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BLUE DASHER
FARM

www.bluedasher.farm

Date:

2023
ANNUAL REPORT



VICTORY BOARD

2023

Victory Board Honey! Wilos

Photo-Sampling done for:

- CA Dairies 2021
- Research Fund 2021
- 1000 Farms 2021
- GA Wheat Pollinators 2021
- CA Almonds Quads 2022
- WA Apples Quads 2022
- CA Almonds Swamps 2022
- CA Apples Swamps 2022
- WA Apples Swamps 2022
- WA Apples Quads 2022
- WA Wheat Swamps 2022
- WA Wheat Quads 2022
- C1 Swamps + Quads
- C2 Swamps + Quads
- C3 Swamps + Quads
- C4 Swamps + Quads
- C5 Swamps + Quads
- C6 Swamps + Quads
- C7 Swamps + Quads
- C8 Swamps + Quads
- C9 Swamps + Quads
- C10 Swamps + Quads
- C11 Swamps + Quads
- C12 Swamps + Quads
- C13 Swamps + Quads
- C14 Swamps + Quads
- C15 Swamps + Quads
- C16 Swamps + Quads
- C17 Swamps + Quads
- C18 Swamps + Quads
- C19 Swamps + Quads
- C20 Swamps + Quads

49 Hives survived the winter. The 8 Friends: You, Rosie, You, Rosie, You, Rosie, You, Rosie.

Tribeca, Red Carpets, Flashing Lights, You know!

2022 Photosampling Completed!

Crop Samples

- 2021 Almonds ✓
- 2022 Almonds ✓
- 2022 Corn ✓
- 2022 Soy ✓
- 2022 Small Grains ✓

Highest forecast on our field day Aug 12/2023 by 153 people (small survey)

401K + DENTAL

Sites Sampled! > 420

Field Day 2023

Bulk Density Clusters

- CA Almonds
- TX Range
- CA Range
- WA Range
- SD Range
- HI Range

Staff members in a name with Juan Mann and Donald Garcia

Alternators changed

Operation: Winterize Barn 23-24

Honey Harvest!

600 lbs!

Our Power beds installed and fine arrangements made! 3 small hives!

2023 Almonds ✓

LAMBS BORN

Will check death 11/12

Ms. & Ryan nearly jumped when we saw the lamb!

Sheep Sold 11/15/23 Kirk Webster Bee Talk

Market trailer began!

MB + TX + NE + SK + IN + WI + OH

trip got EVERY SINGLE Receipt!

Committed to the return to the Dasher!

Found Leatherman

Leatherman accidentally stolen from a child



ecdysis

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Who We Are & What We Do



Ecdysis Foundation is all about grower-focused research to transform agriculture with regenerative principles. Agricultural science is typically conducted and communicated to other scientists, rather than the farming community. At Ecdysis, we flip those priorities. Ecdysis has a strong emphasis on farmer-, rancher-, and beekeeper-driven research questions, and empowers growers by involving them in the actual research projects themselves. Funded by grants and donations, all of our research is provided back to farmers at no cost, with no strings attached. We host field days around the country to help others understand our findings, connect growers with each other, and make friends along the way.

To make this mission a reality, we started the largest agricultural research project North America has ever seen, the *1000 Farms Initiative*.

Throughout this year's review you'll find out where we've been, what we've accomplished with the *1000 Farms Initiative* so far, and hear some of our staff's favorite stories from the front lines of this history-making project!

Blue Dasher is the regenerative farm where Ecdysis' headquarters is located. We believe that if we're going to be researchers for farmers and ranchers, we better be farmers and ranchers ourselves. On any given day, staff can be found moving sheep, mucking barns, starting seeds, or checking on bees. Blue Dasher roots us and gives us a place to connect with the communities and people around us. It allows us to connect with many of the obstacles that farmers face.

Bettering our food system and engaging our communities go hand-in-hand, and we want to be a part of that.

For more information on what the farm has been up to this year, check out Farm Manager Christina's reflection on page 22.

Dr. JONATHAN LUNDGREN
Founder, Ecdysis Foundation
Entomologist/Agroecologist/Beekeeper/Rancher

An Unpredicted Kernel of Hope



There is a randomness inherent in the laws of thermodynamics that often defies our ability to identify and predict. This random factor, called entropy, causes highly complex, organized systems to break down into lower-energy systems that are more stable. In other words, complicated things break without a lot of energy to maintain them. No matter how hard we try, our initial design of a system has unavoidable bugs that will eventually reinvent the system.

Sometimes, the system that initially evolves during entropy is worse than the original system (nobody wants a lot of velociraptors and Andromeda strains running around). But other times, entropy can be synonymous with hope, such as when the initial system is exploiting and degrading the natural resource base of our planet (think Ewoks and hobbits).

Over the past 50 years, greed has degraded our food system in a way that threatens the agrarian, cultural fabric of society.

The “get big or get out” farming philosophy simplified the food system, reducing the number of American farmers and replacing them with agroindustry. This philosophy led to the collapse of the food system by supplanting the currencies of family, community, and connection to the natural world with one of money made by 3rd parties. The result is that there is a lot of people making money off of farming, but it isn't the farmers; it isn't the ones that are proud of their land and their story.

This past year, the *1000 Farms Initiative* taught me that of all the powerful glues that hold a complex food system together over time, greed is not one of them.

The impending collapse of the industrialized food system has produced something that no one was expecting. Regenerative agriculture is a singular soft, high voice among the din of an angry chorus of greed. It sings a different song. It sings a reminder that when all else seems lost, there is still hope.

Regenerative agriculture corrects the over-emphasis on financial currency at the expense of social and environmental connectedness. That doesn't mean farmers don't make money in a regenerative system - in fact, it is quite the opposite: We have observed that family, community, and connection to the natural world are the **ONLY** ways that long-term financial stability can be generated in food systems.

The steady state that will save our place on this planet is simple. Attaining it requires reminding us all what it means to be a farmer. To be human. To produce food for your family and your community. To grow life. To touch every acre of a farm with human feet.

To support the current agricultural system, science became focused on self-preservation and growth rather than solving problems, and stopped taking responsibility for its contributions to a deteriorating planet. Yet at science's most distended state, a spark of something unexpected was ignited.

Ecdysis Foundation isn't supposed to be here. Given the hurdles that we overcame in 2023, logic says we should not exist. Models tell me that what we have attained so far scientifically is impossible. We shouldn't be discussing agriculture with world leaders at 3 AM from a pole shed in a depopulated county of South Dakota. We should not be attracting such incredibly talented staff from around the world to create the largest database of regenerative operations in existence. There shouldn't be an archive of the nation's soils in our attic, nor a museum-quality biological collection (fully digitized) in a former dog kennel on a regenerative farm. It is completely unpredictable that donors would offer us millions of dollars to support it all. I



Lundgren speaks with a farmer on one of many visits



Passion, capability, and ethic cross generations of farmers in the mission to grow better food.

can't figure out precisely what would allow someone else to replicate what we have created.

In its purest state, regenerative agriculture is a spine to build a culture around. Science has to be a leg of this new culture, and Ecdysis is trying to help forge this by prioritizing fundamentals and clearly defined missions.

Perhaps one of the most important outcomes of the *1000 Farms Initiative* was entirely unpredicted. Our second year in, our teams visited 453 farms (bringing our 2-year total to 842 farms visited, and 737 farms with total system measurements). Time and again, farmers told us how they were losing hope. They were working really hard, doing something that they believed in, risking a lot, and they just wanted to know that someone cared. Enter our team of unusual staff, pouring out of crappy old minivans to measure these farms and provide them with free data. But more importantly, we greeted each of these farmers with wonder and excitement and appreciation.

Over every cluster of farms we visited, the word spread through communities. By the end of a trip, our teams would be greeted by farming families with anticipation and home-grown foods. Our style of science is analogous to

a country doctor delivering a baby in exchange for a milk goat or a few hens.

These trips are one of the times that I get to chat with my staff more deeply than normal. On such occasions, I often ask them what they are going to do with their lives (no pressure, right?). Morgan, one of the new staff this summer, explained “I am not sure what job I want, but I want to know that I am doing something good.”

I asked her if what we were doing was good.

The sun was setting on the little Kansas ranch where the team had worked hard all day, the farmer's children running through the fragrant grasses, laughing with their insect nets. The farmer was talking with the soils team to learn about their operation.

We didn't know what we would find on their farm - that is the point of doing the science - but the farmer knew that we cared about his family and their farm.

“This is just so obviously good,” was Morgan's response.

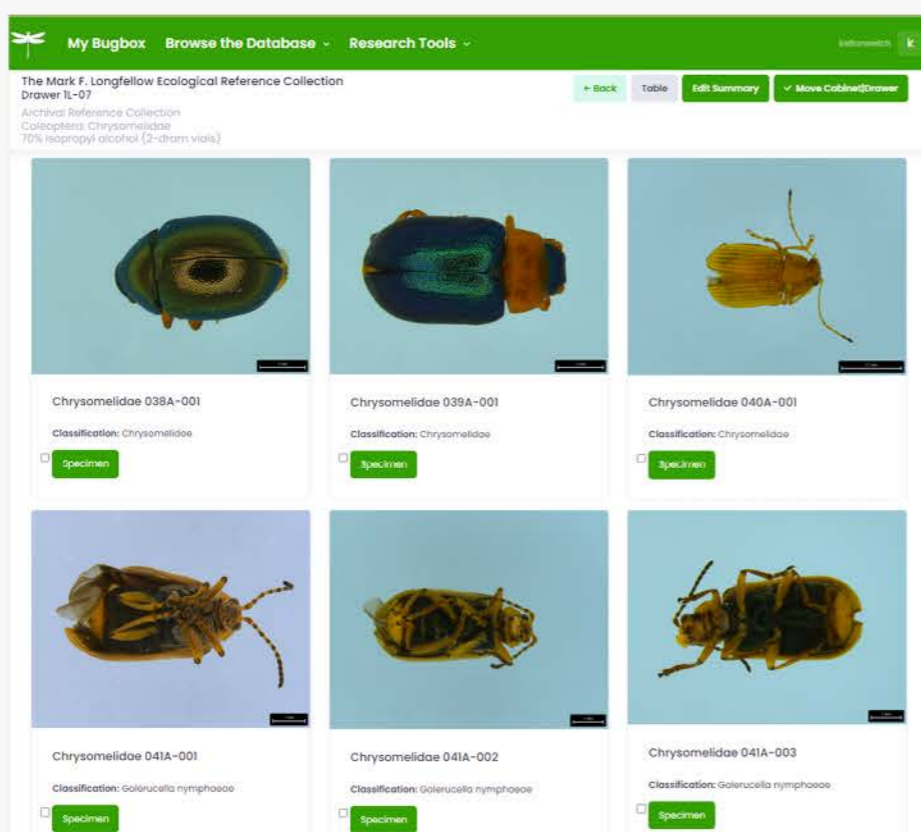


Dr. KELTON WELCH
Research Entomologist & Entomology Collections Manager

This year was a big year for Ecdysis, with a record number of sampling trips completed and a record amount of data collected. In the entomology lab, big things are happening too: I've started to hand over the day-to-day work of identifying arthropods to our artificial intelligence program, BugBox. It's now identifying Midwest arthropods with about 70% accuracy, which is good enough to produce reliable estimates of diversity in each field, pasture or orchard we sample. And BugBox can do this fast, which means there's no need to wait for the identification specialist (that's me) to identify every single insect and spider. We've already got this preliminary data available for a handful of the sampling trips we conducted this year, and we should be able to get just about all of them done before spring planting.

Artificial intelligence can be a scary thing to think about: after all, is it replacing me now? Am I going to be out of a job? Well, the answer is "no", but it is going to change how all of us do our jobs from here on. BugBox only knows the species of arthropods that I know, and it's only good at identifying them if I'm good at identifying them. That means it's pretty good at identifying bugs from the Midwest (which I know quite well now), but it's never seen bugs from California vineyards or rangelands in New Mexico or vegetable fields in Vermont, so now my main job is to learn those bugs so I can train BugBox to identify them.

But my life at Ecdysis isn't 100% glued to a microscope and computer screen. I'm also starting to reconnect with the scientific community, so I can get the word out about BugBox. I went to a

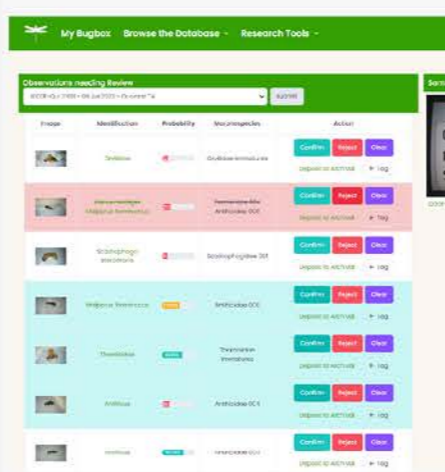


A gallery of leafbeetles from the Mark F. Longfellow Ecological Reference Collection

scientific conference for the first time in almost eight years to give a talk about BugBox. A lot of entomologists have been playing with artificial intelligence for a while, but BugBox is something that entomology simply doesn't have yet: a practical tool that actually empowers scientists to collect and analyze data on a bigger scale than ever before.

For our agroecology specialists, their jobs are changing too. Instead of pre-sorting bugs for me, now they're "photosampling". This means they're taking photographs of every specimen and uploading them onto BugBox for the AI to identify. That's one of the main things they do over the winters, when there aren't any crop fields to sample. They've taken over 225,000 photos since we started this midway through last year, and I estimate that we have another 100,000 or more specimens to photograph this winter. But that's not all they're doing: some of my technicians are starting to learn how to identify certain types of arthropods, so they can help share the identification workload with me. They're

balancing a lot of responsibilities around the farm and with other aspects of the research too. Quite a year in the entomology lab!



A partial screenshot shows Kelton's confirmations and corrections to Bugbox's AI identification.



Dr. RYAN SCHMID
Research Scientist/Agroecologist

This year was a bit different for me. Sure, I did many of the same things I have done over the past couple years, traveling on 1000 Farms trips across the country and learning from farmers and ranchers as I went. But perhaps the biggest lesson I learned this year, I learned at home. You see, I became a father for the first time this summer, and when our baby came, Ecdysis was kind enough to give me paternity leave. I am very grateful for this time, because to be frank, I had no idea how to care for the helpless and sometimes irrational creature that had entered my life. Thankfully my wife knew what she was doing, and our baby girl, Solvie, is doing just fine. But my time off gave me a moment to reflect on how important regenerative agriculture is for the families living on regenerative farms.

I am fortunate to meet a lot of farmers and their families as I travel for research, and one thing stands out when I visit the regenerative ones. Often, the whole family is involved with the farm. I don't think this is by accident. And it's not just that the family members want to be involved in the farm, I think they NEED to be involved in the farm. Regenerative agriculture is a holistic approach to not only farming but life in general, and it demands families make decisions and work toward goals together. When put into practice, regenerative farming becomes a framework for life for these farm families. I think regenerative farmers have realized the wisdom of Masanobu Fukuoka, author of *The One Straw Revolution*, who said, "The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings."

Plate - reading taken every 2 m on each transect | Site Code:

As any farmer can tell you, farming teaches many lessons, providing fulfillment and frustration, happiness and sadness, patience and perseverance. Sometimes all of these things in the same day! It is necessary for us as human beings to experience all of these things in order to grow and become better versions of ourselves. By doing this, we become better for those around us. Regenerative farming provides the perfect stage for families to work together toward personal improvement. Allowing for the transfer of experiential knowledge to be passed down through the generations, while simultaneously providing opportunities to apply those lessons toward making major farm decisions as a family unit. This gives generational foresight to the direction of the farm.

All of this is to say, regenerative farms provide the setting for individuals and families to better themselves, and apply that knowledge to better their farm for the future. The boundaries of the farm cannot contain this

advancement of these human souls, and eventually the prosperity spills over to neighbors and the surrounding community. Maybe this is the secret why so many regenerative farm families seem truly happy to be working on the farm together. They realize they are not just producing quality crops and livestock, but they are ultimately producing quality human beings that will improve our world.

While these thoughts might come from a young, sleep deprived new dad. I cannot think of a better justification for regenerative agriculture. I look forward to providing the same opportunities for my young family someday when I return to the farm.

Until then, Solvie will have to settle for the lessons learned collecting eggs at her grandparent's farm.

Solvie's first Christmas



Dr. KC JENSEN

Research Scientist/Avian Biologist



2023 was a busy year for bird studies within the 1000 Farms Initiative framework! Birds like other living creatures, have 3 primary needs to sustain life: sustenance, security and comfort.

Sustenance is the food and water they need to grow and maintain optimal body condition and meet the needs of their normal daily and seasonal activities (breeding, molting, chick-rearing, etc.). Most birds meet those needs by eating high-energy foods like seeds, fruits, and insects, and the presence of these foods in their environment is one of the main measures of high-quality habitat. We know from extensive research that sites with high quality soils which lead to abundant plant life and the resultant insect communities is the best predictor of bird presence and abundance.

The needs of security and comfort often go hand-in-hand. Security is basically the ability to detect and escape or hide from potential exposure to predators. Different species of birds accomplish this in different ways, but the presence of multiple layers of vegetative cover within their habitats are their primary options for escape from predation. Comfort is somewhat similar; in that they need to be able to stay warm or escape to places of shade and moisture in very hot conditions. They also need protection from intense precipitation events. Feathers are wonderful insulators and will shed water to a certain extent, but if the feathers become water-soaked they lose their insulating capacity and can lead to hypothermia if not quickly dried and made serviceable again. Once more, vegetative complexity and diversity are the major

factors in determining the quality of habitat in terms of providing for both security and comfort for birds and other wildlife.

Our goal in studying bird communities within the 1000 Farm Initiative was to assess the impacts of regenerative agricultural practices on bird community composition, diversity and abundance. To this end, we surveyed fields in systems ranging from almonds and vineyards in California; rangelands in Texas, Oklahoma, Kansas, Colorado, North and South Dakota, Saskatchewan and Manitoba; Southwestern rangelands and traditional Native American farming practices, Midwest row crop and dairy/grazing operations, and New England dairy and vegetable farm systems.

In total, scientists from Ecdysis surveyed 327 individual farm fields and walked a total of 210 miles of bird survey transects! My Fitbit was getting a workout!

We have 3 years of bird survey data from all seasons within the California almond system; looking at both regenerative and traditionally farmed orchards. **These are our main preliminary findings** and important messages from this effort:

- 1. Almond orchards are providing habitat resources year-round** - even when the tree are dormant. They attract a wide variety of insect-eating birds (kingbirds, warblers, kinglets, mockingbirds) - that glean insect eggs and larvae throughout the year.
- 2. Regenerative orchards have higher bird diversity**, They attract a wider suite of species than conventional orchards - about 25% more.
- 3. Regenerative orchards have higher bird abundance**; they support more pure/total number of birds by about 3-5 times depending on the season. This higher abundance is most likely a result of more food being available for them in regenerative orchards.

Data analysis and interpretation will continue through the winter to look for patterns of bird diversity and abundance with the other agricultural systems. We are anxious to see the revelation of those results! We're also trying to keep our walking legs in shape for the 2024 field season! We have a lot of transects and miles ahead of us to equal our 2023 efforts!



Top to bottom: Scissortail flycatcher, dark-eyed junco, white crowned sparrow, western bluebird. Photos by Jensen and Shorter.



KATYA BUSENITZ

MSc Student, Honey Bee Ecology



2023 was, like most summers with Ecdysis, an exciting and fast paced blur. But we had so many experiences this year that it's been nearly impossible to pick out just a few to talk about. The summer included swimming in Lake Champlain in Vermont, eating a rattlesnake in Oklahoma, eating cheese curds in the fields of Wisconsin, and learning about dairy production from Amish families in New York. I learned an incredible amount about the intricacies of nut production in California, how the farmers struggle to keep their farms afloat despite the changing weather and water access.

As we drove through the central valley, I was saddened to see so many orchards uprooted. The trees, which could have been productive for many years to come, couldn't pay for the water to keep themselves alive.

The trip reminded me of home. My family is from an area aptly named "Fruitland." The abandoned orchards were my favorite places to explore, the trees are able to grow to their full potential without intervention of any kind and could live to a half a century or longer, these were always the trees so loaded with apples their branches would bend from the weight.

In California, it was like a trip to the past, (everyone's childhood smells like

fungicides in the rain, right?) and as we toured more and more almond orchards, I was so excited and inspired to see some orchards that brought me back to those memories of happy thriving apple trees. Some of the orchards we sampled the trees had been there for 80 years and were not only still productive but yielding more than their neighbors. These orchards weren't just making money, they were thriving and buzzing with life. The families running livestock underneath and planting beautiful pollinator mixes



into the rows, showed me the closest landscape I've seen to a perfectly balanced natural habitat with food production without hurting the soil.

A personal highlight for me was traveling West river in SD to sample Bison ranches near the badlands. It was hard not to place both feet on a massive ranch with sprawling prairie and native flowers and not have a little voice

in your head say: "this is what it's supposed to look like, this is South Dakota."

Another moment that sticks out to me was Kansas City farm school, a non-profit organization in the middle of Kansas City that focuses on teaching kids and teenagers about farming, The kids at the farm school had an opportunity to learn skills and connect with farming in a way that they just couldn't have without the school.

There's a perception that agriculture is aging out, and that young people are not excited about growing food, but I've seen so much hope and passion coming from these younger generations that I know it's not a problem, give them a plot of dirt and watch the magic happen.





DAN PECENKA

MSc Student, Insect Communities in Wheat

the great research their operation is conducting furthering our understanding of grain production.

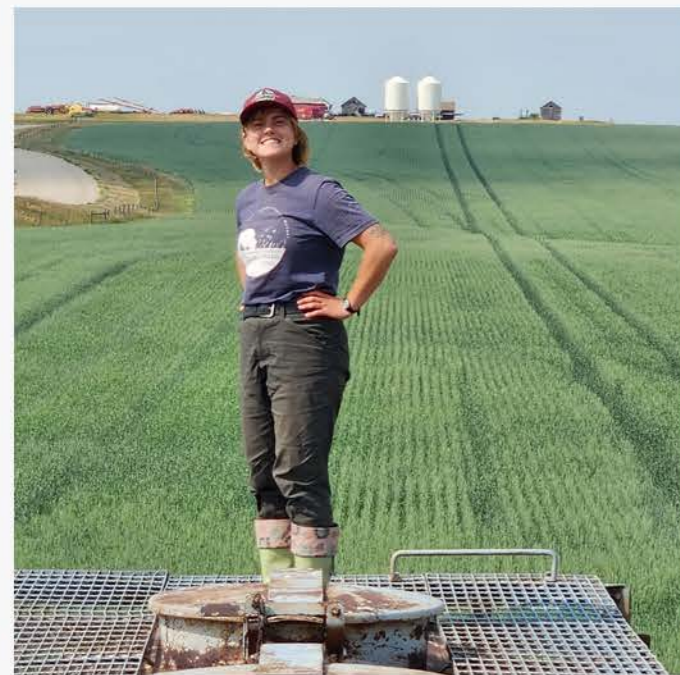
This year I was able to exercise more of my leadership skills by leading two different trips in two different countries. First, I lead a trip to Washington state. Where at you may ask? The answer is "yes." We traveled from north of Seattle to Spokane in less than a week, clocking in more than 413 miles and sampling 24 farms in the process. The highlight of this trip was when we were able to sample the soil from a field and then sample the bread, and beer that was made from wheat grown on the same field. It was a neat and delicious full circle experience for the whole team.

The other trip was to the Great White North of Saskatchewan, Canada. This was a return trip for Ecdysis to sample fields that we have been keeping track of for the past 5 years. It was also a return trip for me since my first year at Ecdysis. I was fortunate enough to go and do this very same trip. It was a surreal experience looking at how far Ecdysis and myself have grown in these 4 years. The team worked their butts off on this trip. The border agent even said "You went to all these places

in a week?! That's impressive!" Don't feel too sorry for us, we managed to end the trip at a hotel with a pool and water slide. And yes, in case you are curious, I made everyone go down the slide at least once.

This year I was able to join a sampling trip to Ohio looking at urban gardens. Coming from an area of huge hundred-acre fields and giant machines, it was neat to see people doing what they can, where they are, with what is available. These growers have these small little backyard farms producing enough food to feed themselves and to sell in local farmer's markets. It was a strange thing to see; a garden in the shadow of a giant building, with the constant sounds of traffic, and people just walking along the sidewalk giving us confused looks. Meeting these growers who were trying their hardest to make food within the system they are given was inspiring. It gave all on the trip a sense of confirmation that what we are doing has an impact. An impact not only on those growing on hundreds of acres, but on these small urban gardens.

All these trips give me hope and inspire me to continue the great work we are doing here at Ecdysis.



TOMMY FENSTER

PhD Student, Regenerative Vineyards

In April of 2023 the project was awarded a \$347,000 USDA Western SARE Research and Education Grant. The grant is helping to fund research, three field days, workshop presentations, the development of a grazing in vineyards Best Management Practices Guide (English and Spanish), and a cost-return planning tool to assist producers seeking to integrate grazing into their operations.

The grant is led by the Ecdysis Foundation and the Gaudin Agroecology Lab, while also being a collaboration with Dr. Beth Forrestel's Viticulture Lab, Dr. Brittney Goodrich (UC Cooperative Extension, Resource Economics), Community Alliance with Family Farmers, Napa RCD, Paicines Ranch, Shannon Ridge Family of Wines, Pennyroyal Farm and Navarro Wines, LangeTwins Family Winery and Vineyards, Fibershed, and the Kaos Sheep Outfit. The project is also partnering with numerous other farms to conduct the re-

Carpenter. Our first task was to carry out the 50% veraison sampling (when the grapes begin to sweeten and 50% of them have changed color). For this sampling we took leaf petiole samples to assess the vineyards' fertility management strategies, conducted insect sweeps, hung sticky traps to be collected at harvest, and did plant community biodiversity assessments. As soon as this sampling concluded, we began our harvest sampling in the vineyards. For this we assessed vine yield, cluster number, cluster weight, grape weight, as well as sub sampling berries to perform grape quality assessments.

Regarding outreach events, I had the wonderful opportunity to present the preliminary findings from the project at the the Wild Farm Alliance's Field Day at Paicines Ranch, the Community Alliance with Family Farmers (CAFF) panel discussion on regenerative agriculture, and the Grazing in Vineyards field day hosted by Lange Twins Family Winery and Vineyards and CAFF.

I'm looking forward to 2024!



The goal of the study is to evaluate the environmental and economic outcomes of integrating sheep on commercial vineyards with different management legacies along a conventional-regenerative management gradient. We hypothesize that the integration of grazers will enhance soil health, biodiversity, and input use metrics when combined with other agroecological/regenerative practices such as reduced tillage and pesticide use.

search. Without the farms none of this work would be possible!

In August, field work in the vineyards resumed and lasted until October 27. To conduct the fieldwork and lab work we had a great team of technicians from both the Gaudin Lab and the Ecdysis Foundation. The team consisted of: Joshua Estes, Ellie Coon, Clarissa Arnaudo, Laura Johnson, Kyle Moeller, Arthur Pontes Prates, and Max



Josh and Ellie armed with sweepnets



You've heard us say it before...
The 1000 Farms Initiative has been called

the most ambitious agroecology research ever conducted



YEAR 2!

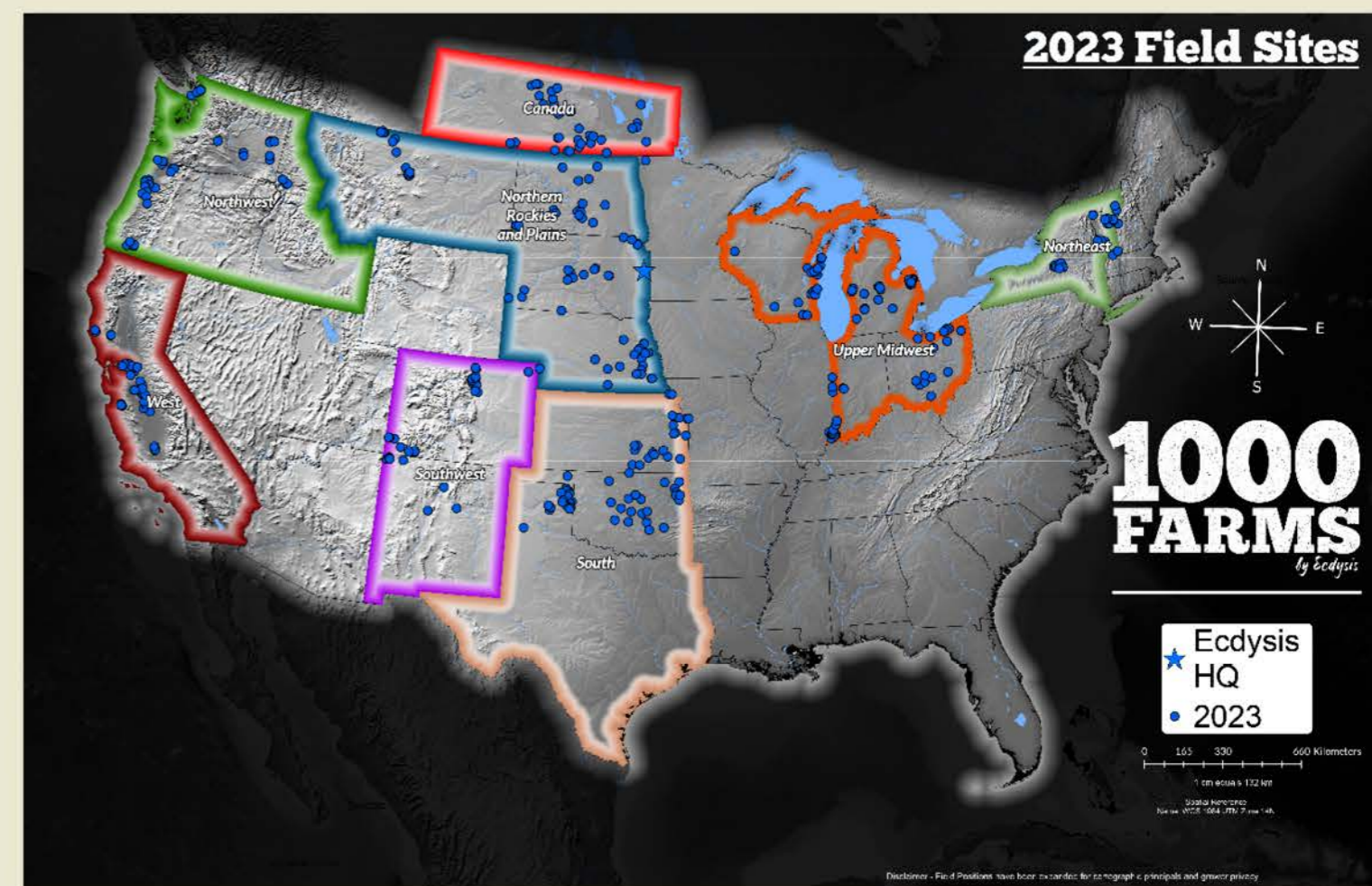
and we're living up to that goal in the second year of our ground-breaking study.

In 2022, the 1000 Farms Initiative was launched, designed to answer the **biggest** and **most complex** questions that can be asked about our food system:

- ? How can we grow food in a way that restores our hurting world to health?
- ? How can our food production benefit our farmers, our bodies, our natural environment, and our communities?

In search of answers, Ecdysis deploys teams to farms across North America to measure everything from **biodiversity**, **soil carbon**, and **food nutrient content** to the **economic and sociological effects** of various styles of land management.

In 2023, we dove into **Year Two** of the 1000 Farms Initiative with **bigger dreams**, an **expanded staff**, **heightened passion**, and even more miles on our **minivans**. We visited **423 farms** in 2023, sending our teams of scientists **all over the continent** to harvest data and **cultivate relationships** with our farming partners. This effort brought us to **74% of our 1000-farms goal** after only **2 years of the study!**



What else did we accomplish in 2023?

- ✓ Visited 20 states and 2 provinces.
- ✓ Hammered 28,764 soil cores.
- ✓ Spread our message to over 1100 people at 6 community outreach days.
- ✓ Added 192,371 invertebrate photographs to our biodiversity database.
- ✓ Walked 210 miles while surveying bird populations in fields and pastures.
- ✓ Fixed 15 flat tires as we traveled across the continent.
- ✓ Increased the number of BIPOC/Women-owned farms in our research base to 28% (over 2 years).
- ✓ Asked hundreds of farmers to teach us how they manage their land - because their hard work is why we have hope for the future!





Above: Katya holds an american toad found among regenerative farmland.

Top left: A bright green stick insect rests on a hand during sampling.

Middle: A careful hand dwarfs a moth pupa.

Bottom: A tiny texas horned lizard suns itself thumb-top.

IN GOOD HANDS

As stewards and tenants of the land and life on it, we must observe, practice, and learn. Ecdysis Foundation and Blue Dasher Farm have their hands in shaping the way people manage and grow from the land and coexists as a part of it ourselves.



Nature - in its vastness and subtlety. It is worthy of our study and our wonder. It can also drive our humility and our hope.



Above: Measuring tape extends into a lush expanse of ferns as part of the sampling process.

Far left: A Morrison's bumblebee and painted lady butterfly share a flower in our research fields.

Left: Researchers look towards a hopeful future framed by a brilliant display over one of the hundreds of farms surveyed as part of the *1000 Farms Initiative*.



NOTES FROM THE FIELD



Trip Leader:
WILL HILLERY
Region:
NORTHWEST



Notes:

FAV FARMER STORY-

John Bansen's nutritious soil health-focused pastures on their organic dairy farm consistently attract droves of elk coming down from the central Oregon mountainsides. He once saw a gang of elk enter into his field and stare face-to-face with a group of his dairy cattle. Both seemed to be utterly perplexed.

KERNEL OF HOPE-

We make a real difference through human connection as we physically travel to all of these farms. After 1 hour of being with Mrs. Beth from GoodFoot Farm, her perception of the regenerative agriculture movement had taken a complete 180 degree turn (for the better).



Trip Leader:
ROBIN BUTERBAUGH
Region:
PLAINS



Notes:

KEY TAKEAWAY-

Even though most of the farmers we visited with were just starting to transition to regenerative practices, they were trying to do all they could despite obstacles. The farmers really wanted to do the right thing, for the land, for their families, and for the food they were producing.

STANDOUT FARMING PRACTICES-

One organic soybean farmer said he did a multi-year rotation of perennial grass with grazing for 4-5 years, then soybeans, then corn, then oats/peas, then perennial grass again. This seemed like such a healthy way to manage fertility without needing to use fertilizer or herbicide to terminate cover crops.



Trip Leader:
COOPER MILLAR
Region:
SOUTHWEST



Notes:

FAV FARMER STORY-

This was our second year at Yellow Barn in Boulder CO. Last year we sampled their silvopasture (trees and livestock integrated on the same land). Last year was the first year trying this practice, so seeing the improvement within just one year was pretty incredible.

FUN TIMES! -

At the Denver Green School where we sampled, they grow food for the elementary school next door. The whole time we were sampling, there were kids out for recess laughing and running around. It was such a cool experience taking samples in those vegetable plots and checking the nutrient density and knowing that this food is going to nourish the kids we hear playing.



Trip Leader:
LYNNETTE MILLER
Region:
SOUTH



Notes:

FAV MEMORY -

The cold, clean running water of rock bottom stream fed by a spring in Oklahoma. Sitting on a rock bench in the stream feeling the water over my bare feet. Absolutely life changing experience as I recall my childhood memories of the rock bottom streams in Kansas.

KERNEL OF HOPE -

The future of farming is full of hope and possibilities in the children we met on these farms. The farm children helped the crews pull samples, asked amazing questions and shared their personal stories and experiences with our team.

Transect	Hour	Start depth	(min:secs)	Depth after	Change in
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Trip Leader:
MIA WERGER
Region:
UPPER MIDWEST



Notes:

BIGGEST CHALLENGE-

We met a farmer who was doing inspiring regenerative work on his own operation, but there was nothing he could do to prevent toxic chemicals blowing onto his field from his neighbor's orchard. It reminded us that healthy ecosystems can't be fully achieved on an individual level; we thrive or we suffer as a community.

KERNEL OF HOPE-

It was great to visit so many dairy farms with fully pasture-raised cattle, reminding us that it is possible to raise animals naturally while still having successful milking operations.

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85	76	T1	1)	9-6	190	11	55	63	75
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Trip Leader:
LIV TORBERT
Region:
OHIO VALLEY



Notes:

KEY TAKEAWAY-

Throughout the trip we would buy vegetables and meat from the growers we visited. To know that I had dug in their dirt and experienced their biodiversity for myself felt so empowering. I wish more people could experience looking at their food and seeing the stories and fields and farmers behind each ingredient. It matters so more than I even realized when I took this job.

STANDOUT FARMING PRACTICES-

The Dreshbachs would ensure there was covered land to serve as wildlife corridors throughout their farm/ranch. It took a bit of planning, but it was inspiring to see a family think about the other life that they are sharing their land with and try to collaborate with them.



Trip Leader:
KELLY CLINTON
Region:
NORTHEAST



Notes:

BIGGEST CHALLENGE-

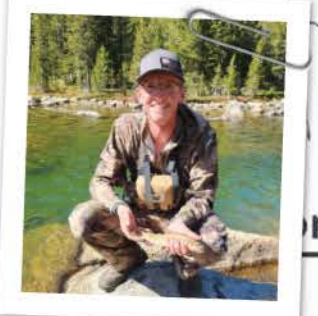
Adapting to other cultures can sometimes be difficult. When we were prepared to work a full day on Sunday, this wasn't the norm in the Amish community so we had to accept that we would lose at least one site that day while still maintaining a respectful relationship.

BONUS LESSON -

This summer showed us the importance of community. In New York we were welcomed within the Amish community. In addition to our field day, we shared in meals, buggy rides, midday snacks and (the best) homemade iced coffee and eggnog. We shared our thoughts on regenerative ag and how at the end of the day, we feel compelled to do it simply because it's the right thing to do- for our planet, our children and each other.



Trip Leader:
JAY SKAAR
Region:
CANADA



Notes:

FAV FARMER TALE -

One grower had been yelled by their neighbors that the practices he was doing would never work. But within the last couple years the same exact neighbors came asking him about his management and were curious about incorporating some of those practices into their own operation. Luckily, this grower didn't take the criticism to heart and was more than happy to build a connection with his neighbor after all.

FUN TIMES/FUN FACTS -

First time I have ever had to use a vehicle tire jack get a probe out of the ground was on this year's trip. Everyone blamed me for getting the probe stuck, but little do they know it was Morgan who pounded it in the last half.



CHRISTINA LIND

Blue Dasher Farm Manager & Communications Specialist



I feel a certain kind of joy when I look at flowers; I'm struck by the colors, textures, and shapes, imagining the beauty of each one to a bee. I feel this joy when I design planting beds and cut arrangements to bring joy to someone else.

I came from a lengthy background of botanic gardening, but when my heart drew me to invest into Blue Dasher Farm, I dove into the charming personality of all the creatures that make this place magical - the livestock stole my heart and recharged my spirit, and I thought the focus of this farm needed to be on food and food production. I thought that was more "important" than growing flowers.

However, my heart was always with flowers, which are important for mental health, joy, habitat, ecosystems and diversity. The carbon footprint of shipping them from other countries across the globe, the humanitarian and labor conditions in the giant production areas there, and the further environmental impacts of their practices affecting the surrounding regions all filled a list of the practical reasons why I should grow them at the farm ... when one really important reason that I wasn't admitting was: damnit, I WANT to. I could apply things I already know while doing them in a new, regenerative way.

Flower growers are advised to till, keep out weeds, and spray insecticides ... all while our product is the structure created to attract insects. Regenerative agriculture, on the other hand, advocates no-till, limited inputs, covering the soil and finding a new relationship with weeds. Another part of my job will be to alter consumer expectations and offer regenerative resources for producers. A bite on your flower petal means that this plant was supporting life and part of something greater and even more beautiful than our shiny tabletops. That local, limited or seasonal availability is worth more than a \$10 bundle of roses from thousands of miles away. While I learned a lot from the conventional advice on growing flowers, I guess I'm as stubborn as my partner Jon is because I kept walking away thinking, I will find a way to do this regeneratively and share that knowledge with others.



This year, I put my dreams to action, starting two large cut flower beds. The establishment methods included occultation, sheet mulching, and sod-cutting and flipping, chosen to minimize disturbance and avoid tillage. I did what may turn some heads - I let many of the weeds grow. I let them cover the soil, removing them selectively and trying to learn from them. I watered minimally, even in a drought. Perhaps certain flowers won't be able to compete with this style of growing - those aren't the ones I need to grow.

The results? There was a vibrant, palpable energy all around the farmstead where the flowers grew, buzzing with life and movement, and re-energizing the humans

that worked there. The shapes, textures, and colors of the flowers enlightened the entire landscape. I am not very traditional, so I didn't plant straight rows of flowers. The meandering curves of mixed flowers made the entire place a home.

We did some direct deliveries, sold at a handful of farmer's markets, and even made some arrangements on request. Katya and I started remodeling a horse trailer into a roadside market stand, hoping to have it operational by next year. I enjoyed every minute of working with the flowers, and cannot wait to see where this project leads us.

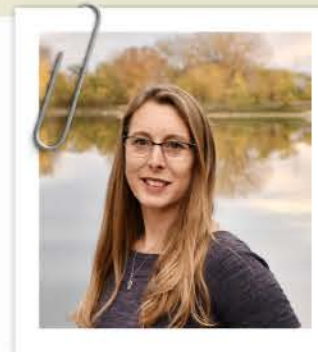
This is only the beginning.





LAB REPORT

by Robin Buterbaugh



OTHER FARM HIGHLIGHTS!

SHEEP

- 61 beautiful lambs born this year.
- Built new permanent fencing for the rotational paddocks!
- BDF staff experienced farriering hooves, care for lambs and sheep pregnancy, learning intricacies of how to build electric fencing.

BEEES

- Halfway through April we still had 3 ft of snow, but bees began flying and were more than excited to find the hills covered in pasque flowers 2 weeks later.
- We had an 80% winter survival rate, including several hives that survived their 3rd harsh winter!
- Hoping to create our own BDF prairie honey bee that can survive and thrive in our harsh conditions, we made splits that were very successful!
- We must be doing something right, as on July 27, on our head beekeeper specialist Bobbie's birthday, a swarm decided to make Blue Dasher their home. They flew in like a magic carpet over the prairie and landed on a low tree branch right over our apiary. It was the best birthday gift to Bobbie that mother nature possibly could've sent her way!
- We had the honor to host Kirk Webster from Champlain Valley Bees and Queens in Vermont, speaking to a full house of local South Dakota beekeepers, farmers and bee inspectors in November.
- For the first time this year, we harvested comb honey and propolis!
- We extracted 600 pounds of honey, leaving 60 pounds of honey on each hive for overwinter food stores.

POULTRY

- First year of hatching all of our own layers and ducks.
- We brought in about 20 turkeys and 60 broiler chickens.
- Added a new peacock, "cousin Eddie", and our peahen Lucy raised her own baby as well!

MOTLEY

- Alpacas have been bred for summer 2024! We cannot wait. We also made lots of crocheted products from their lovely fleeces.
- Our daughter Leiana and I were able to experience the farrowing of 3 beautiful piglets, and it was one of the most memorable experiences we've had.

I started working at Ecdysis in June of 2022 just as the summer field season was beginning. Getting to know the staff, learning about sampling methods, and participating in the 1000 Farms Initiative was an exciting, whirlwind of a time. In both last year and this year, I've experienced a whole different way of approaching science and effecting positive change in our food system.

I came from a very regulated and structured scientific industry career. While that aspect of research is incredibly important, coming to Ecdysis was a breath of fresh air because the science and research is complemented by an emphasis on **valuing the human dimension**, outside the box thinking, relationships, and allowing ideas and conversations to evolve organically.

I've really enjoyed being able to use my knowledge and experience from the research industry here at Ecdysis to help with coordination and logistics to support the field sampling, while working alongside my coworkers who also bring their strengths and unique experiences.

The human dimension is at work in the Ecdysis lab along with a plethora of scientific equipment and gear used in its research. Over the years, the lab has been converted and expanded from its original state as a working cattle barn and dog kennels.

This melting pot has made us into a **diverse and strong team**. Despite many moving parts, people coming and going on sampling trips, and ordering tons of sampling supplies (sometimes at the last minute), the last two field seasons have been extremely successful with barely any hiccups. I even had the opportunity to lead a sampling trip to Nebraska this summer.

It was so rewarding to be outside talking with farmers and hearing about their love for the land and the management practices they were implementing. So much credit for our success these past two crazy years goes to Jon for his vision of what is possible, and to all the staff who work hard in oftentimes extremely challenging conditions and are willing to adapt and do whatever needs to be done.

It's amazing what we can accomplish with a group of dedicated people who all want to do their part to make this world a better place through regenerative agriculture.

OS

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ECDYSIS STAFF ACCOMPLISHMENTS

Scientific Papers

- Schmid, R. B., K. D. Welch, **J. G. Lundgren**. 2024. A survey of the dung dwelling arthropod community in pastures of the Northern Plains. *Insects*, *in press*
- **Lundgren, J. G.**, and R. L. Anderson. 2023. The influence of weed community structure on granivore communities and their function in an agroecosystem. *Ecosphere* 14(8): e4641 <https://doi.org/10.1002/ecs2.4641>
- Robertson, S. R., R. B. Schmid, and **J. G. Lundgren**. 2023. Estimating plant biomass across multiple agroecosystems and regions using a drop-plate meter. *PeerJ* 11: e15740 <https://doi.org/10.7717/peerj.15740>
- Schmid, R. B, K. D. Welch, R. Teague, **J. G. Lundgren**. Adaptive multi-paddock (AMP) pasture management increases arthropod community diversity without increasing pests. *In press*, *Rangeland Ecology and Management*.

Presentations

- | | |
|---|---|
| <ul style="list-style-type: none"> • Northern Plains Sustainable Ag Society • The Farm Show, SD • Capay Valley Cover Cropping Tour • Great Plains Beekeepers • Ukrainian Farming Association • California Small Farms Conference • Washington State University • Renville County Soil and Water Conservation District • Best Practices for Pollinators Summit • National Cover Crop Summit • VIII International Symposium on Almonds and Pistachios • Wild Farm Alliance Field Day • National Pilot for Soil Health Training | <ul style="list-style-type: none"> • Ducks Unlimited CalfSoil Health Workshop • St. Cloud State Biology Dept. Seminar • Community Alliance with Family Farmers: <i>What Does Regenerative Agriculture Mean?</i>, Sebastopol, CA • CAFF Sonoma County VIP Tour 2023 • Entomological Society of America Annual Meeting • Clifton County, IL Farm Bureau • Biologically Integrated Farming Systems: Cover Cropping and Livestock Grazing for Regenerative Viticulture • Montana Soil Health Teleconference • Manitoba Forage and Grasslands Meeting • Spokane Soil Conservation District Meeting |
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In the Media: Print, Web, Radio, Podcasts, & Film

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| <ul style="list-style-type: none"> • "Common Ground" Film • Philanthropy Today Interview • "Farm Green with Rick Clark" Podcast • Tribeca Film Festival Premiere of "Common Ground" • Filming for SD Grasslands Coalition • Filming for "Good Food U" | <ul style="list-style-type: none"> • Filming for "A Better Way" • "Rocks to Roots" Podcast • "AgEmerge" Podcast • "Restoring Eden" by Elizabeth Hillborn • Civil Eats • Tri-state Neighbor • "Carbon Cowboys" Podcast |
|---|--|

Hosted Events

- Burroughs Regenerative Almond Field Day, Turlock, CA
- Circle 7 Farm Field Day, Severy, KS
- Montana Ecdysis Field Day, Shelby, MT
- Blue Dasher Farm Field Day, Estelline, SD
- New York Field Day, Cazenovia, NY
- Co-host "Insect Festival" at McCrory Gardens, Brookings, SD

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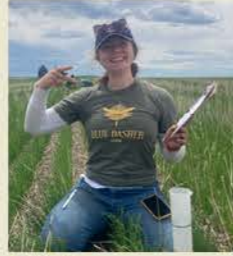
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Paul Moss
Roxanne Mettenburg
Scott Beck
Suzanne Prendergast
William Bradley

Local, state, or federal government

City of Boulder
Greenwood County Conservation District
Kansas Association of Conservation Districts

Keep up with our ongoing 1000 Farms Initiative and other projects on our website and social media!



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