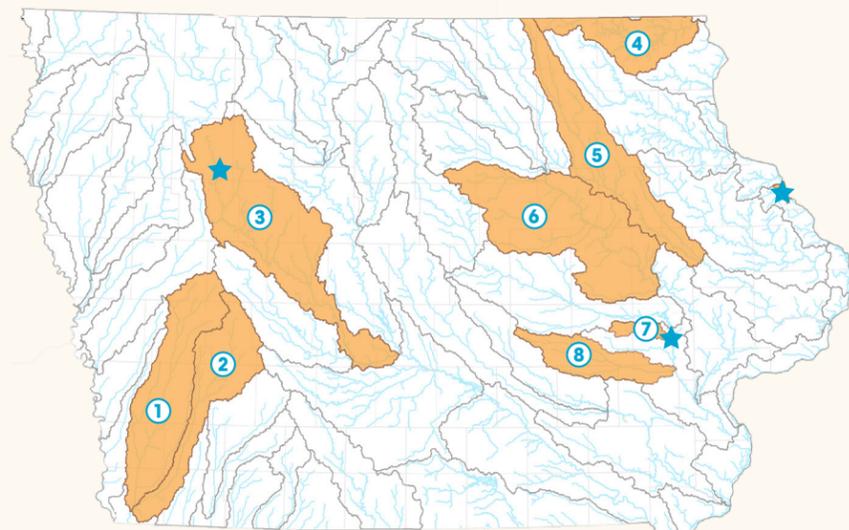
So how can the state start addressing these compounding issues? The answer lies in the land.

NATURAL SOLUTIONS

"When we think about conservation's role in reducing the impacts of flooding and nutrient pollution, we're thinking from a water retention standpoint and the natural way a floodplain should work," said Heather Jobst, INHF senior director for land conservation. "If you have a natural, functioning river system, it holds more water. We're always looking to bring our rivers and streams back to that more natural state."

INHF works with landowners across the state to protect land along river corridors and restore it to year-round natural vegetation, like grassland, prairies, wetlands, and utilize conservation-forward land management techniques, like cover crops and managed grazing. This restoration increases the land's capacity to hold water, creating a high-functioning floodplain, natural habitat for wildlife and opportunities for recreation. Retaining surface and ground water — and having permanent roots in the soil — help decrease the speed and flow of water into Iowa's streams and rivers.

It's on this idea that Levi has based a majority of his work. Levi has spent three years setting up a network of stream sensors in central Iowa to study the impact of conservation land on water quality and flow. Sensors are installed in streams next to crop land, development and protected land in native vegetation, and are constantly



The Iowa Watershed Approach (IWA)

After the floods of 2008, the state of Iowa was able to secure a major federal grant — \$97 million — to help make Iowa watersheds, communities and homes more resilient. Nearly \$40 million of the grant is dedicated to watershed research and planning and implementation of flood mitigation projects in eight of Iowa’s major watersheds (shown above). The plans encompass the Iowa Watershed Approach, which targets land use and infrastructure to tackle the state’s flooding and water quality issues.

With the funding, watersheds are able to work across municipal borders to collaboratively implement conservation and infrastructure practices to prevent or decrease flooding across the whole watershed.

Examples of watershed projects include the installation of large structures like ponds and wetlands near waterways to retain flood waters, terraces in agricultural fields, planting perennial vegetation on land like prairie strips along fields and large buffers and grassways, oxbow restoration along rivers to reduce water flow speeds, and urban projects, like rain gardens and permeable pavement. The result is more natural infrastructure on the land.

“This work has definitely increased our focus on thinking about how we can store water on the landscape versus building up large and costly infrastructure that may eventually fail,”

IWA Watershed districts

- ① West Nishnabotna
- ② East Nishnabotna
- ③ North Raccoon
- ④ Upper Iowa
- ⑤ Upper Wapsipicon
- ⑥ Middle Cedar
- ⑦ Clear Creek
- ⑧ English River
- Iowa watershed
- IWA Watershed district
- ★ IWA community project
- River/stream

said Jamie Benning, water quality program manager at Iowa State University Extension & Outreach.

The work is helping build resiliency in Iowa’s communities and in the long run, helping shape them into more desirable places to live.

“At the Iowa Economic Development Authority, we’re asking ‘How can this river or stream be an asset in enhancing quality of life in our communities locally or in the region?’” said Jeff Geerts, special projects manager with IEDA. “Through partnerships, planning and investment, the IWA will help communities be more resilient in the future.”

The current grant monies must be used for planning and implementation by Sept. 2021, but the impact of watershed work will last for years to come.

Information courtesy of Jamie Benning and Jeff Geerts

measuring health indicators of the stream system. While still in the early stage of reporting, Levi is already seeing clear signs: Streams are healthier flowing through protected natural land than when they enter.

Levi’s results could mean big news for conservation. “As I analyze these data, I expect we’ll have a quantitative demonstration of the value of conservation land on water quality,” Levi said. “It’s very exciting.”

FINDING THE RIGHT PIECES

But with limited resources and ever-increasing pressure on our river and stream corridors, it can be hard to know where to start with protection. A Land & Climate Program grant from the Land Trust Alliance will help INHF answer that question. The grant-funded research will overlay The Nature Conservancy’s Resilient Lands data and other Iowa conservation data to identify what lands could be most resilient in years ahead, and where conservation groups could be focusing to best combat the effects of flooding and climate change.

“We’re bringing together two very big concepts, climate change and land protection, and making it feel more solvable,” said Emily Martin, INHF conservation programs coordinator. “When you’re able to piece it down to the most important land to protect, it gives you a clear start point to addressing these issues.”

INHF will be sharing this data with watershed groups across the state working to combat the effects of flooding in their local areas. Part of the Iowa Watershed Approach (IWA), eight watershed teams are working to implement conservation and flood-prevention protection in areas along Iowa’s major river corridors.

Funded by a \$97 million dollar grant from the federal government, the IWA is developing models for flood prevention for the whole state, and allowing communities and cities to collaborate to build healthier and more connected floodplains.

“The Iowa Watershed Approach attempts to deal both with our flood challenges and water quality challenges,” Weber said. “We have to think locally and how we can improve one watershed, one field, one urban lot at a time.”

By working on a watershed scale instead of on municipality or county borders, partners are more able to address flooding issues that impact every community along a river.

“Streams don’t stop at or recognize political boundaries,” says Jeff Geerts, special projects manager with the Iowa Economic Development Authority. “A watershed approach brings together cities and counties to address a flooding issue they all have in common, on a stream or watershed they all share.”

FLOWING TOWARD PROGRESS

In the years after the 2008 flood, Heritage Valley has recovered. After the initial cleanup, the original floodplain area was planted back to

prairie and trees, and more acres have been planted to year-round vegetation since 2012. When floods came again in 2013 and 2016 (the largest flood event the lower Upper Iowa has ever seen), Heritage Valley held. Prairie and tree roots prevented any scouring and the valley’s soil stayed in place.

It’s just one example of what the land, when given a chance, can do.

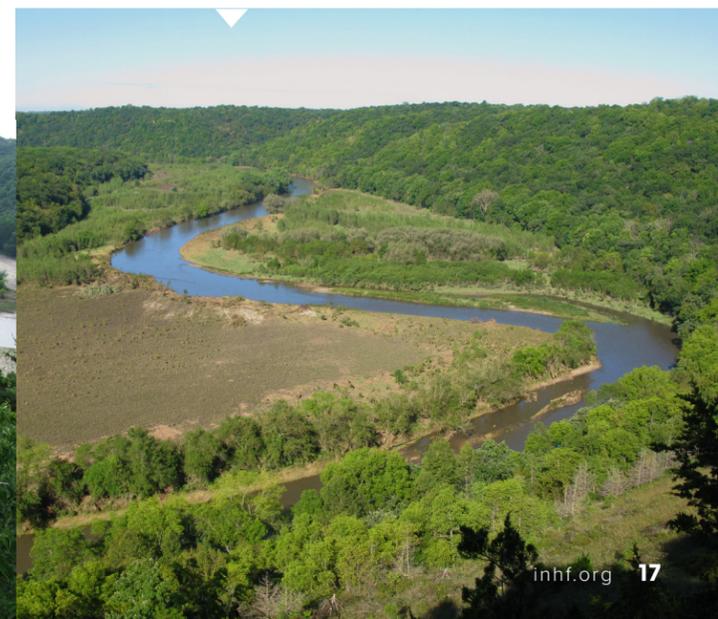
“It’s not about ‘more of this, less of that,’ it’s ‘how can conservationists, farmers and organizations work together to tackle these issues side-by-side?’ This is a state we all love and we need to protect it together,” said Joe McGovern, INHF president.

Iowa has immense challenges facing it, but with the right partnerships and dedication, a better future is attainable.

“If we can show that land conservation and the watershed approach work can improve water quality, that’s a blueprint for the rest of the agricultural Midwest,” Levi says.

“It’s time we ask ourselves: Are we going to collectively develop solutions that truly help people and lessen the impact of these events in the future? It’s going to take a lot of effort — and we’re ready to play our part,” says McGovern. 🌱

Additional reporting for this story done by Katy Heggen.



“HOW CAN CONSERVATIONISTS, FARMERS AND ORGANIZATIONS WORK TOGETHER TO TACKLE THESE ISSUES SIDE-BY-SIDE? THIS IS A STATE WE ALL LOVE AND WE NEED TO PROTECT IT TOGETHER.”

- JOE MCGOVERN, INHF PRESIDENT

Side-by-side comparison of INHF’s Heritage Valley one month after the floods of 2008 and 2016. After 2008, the floodplain was planted back to year-round vegetation, allowing for more water storage and slowing, and less flood impact on the valley. *Photos by INHF*

DESTINATION WHITEROCK

BY ROWAN McMULLEN CHENG
Communications Intern | comminternrowan@inhf.org

Floating south on the Middle Raccoon River, the gentle water trail meanders through the Whiterock valley, opening overhead to oak branches outstretched toward ancient bluffs, with prairie and rolling farmland dotting the surrounding land. This valley is part of one of the largest conservation visions in Iowa: A private oasis, open for public use, mixing protection and agriculture in one 5,500 acre area.

Compiled piece by piece out of the Garst family's love for the land, Whiterock Conservancy is nearly 5,500 acres just outside Coon Rapids, a little over an hour west of Des Moines. The Garst family has owned land in the Middle Raccoon valley since 1882, building their ever-evolving complex of agricultural and natural land through generations. Whiterock's current iteration, of which 4,200 contiguous acres are open to the public, is owned and protected by a nonprofit organization created in 2004 by the five Garst sisters, great-granddaughters of the original landowner, and their mother Mary. It's a massive preserve of natural features and recreation opportunities ripe for discovery.

A family affair

Edward Garst settled in the region in the late 1800s, opening the area's first general store. Roswell, his son, built a popular hybrid seed company out of Coon Rapids and Roswell's son Stephen expanded his father's farm piece by piece as others moved out of the valley. Stephen had five daughters and one son, whom helped the family expand the farm again during the 1980s. The land they purchased is still a part of Whiterock Conservancy today.

The oldest of the five sisters, Liz Garst grew up on the family land and is now the Garst

Family Business Manager. She says her family's connection to the land built Whiterock to what it is today.

"Everyone in the family has really loved this land that is now Whiterock," said Liz. "When my father's estate had to be dealt with, we decided 'let's go ahead and make sure this gets protected.' There are very few parcels of land in Iowa in a contiguous block as big as Whiterock. This is meant to be public."

The most recent land addition to Whiterock has been within the past decade. The organization, also called Whiterock Conservancy, has grown to eight full-time employees and a board of directors. Altogether, Whiterock Conservancy aims to maintain the Garst legacy of balancing natural resource protection, sustainable agriculture and public recreation.

For natural benefit

Whiterock Conservancy is named after a roughly 90 million-year-old cretaceous Dakota sandstone bluff that juts up in the middle of the valley. This irregularly-shaped outcropping contains fossils from the last cretaceous period, making Whiterock a snapshot of the state's natural history.

"One of my favorite phrases to promote

Whiterock Conservancy

Guthrie County



LAND: 5,500-acre private nature and agriculture preserve with 4,200 acres open to the public

SPECIAL FEATURES: Middle Raccoon River, remnant prairie and oak savanna, Dakota sandstone bluffs, conservation agriculture, campsite and cabin rentals, trail system

PARTNERS: Whiterock Conservancy, Garst family, INHF



Whiterock Conservancy, a privately managed conservation area west of Des Moines in Guthrie County, invites Iowans to experience the convergence of nature and agriculture. Whiterock is known for its dark skies, expansive trail system for hikers, bikers and horseback riders and long family history. *Photo [left] by Lynn Reihman, photo [right] courtesy of Travel Iowa*



“The promise of Whiterock is really only fulfilled when people will go there and touch it, know that it’s real. Take its lessons and make them true elsewhere.”

- RYAN HANSER, BOARD MEMBER, WHITEROCK CONSERVANCY

Coon Rapids is: “The last glacier stopped here, so should you,” says Liz.

The large size of Whiterock Conservancy is home to a wide variety of protected habitats. Straddling two landforms — the Southern Driftplain and the Prairie pothole regions — Whiterock Conservancy has prairies, wetland seeps, oak savannas, rocky bluffs, working agricultural land and eight miles of the Middle Raccoon River cutting through it.

From Bald eagles, Barn owls and Blanding’s turtles to Flying squirrels, Whiterock Conservancy is a refuge for many of Iowa’s most threatened species, as determined by the Iowa Wildlife Action Plan.

“At least 53 of Iowa’s 67 breeding bird species with greatest conservation need have been documented at Whiterock Conservancy,” said Penny Perkins, naturalist at Whiterock Conservancy. “Whiterock is also home to 3 of the 19 mammals identified as species of greatest conservation need and at least 5 of the 18 migratory birds of greatest conservation need.”

Whiterock has been an active restoration site for decades, employing land stewardship techniques that mimic historic natural processes, including on one of the largest

active oak savanna restoration sites in the state. “Oak savanna is Iowa’s most endangered habitat type, rarer than prairie and wetlands,” said Liz. “We’re doing restoration on what was originally oak savanna habitat, and at scale. This is a big project, and fire is a major part of what we do here. We burn something like 1,500 acres a year.”

Finding balance

An integral part of Whiterock’s mission from the beginning, sustainable agriculture is still at the forefront of Whiterock’s use today. Alongside native and restored natural landscapes, Whiterock strives to set a statewide example of responsible, innovative agriculture existing in tandem with conservation and recreation.

Visitors can take a stroll by the prairie strips, learn about varieties of cover crops, or picnic on a pasture with intentionally diverse grass mixtures. And with herds of bison, cows and goats, Whiterock Conservancy has been a touchstone for demonstrations and education regarding high intensity rotational grazing.

“It’s the boldest vision for what Iowa could be again,” said Ryan Hanser, board member at Whiterock Conservancy. “The idea that

commercial production agriculture could coexist with an effort to create sustainability and ecological integrity. To do habitat work right on top of working lands to me is the most meaningful dichotomy out there. I don’t think they’re polar.”

Welcoming Iowans to Whiterock

Maybe the boldest part of Whiterock’s mission is encouraging all Iowans to explore the valley to learn, recharge and discover in Iowa’s outdoors. With a myriad of recreational opportunities from biking, paddling, hiking, horseback riding, fishing and varied accommodations including campsites, cabin rentals and a farmhouse-turned-inn, any recreationist is bound to find a home away from home at Whiterock.

Nearly 40 miles of hiking, biking, horse and ATV trails exist and are maintained at Whiterock, creating opportunity to see all of the area’s unique landscapes. And the wonder extends beyond daylight hours — as one of the darkest places in Iowa, Whiterock is host to the Iowa Star Party and many stargazers hoping to catch a glimpse of meteor showers and the Milky Way.

The River House Barn at Whiterock, which used to hold dance parties during prohibition, now hosts weddings and events. From the gardens near the barn, you can see all that Whiterock Conservancy has to offer, from geologic time, human relaxation, agriculture fields in the distance and roaming wildlife.

“The promise of [Whiterock] is really only fulfilled when people will go there and touch it, know that it’s real. Take its lessons and make them true elsewhere,” says Hanser.

Protection into the future

The story of Whiterock is long and ever-evolving, but the Garsts are happy knowing their family land is protected for innovation and public use beyond their lifetimes. Guided with help from former Iowa Natural Heritage Foundation president Mark Ackelson, the Garst sisters worked with INHF to protect the original pieces of Whiterock Conservancy and create the nonprofit that now owns and manages the entire area.

“We feel glad that the land will be protected and kept together,” said Liz. “We knew it’s bigger and more important than we are. It deserves to live.”

Habitats and land uses combine at Whiterock Conservancy to serve as a model for the intersection of recreation and working lands in the state. Traditionally a working farm, the Garst family opened portions of Whiterock up to the public in the early 2000s in hopes Iowans would discover its natural beauty. Today, it’s host to paddlers, wildlife spotters and an annual Star Party. *Photos courtesy of Whiterock Conservancy*

LEAVING A LEGACY

A gift that provides annual income for life to you or a loved one

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- A favorable tax benefited return
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– John E. Carl, INHF member

Through a Charitable Gift Annuity, a percentage of your gift to INHF is paid to you by INHF each year. The size of the payments depends on the amount you contribute and the age of the beneficiaries (the older the beneficiaries, the higher the rate of return). You can choose:

- Income for one or two people who are age 60+
- Annual or semi-annual payments
- To defer your payments for a year or more — which will increase the size of the payments
- To receive payments for a period of years, or for the rest of your life

More information about establishing a Charitable Gift Annuity with Iowa Natural Heritage Foundation can be found at www.INHF.org/ways-to-give, or contact Abby Hade Terpstra at aterpstra@inhf.org or 515-288-1846, ext. 15.

— ABBY HADE TERPSTRA,
Donor relations director

Leave a legacy of clean water, healthy soil and beautiful outdoor places for future generations.

To see how including INHF in your will or trust can help make your vision for Iowa a reality, contact Abby Hade Terpstra at aterpstra@inhf.org or 515-288-1846.

TRIBUTE GIFTS

IN MEMORY OF

George William Ackelson
Steve Atherton
Alan J. Atkinson
Alberta Brosnahan
Betty Murrow Bergland
Erica Berrier
Larry Beving
Dale Birkenholz
Laurance Bishop
Gabriel Blaskovich
Carl Bollwinkel
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Max Jack Clark
Jerry Cable
Raymond, Irene and Roger Coenen
Susan Connell-Magee
Frances Crouse Salyards
Charlie Cutler
Robert Cutler
Robert Leo DeMueulenaere
Uncle Bob Dyas
Bill Fultz
Hoddy Gates
Janelle Geiserts
Dirk Glahn
GMHR Mountain's Top Beggar MH
GMHR HRCH Mountain's Top Wooden Nickel MH
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Jerry Jewett
Thomas Robert Johnson
Wilma Murrow Jones
Wilma Forshay Kelloway
Elwood Kleese
Arnold Klemme
Matt Krawczuk
Bill Kruse
Larrie LaFoy

Doug LeWerke
Chuck Lusher
John R Mackaman
Gary "Boomer" Maxwell
Mike McCabe
Joseph McGovern
Barbara Meysenburg
Alicia Moeller
MoMo, Chubby Cat, Sonnewen
Jeffrey R. Moom
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Gerry Nauman
Vernon T. Olson
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Anita O'Gara
Frank Olsen
John and Carol Peterson's 45th Wedding
My brother the forester; Bob Petzelka
Ryland and Morgan Richards
Andy Skahill
Wanda Skubal
Louis & Juanita Slauson
Jim Sutherland
Donald Wegmann
Kristen Winter

Expand your hiking horizons

BY ROWAN McMULLEN CHENG
Communications intern | comminternrowan@inhf.org

With warm weather quickly approaching, it's time to start planning new adventures around the state. This year, pack your backpack, find your compass and plan a route: backpacking is an essential way to discover Iowa's lush outdoors and immerse yourself in wilderness.

Not always known for its rich backpacking opportunities, Iowa has great routes to explore if you're looking for multi-day trips and can be great for beginners looking to try backpacking for the first time.

“For me, it's just about getting everyone outdoors,” says Jenn Riggs, founder of Wander Women Iowa, an outdoor adventure company for Iowa women. “Just go for it. Be prepared but get your foot out of the door.”

Before venturing off, make sure you're prepared for the trail ahead. Route planning is made easy by maps and trail guides found online through the Iowa DNR, MyCountyParks.com and IowaParklands.com. Maps and campsite descriptions can also be found in *Hiking Iowa: A Guide to Iowa's Greatest Hiking Adventures* by E. Hill and K. Corcoran.

Backbone State Park in eastern Iowa features eight miles of hiking, with full views of the forest understory diversity to wow along your hike. Easily accessible from the Des Moines metro, Stephens State

Find more Iowa places to explore at www.inhf.org/blog



Forest between Osceola and Chariton is exemplary for beginning backpackers due to its well-maintained 6-mile loop through the Woodburn Unit. Set out east from the parking area on 330th Ave and follow the Bur Oak trail. The loop features five pack-in campsites.

Connected by a short road segment, Preparation Canyon State Park and the Loess Hills State Forest are ideal for watching slow sunsets sink over distant bluffs. In addition, the two areas provide great stargazing. With some animal and plant species found only in these parks, backpackers should be aware of this landscape's ancient fragility.

The biggest rule of backpacking: Know your limits before your boots hit the soil. According to REI experts, most backpackers face two main obstacles: time and distance. An average backpacker can trek anywhere from three to 12 miles per day, depending on season and elevation. Know recent and projected weather for the area you're planning to hike, bring enough water and food and build in opportunities to appreciate Iowa's beauty. 🏕️

Iowa has several areas across the state that are perfect for learning the basics of backpacking. With the right gear and sense of adventure, opportunities wait all over Iowa, like the Loess Hills, pictured here. Photo by Robert Buman



Iowa
Natural Heritage
Foundation

505 5th Ave., Suite 444
Des Moines, IA 50309



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Sweet William, a spring ephemeral, is spotted during a woodland hike near another popular spring sight: a morel mushroom. The freeze/thaw cycle of early spring sows the right conditions for the first flowers to bloom in woodlands, followed closely by morel mushrooms, which thrive in early spring humidity and warmth. Just don't ask where the picture was taken. *Photo by Don Poggensee*

