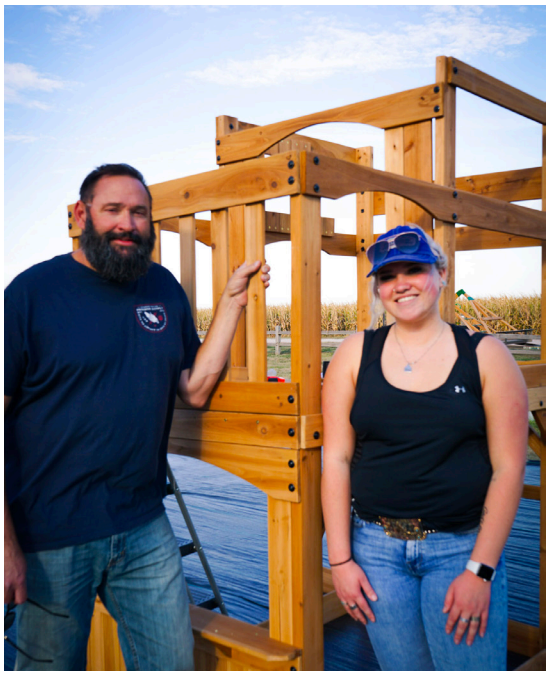
ANNUAL PROJECTS ISSUE • NOVEMBER 2022

UPPER BIG BLUE NATURAL RESOURCES DISTRICT
BLUEPRINT

Volunteer Projects Improve District Recreation Areas

Two young women used their time, talents, and resources to benefit district rec areas this fall. Their community service projects will be felt for years to come, as each has worked to make a lasting impact.

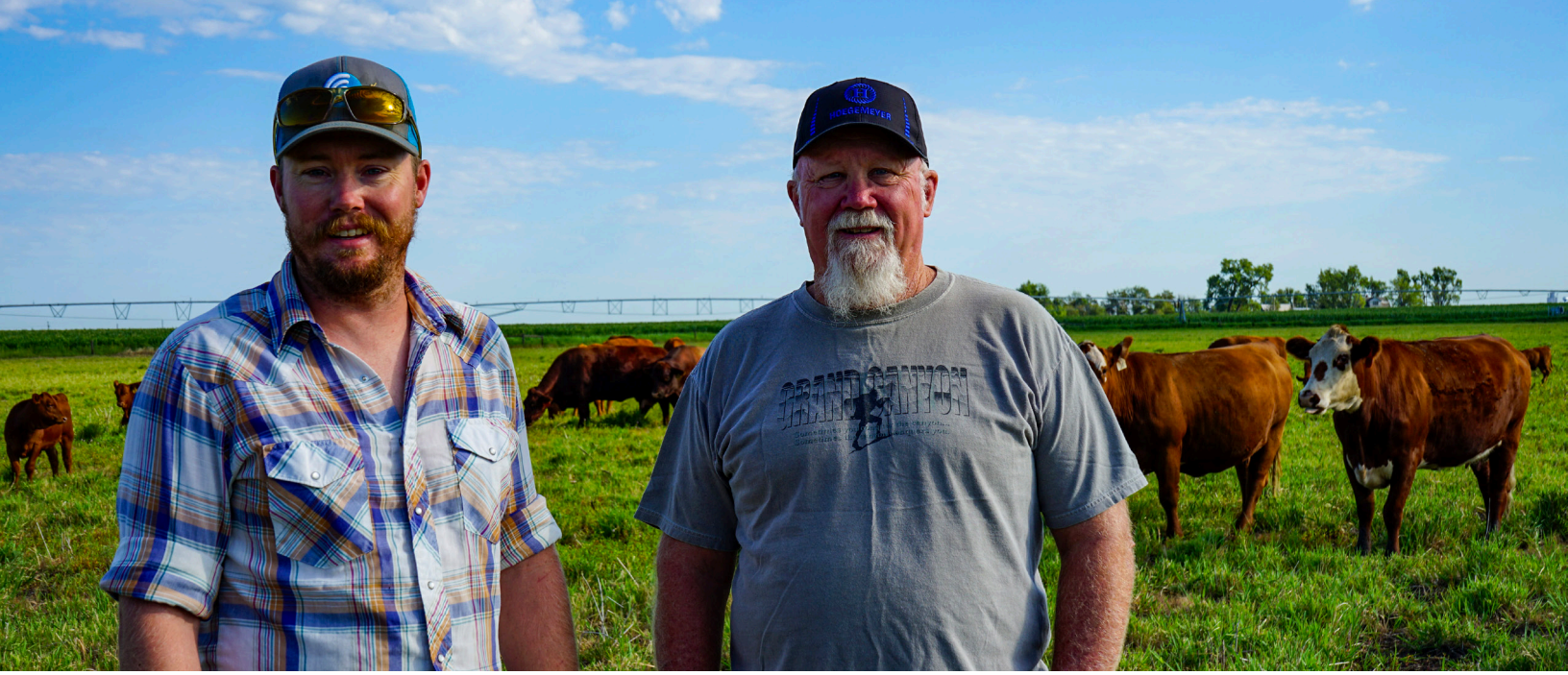
PLAYGROUND INSTALLATION



For Aurora area resident Kelsey Mersch, growing up near Pioneer Trails Recreation Area was a privilege that came with an added sense of responsibility. Mersch's youth was spent kayaking and fishing on the lake and picnicking and walking the trails on the park grounds. Through her teen years, she gave back when she could, cleaning up trash and keeping an eye out for suspicious activity or vandalism. She had a sense of pride and ownership about the facility. She wanted the park to be a great place to relax and enjoy nature, not only for her family, but for all who visited the picturesque site.

A longtime member of the Aurora Eager Achievers 4-H club, Mersch understood the importance of community building and using one's gifts as opportunities to serve. Mersch loved the outdoors, loved building things, and especially enjoyed spending time at Pioneer Trails. Why not combine her interests and create a park improvement that would benefit her community using the skills and resources she developed through 4-H?

Several years of planning and fund raising have come to fruition, as Mersch installed a new play structure for young children at Pioneer Trails in September. *(VOLUNTEERS...page 6)*



To Whom Honor is Due...

Several individuals and one community in the Upper Big Blue NRD were recognized with awards from the Nebraska Association of Resources Districts at their fall conference. More on each of these honorees can be found at www.upperbigblue.org.

Director of the Year: Larry Moore (Ulysses)

Since the founding of Nebraska's Natural Resources Districts in 1972, Larry Moore has been a fixture of the board room at the Upper Big Blue NRD. Moore first started attending NRD board meetings 50 years ago, not as a director, but as a driver. One of his friends, Raymond Burke, was elected to the first board of directors for the local district, but he needed someone to drive him to the meetings because he didn't like to drive at night. Moore volunteered to drive and became engaged with the work of the district as he sat in on meetings. By 1974, Moore's interest rose to the level of running for a seat on the board himself. That was 47 years ago. In that time, Moore has served continuously as a director and has seldom missed a meeting.

Beyond near perfect attendance, Moore has provided essential institutional knowledge and a deep understanding of the issues faced in the district, both as a board member and as member of the local ag community. He has provided leadership and modeled mature debate, deliberation, and decision-making during almost five decades of board service.

Moore studied agriculture for several years at UNL, working on summer farm crews in Nebraska, Montana, and Canada, before returning to his family's farm in 1960 to work full-time with his father. Today Moore farms with his brother Mike, son John, and grandson Max. Their operation involves hybrid seed grain crops and hay and pasture. The farm is composed of both dryland and irrigated fields. Moore began experimenting with cover crops and no-till in 1989 and has built on the practices since then. For the last five years, the operation has been 100 percent no-till and has incorporated cover crops whenever weather conditions will allow, with the goal of 100 percent coverage.

Moore leads by example, as he talks to other area farmers as well as board members about the benefits of cover crops and no-till on his fields and is pleased to see the practices are being adopted at a greater rate in the area in recent years. Moore has continuously invested in water conservation on his farm since the 1970s, moving from gravity irrigation to center pivots. He has installed soil moisture sensors and irrigation scheduling technology to reduce the amount of water they use as well as reduce the likelihood of nitrogen leaching."Larry is a pillar of this district. His leadership has been indispensable for decades," said NRD General Manager David Eigenberg. "He brings so much enthusiasm and knowledge to the challenges the NRD is working to tackle."

Outstanding Soil Conservation: Dave and Alex Daake (Waco)

The Daake family has been farming in Nebraska for generations. Today, Dave Daake and his son, Alex, continue that tradition by farming and practicing conservation on the family's 1,100 acres, which lie between Goehner, Utica, and Beaver Crossing.

Dave and Alex grow a rotation of crops including soybeans, corn, alfalfa, and grasses. They are considering adding wheat to the rotation as well, as they are always looking for ways to improve the diversity of the operation. Dave used to raise sheep and hogs, but currently Alex is trying out a small cow-calf operation on the land to improve their soil health as well as profitability. The animals graze on the forage mix cover crops, which benefits the cattle and the soil, as the grazing practices break up compaction and recycle nutrients.

Soil health has been important to Dave for decades. Trained in horticulture at the Nebraska College of Technical Agriculture in Curtis, Nebraska, Dave started no-tilling 25 years ago on a portion of his fields and is now 100 percent no-till in their operation. About 15 years ago, he started adding turnips and then later rye grass as a cover crop to reduce erosion and compaction. He's been steadily adding cover crops to more and more acres each year. Alex enjoys researching cover crop mixes and experimenting with planting options including timing and row spacing, looking for ways to maximize on the investment. "We're planting more cover crops each year," said Dave. Alex plans to have cover crops on all of their row cropped acres eventually.

The team has increased the soil organic matter on many of their fields to be 4.5-5%, which has reduced their need for fertilizer inputs. The increased levels of soil organic matter provide essential nutrients for plants and microbes, as well as increasing water holding capacity. "It saves us a pass or two each year with the pivot," says Dave, "and in drought years like 2012, we aren't impacted as much. You don't see the dirt blowing in the spring." The cover crops suppress enough weeds that there is also a reduction in herbicide inputs needed. Dave sees the many active earthworms in his fields as evidence that the soil health continues to flourish.

Outstanding Community Conservation: City of York, Project GROW

Since 2017, the City of York and the Upper Big Blue Natural Resources District have worked together to protect water quality in the city's wellfield through Project GROW (Growing Rotational crops On Wellfield). Five years into the program, the partnership continues to accomplish its goals. The innovative partnership between the city and the NRD has prioritized restoring the soil in the wellfield as a means of protecting the water consumed by the residents of York, as healthy soil acts as a filtering system to the aquifer and decreases nitrogen leaching and contamination. Project GROW focuses on 160 acres of the total 400-acre wellfield and includes demonstration fields, community garden plots, a fruit orchard, and an extensive pollinator habitat. Using no-till, cover crops, livestock integration, and diverse crop rotations, the project seeks to improve soil health, decrease soil erosion, and improve water holding capacity, all while maintaining profitability.

Thanks to these measures, inputs of conventional fertilizer, herbicides, and pesticides have been minimal. When conventional fertilizer has been added, it has been applied in season using precision technology to make sure that the least amount could be used to the greatest effect, decreasing the risk of leaching to the groundwater supply.

Annual soil testing and other measurements have shown continuous improvement in the nutrient availability, nitrogen efficiency, infiltration rate, and soil organic matter in the Project GROW fields. In addition to the benefits to the citizenry of better water quality, Project GROW remains profitable and provides a net financial gain for the City of York.

An additional benefit of Project GROW has been opportunities for education. Students from York and Concordia Universities have made regular visits to the GROW fields leading to academic research projects. Results from the growing practices at the demonstration fields are regularly communicated to agricultural producers in the area in the hopes that they will adopt similar practices to protect soil health and groundwater quality. ♦♦♦

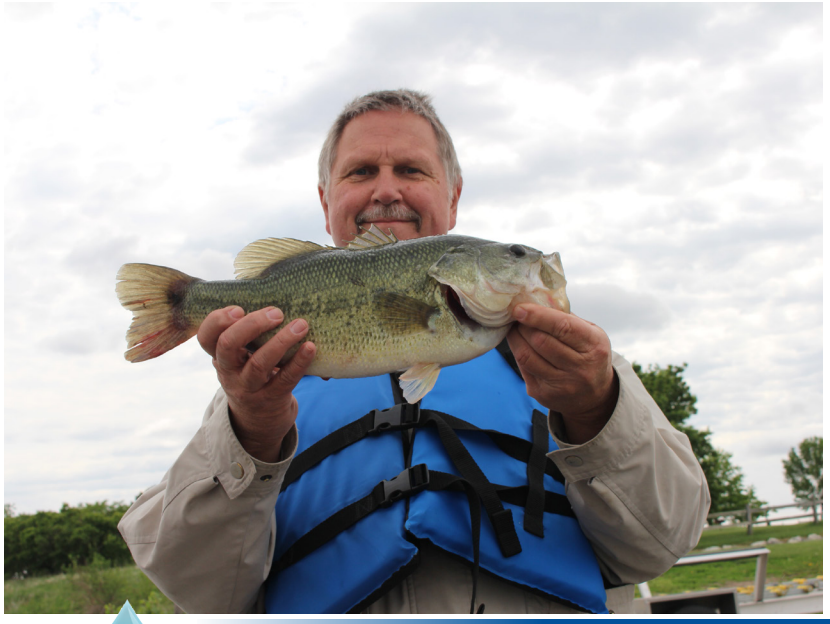
Gone Fishin'

Fishery Health Assessed at Pioneer Trails Recreation Area

It was overcast and cool on the lake at Pioneer Trails Recreation Area as a team from the Nebraska Game and Parks Commission readied their equipment: boats, buckets, long-handled nets, and measuring boards. They motored across the lake to the first of four fish traps they had set out the day before to begin a survey of the fishery. The last time such a survey was done on this lake was in 2017. Public access lakes across Nebraska that are stocked with fish by NGPC are surveyed regularly to ensure that the conditions in the lake continue to be suitable for fish populations.

As two of the team members worked together to haul the nets up out of the water, it was clear there were indeed plenty of fish in the 40-surface-acre lake near Aurora. The flopping mass of fish inside the trap net were deposited into large buckets on the boat, then examined one by one. Each wet and wriggling body was placed on a measuring board, then sizes and species were recorded on a clipboard. The biologists noted the number of each species present and the condition of the fish before releasing them back into the lake.

The first net contained mostly channel catfish, the official fish of Nebraska, but also some white crappie. "Catfish are well suited to water of this turbidity, so we stock them every other year here," said Brad Eifert, NGPC southwest district fisheries manager, tossing an olive-brown, whisker-faced fish back into the lake.

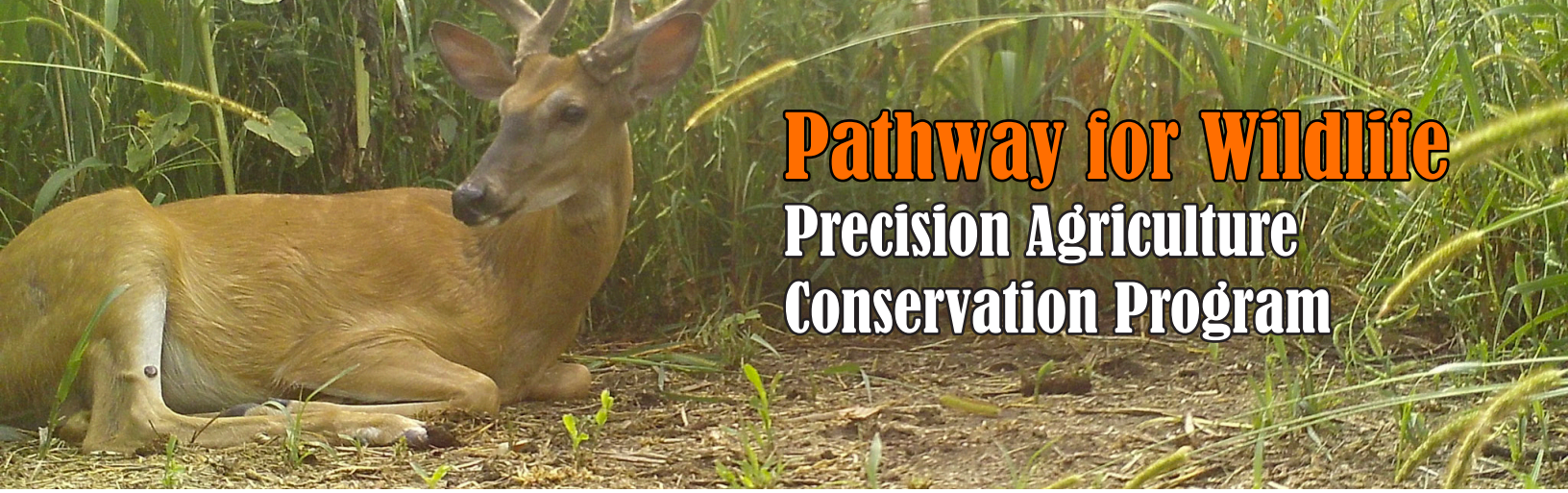


Turbidity is a measure of the degree to which water loses its transparency due to the presence of suspended particulates. Erosion from nearby agricultural fields is a likely cause of the turbidity at the lake at Pioneer Trails, and many lakes in Nebraska. The more total suspended solids in the water, the murkier it is and the higher the turbidity measurement. This is a fine environment for catfish, as they hunt by smell and not by sight, however it can be a challenge for other species of fish, including largemouth bass, which rely on vision to catch their prey. The increased turbidity also means less plant growth in the lake, which leads to a loss of food and habitat for some fish species.

Still, there appeared to be a decent number of fish in the lake at Pioneer Trails, even with a higher level of turbidity. The second net trap the team reached for was so full that they couldn't pull it into the boat. Filled with hundreds of struggling fish, the net was dragged closer to the shoreline where the team got out of the boat to catalog its contents. This one, too, was filled with mostly catfish, some reaching 27 inches in length. According to US Fish and Wildlife, the average size for a channel catfish is 22 inches, but some can reach the gargantuan proportions of 52 inches and 40 to 50 pounds.

While catfish congregate in the dark depths of the lake and are easily caught in the trap nets, other species tend to remain closer to the surface and require a different strategy to survey. The NGPC team lowered two booms with dangling octopus-like metal probes into the water. These devices send an electric current through the water near the boat that stuns the fish in a small radius. The immobilized fish float to the surface, unharmed though unable to escape. The shallow water survey revealed dozens of bluegills in various shades and sizes. Bluegills can reach up to 12 inches in length, but most collected at Pioneer Trails during the survey were 6-8 inches.

Several keeper-size (15 inches or larger) largemouth bass also turned up during this collection, as well as an abundance of 5-8 inch bass. This species is highly sought after and prized by Nebraska anglers, but a challenge for many Nebraska lakes due to the turbidity factor. The survey also revealed several saugeye, a sauger-walleye cross that was created in NGPC hatcheries and released in lakes across the state. The biologists from Nebraska Game and Parks Commission will draft a summary report of the findings of the fish survey this winter, as well as make recommendations for fishery management for the lake at Pioneer Trails Recreation Area. ♦♦♦



Pathway for Wildlife
Precision Agriculture Conservation Program

Did you know Pheasants Forever (PF) is working with producers across the eastern portion of the Rainwater Basin to benefit row crop operations and local wildlife? As you travel throughout the district, it is no secret that row crop acres are a substantial part of the landscape. This area has highly productive soils, a conducive climate for row crop production, and the potential for reliable irrigation.

Since the area is dominated by row crop agriculture, Pheasants Forever looked for ways to incorporate wildlife habitat into existing row crop acres and cover crops were identified as a perfect fit. Historically, a cover crop was a crop grown between cash crops with the sole purpose of keeping the soil covered. Today, cover crops are used for a wide variety of soil health purposes (erosion control, nutrient management, forage production, etc.), but they can simultaneously create habitat for local wildlife in certain scenarios. Within the Rainwater Basin Complex, we see most of the landscape's structure removed after corn and soybeans are harvested in the fall. This puts an even bigger burden on local pockets of perennial habitat because they are now the only usable structure for game birds on the landscape. To help combat this problem, Pheasants Forever and Quail forever of Nebraska, in partnership with The Natural Resource Conservation Service, The Nebraska Game and Parks, and The Nebraska Environmental Trust, created the Pathway for Wildlife Precision Ag Conservation Program.

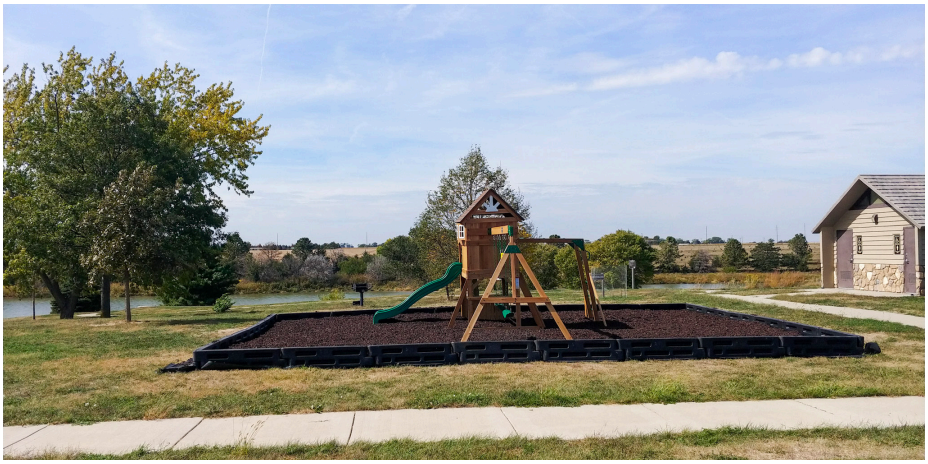
Through the Pathway for Wildlife Precision Ag Conservation Program, Pheasants Forever works with producers to plant cover crops on row crop acres in a wide variety of scenarios. The Full Season Cover Crop Practice creates useable structure for upland game birds that supplements preexisting perennial habitat through the fall and winter months when row crops are no longer standing. The practice requires a producer to have productive row crop acres within two miles of existing quality perennial habitat. A producer must also agree to plant a diverse cover crop mixture on the row crop acres prior to June 1st and then leave the biomass standing until March 15th of the following year. Once contract obligations are met, the producer is eligible to receive a $300 per acre foregone income payment along with 75% cost share on the cover crop seed. After March 15th, the producer can utilize the biomass however they prefer and can again row crop the previously enrolled acres.

To ensure this new practice is being used by upland game birds and other wildlife, PF has implemented monitoring techniques including camera traps and small mammal trapping. Volunteers from the Nebraska Master Naturalist Foundation have helped gather thousands of photos of pheasants, quail, and numerous other wildlife species within the plots throughout the summer, fall, and winter months. It should also be noted that PF has photos of hen pheasants with their broods within the cover crop plots. Small mammal trapping is used to compare small mammal species diversity, relative density, and species richness between the cover crop site and the adjacent row crop acres. Even though the dataset is small, it does suggest that species diversity, relative density, and species richness tend to be higher on the cover crop acres. As PF continues to learn and work with producers to evolve the program, their goal is to have producer, soil health, and wildlife wellbeing in mind. For more information on the Pathway for Wildlife Precision Ag Conservation Program, contact Nathan Pflueger, Pheasants Forever Precision Ag Coordinator at npflueger@pheasantsforever.org.

You can also access cover crop cost-share and additional resources through the Upper Big Blue Natural Resources District. Contact Dan Leininger, NRD water conservationist, to get started. Call 402-362-6601 or email Dan at dleininger@upperbigblue.org. ♦♦♦

(VOLUNTEERS..continued from page 1)

It was a long road to finish this project, she said. Getting all the requisite approvals from the Upper Big Blue Natural Resources District, which operates Pioneer Trails Recreation Area, to select the best site and equipment took more than a year. "We had to make sure everything met safety standards, but wasn't too expensive," she explained.



Fund raising came next. Mersch raised the $1,400 necessary for the project through bake sales, as well as personal labor—she assisted in renovating a home with flood damage and the money she earned was put toward purchasing the playground.

She couldn't have done it without the support of 4-H. "Thanks to my 4-H club for helping me fund raise most of the money to be able to buy the equipment," she said. Her experiences with 4-H were very meaningful, as she met new people, learned new skills, and had many opportunities to grow over her decade in the club. The playground equipment was her farewell project for 4-H, as she recently aged-out of the program, which serves youth ages 8 to 18.

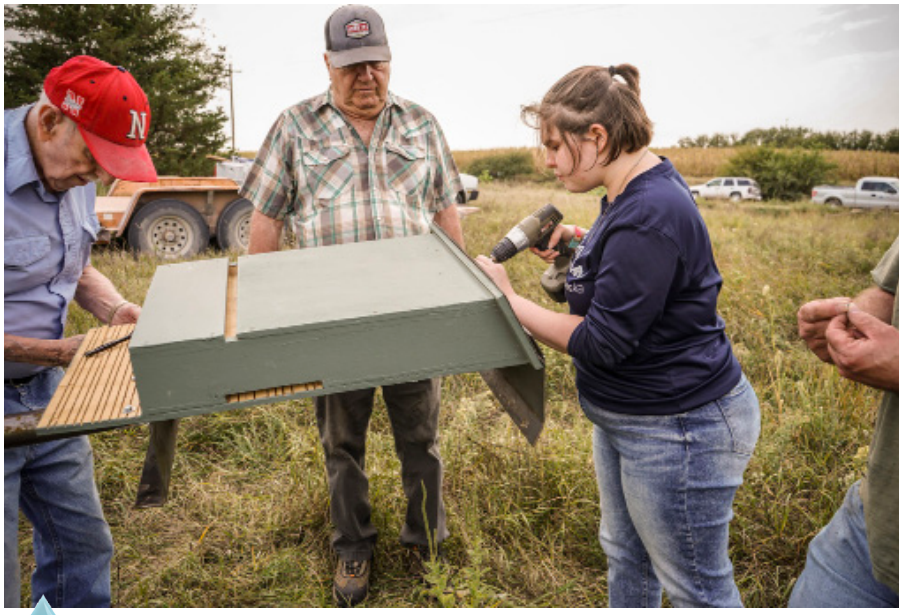
Mersch's father, Bill, was an important part of the playground project as well, as he assisted with assembly and installation of the equipment. Today, Mersch is putting her 4-H skills to good use as an agribusiness major at Southeast Community College, where she is in her second year.

Building the playground was a learning experience, she said. Through the long process from idea to execution, Mersch learned about project management and perseverance. "You have to stay committed and not lose motivation along the way if you want to make a difference," she said.

BAT SANCTUARY

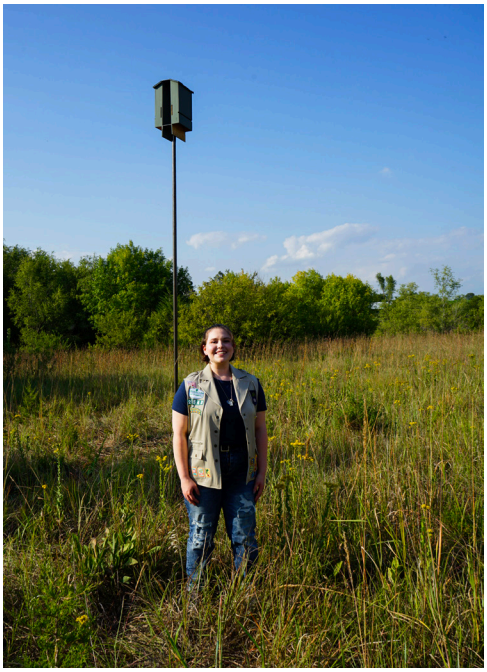
Bats get a bad rap in popular culture. With frequent appearances in vampire films and haunted house attractions, bats are usually viewed as sinister, creepy, or malevolent. The truth is, bats are highly beneficial, providing valuable insect control and pollination services. They are an important part of a healthy ecosystem in Nebraska, and Girl Scout Elizabeth Marsh is here to stand up for the misunderstood species.

For her final scouting project, Marsh constructed a bat sanctuary at two district rec areas. The capstone project was to earn the Gold Award, the most prestigious award in Girl Scouts. Gold Award projects utilize skills acquired through years of scouting to help fix a problem in the scout's community or make a lasting change in their world.



Why did Marsh settle on bats to accomplish this goal? Living in a town with so many old buildings, Marsh, a York native, says she's seen her share of bats in places where they shouldn't be--in a classroom, in the church sanctuary, even in the post office. "It really upset me to know people were killing bats when they were in buildings, especially since they are a protected species in most states," said Marsh. Her goal with the sanctuary project is to put bats in the right place, out of homes and urban structures, and into a habitat where they can thrive.

Reducing interactions between humans and bats is the key. In the future, wildlife professionals removing bats from homes and businesses will be able to introduce bats to the sanctuary.



Marsh began the research and fund raising portion of this project in 2018. Work was delayed by the pandemic, as building materials became too expensive or unavailable, and in-person fund raising events had to be postponed. Eventually, Marsh was able to bring the project to completion. The bat houses were installed at Bruce L. Anderson Recreation Area and Overland Trail Recreation Areas in early September. The locations are ideal, said Marsh. "There's lots of space where they'll be far from people, water nearby, and fields full of bugs to eat."

Marsh doesn't expect to see bats moving into the houses right away. She thinks they likely won't be inhabited until spring, when bats are emerging from hibernation and preparing for the next generation to be born.

Marsh is a freshman at Concordia University, where she is studying environmental science. She is planning for a career as a conservation biologist and hopes to work in the non-profit sector. In addition to providing bats with a safe place to live and reducing the amount of mosquitos at local recreation areas, Marsh hopes that this project will remind people that bats have many good qualities. "I wish people weren't so scared of them," she said. "Most of the time, bats want nothing to do with you. They're great pollinators. They keep insect populations down. They're just all around wonderful for the environment." ♦♦♦

BLUEPRINT

The **BLUEPRINT** newsletter is published regularly by the Upper Big Blue Natural Resources District.

The BLUEPRINT editor may be reached by phone at 402-362-6601; by email at chouston@upperbigblue.org; or by mail at:

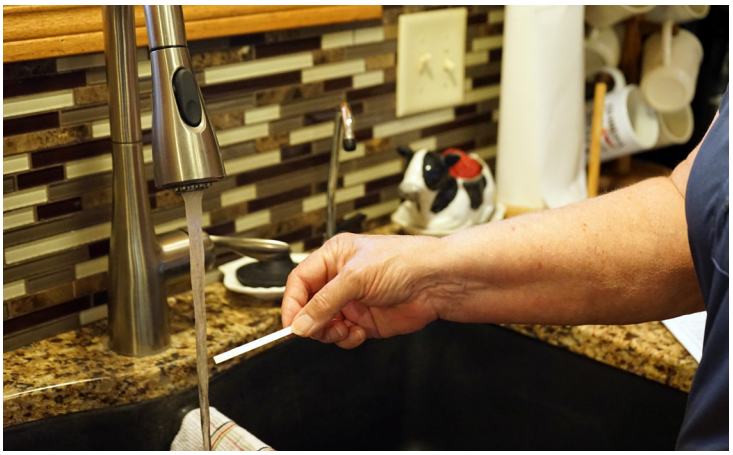
Upper Big Blue NRD
319 E. 25th Street
York, Nebraska 68467
www.upperbigblue.org

Connect With Us!

Find us on social media @UBBNRD
Sign up to receive important alerts and news at www.upperbigblue.org/email

What's in Your Water?

Free water quality test kits available to district residents



If your home's water comes from a private well in Nebraska, you may have elevated levels of common nutrients found in agricultural fertilizers in your drinking water. Consuming water with elevated levels of nitrate-nitrogen can have significant health risks. Annual testing of your water is an important way to protect the health of everyone in your home.

Thanks to a partnership with UNL, the Upper Big Blue NRD can now mail simplified at-home test kits to district residents for free that will indicate if there is an elevated level of common contaminants in the water. To request a kit, call (402) 362-6601 or email info@upperbigblue.org with your home mailing address. The at-home kits are not as sensitive as having a sample tested in the lab, but they do provide a simple way to determine if additional testing is required and to identify what further steps need to be taken to improve drinking water quality, such as installing a reverse osmosis filter. Funding is available through the Nebraska Department of Environment and Energy for homeowners and communities with elevated nitrates to install reverse osmosis systems. More information on these resources is available at http://dee.ne.gov.

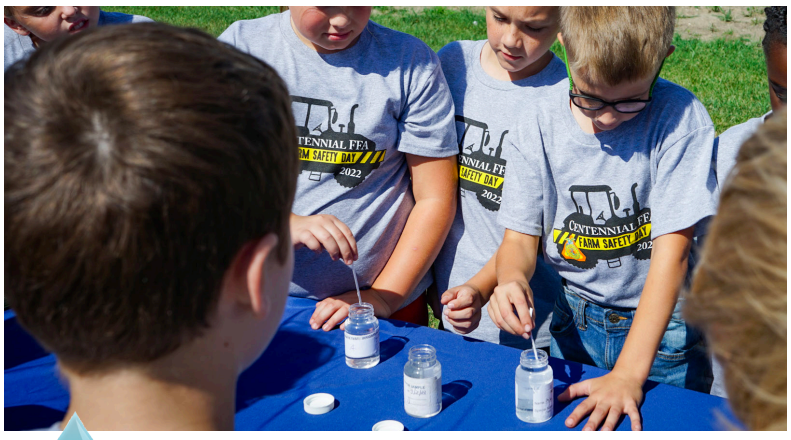
Why Should I Test My Water?

Numerous scientific studies have looked at the relationship of nitrate in drinking water on human health and linked high concentrations of nitrate in drinking water to adverse health outcomes. The strongest links are for methemoglobinemia, colorectal cancer, thyroid disease, and neural tube defects (birth defects of spine, brain, and spinal cord). Agrichemicals in drinking water are also linked to increased heart rate, nausea, headaches, and abdominal cramps; cancers including pediatric brain cancer, kidney cancer, bladder cancer, and non-Hodgkin's lymphoma. Other studies are also examining a possible link between these contaminants and Alzheimer's, diabetes, and Parkinson's disease.

Nebraska has one of the highest rates of some pediatric cancers, which may be linked to agrichemicals in drinking water. When it comes to health concerns and drinking water quality in Nebraska, the most vulnerable populations are young infants (less than six months old), pregnant women and children in-utero, and people with oxygen transport or delivery conditions like anemia, cardiovascular disease, lung disease, and sepsis.

The EPA guideline for safe drinking water is less than 10 parts per million of nitrate. Municipalities are required by law to provide water that meets the EPA criteria, but for the many Nebraskans whose water comes from a private source, the quality of the water is the consumer's responsibility.

For private well owners, it's important to test drinking water annually, as results can change from year to year. If the results of the at-home water quality test reveal greater than 5 parts per million of nitrate, the NRD staff recommends following up with a lab test for verification and to determine next steps to ensure safe drinking water. To bring in a sample to the NRD for nitrate testing, no special bottle is required. Any clean container will do. If you would like the water tested for bacteria (also recommended annually), the water must be in a sterile container, which may be picked up from the NRD office. The water must be kept cool and delivered to the NRD right away for best testing results. NRD lab testing for nitrate and bacteria is always free for district residents. ♦♦♦



Students tested water quality at a recent farm safety day event hosted by Centennial Public Schools.