

NEWS FROM FRIENDS OF
**POPE FARM
CONSERVANCY**

Volume 2, Issue 2

PROTECTING THE LAND AND ITS STORIES



MESSAGE FROM THE CHAIR

The Vegetation Layout at Pope Farm Conservancy

BY MEL POPE



The Town of Middleton Plan for Pope Farm in 2004 called for the Conservancy to serve the Town's residents, the general public, and provide an educational opportunity to grade school students. Many of the natural features of the land are part of that curriculum. Given the nature of an educational conservancy, the plan called for diversity of vegetation.

Today's visitors can see 20 distinct vegetation units in the Conservancy. These include 7 Crops, 7 distinct Prairies, 3 gardens, 2 stands of Burr Oak trees, and 1 stand of Sugar Maple trees. Each has its unique characteristics, and each represents a teachable moment for those who visit the Conservancy. In exchange for a reduced leasing fee on the Conservancy's crop fields, the farmer plants 7 different commercial crops. Although Corn and Soybeans are the most profitable, he also plants Sunflowers, Timothy, Alfalfa, Winter Wheat, and Oats. Interpretive signs for each crop provide a learning experience for visitors and students. The Conservancy's trails give you a sense of walking down a country lane as you pass different crop fields.

Each Prairie is different, too. There are 2 wild flower (Forbs) prairies, a Tall Grass Prairie, a Short Grass Prairie, a Native Shrub display, and a Hillside Prairie/Oak Savanna that once typified South-Central Wisconsin. These prairies change with the season and from year to year so there is always something familiar and something new.

It's easier to just rotate Corn and Soybeans and not plant the other crops, but that isn't what the Conservancy is about. It's easier to have just one kind of prairie, but that also isn't what the Conservancy is about. It takes careful planning and management to ensure the diversity of crops and prairies that keep visitors and students coming back year after year. In most Prairie restoration projects, a prairie is planted with a few native species, burned every few years, and managed by weeding out non-native species. A few native species flourish, become the prairie, and that's why many prairies look alike—they lose their distinct character. A generic prairie is cheaper and easier to maintain, but that's not what the Conservancy is about. Instead, our management program goes the extra mile by controlling non-native species, carefully controlling the more aggressive native species, and actively managing for less aggressive native prairie plants. Going the extra mile means that each prairie has a different look and a different mix of native prairie plants. It takes more time and effort than the Town of Middleton can afford and that is where the Friends have stepped in to do what government cannot.

The FOPFC Board is unanimous in its commitment to maintain the differences in the Prairies at Pope Farm Conservancy. We realize that the only way to do this is for the FOPFC to manage these Prairies for the Town—at no cost to them. Last year, the Town asked the FOPFC to manage four of the seven prairies. We accepted and committed 1/3 of our budget and hundreds of volunteer hours to that purpose. To continue that work, as well as our education projects, we plan to raise funds during Sunflower Days by selling souvenirs and water to the estimated 40,000 who will visit the Conservancy. Your help during Sunflower days, even for a couple hours, can make a difference.

Mel Pope, Chairman
Friends of Pope Farm Park Conservancy



Newsletter Team

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FOPFC Mission

Our mission is to contribute to the enrichment of Pope Farm Conservancy as a community and educational asset. We strive to protect and preserve the balance of the conservancy's unique natural, agricultural and historical features and volunteer as stewards to promote our passive conservancy.

Contact Us

Friends of Pope Farm Conservancy
10333 Blackhawk Road
Middleton, WI 53562
info@popefarmconservancy.org



12,000 YEARS OF ARCHEOLOGY

As you stroll along the trails at Pope Farm Conservancy, you are walking in the footsteps of past generations. Their history may well lie just under your feet.



RESTORING THE PRAIRIES

Several different kinds of prairie were planted on the landscape of the park. Those diverse prairies attract different bird and insect communities and provide the opportunity to see and compare different prairie types.



2016 EVENTS CALENDAR



SOIL SCIENCE

A UW-Madison research team from the Departments of Soil Science and Biological Systems Engineering is conducting a winter study at the conservancy to investigate how soil structure is affected by predicted changes in snow cover and freeze-thaw cycles.



EASTERN MEADOWLARKS

One of the first migratory birds to return to Pope Farm Conservancy during spring migration is the Eastern Meadowlark.



BUMBLBEE RESEARCH

Conserving and expanding beneficial bee environments will help to counter the decline of bees, and secure sustainable pollination services to home gardeners and commercial growers, alike.





12,000 YEARS OF HISTORY: ARCHAEOLOGY IN AND NEAR THE POPE FARM CONSERVANCY

BY AMY L. ROSEBROUGH

Not long after glacial ice created and then melted back from the Conservancy's hills, the ancestors of today's Native Americans made southern Wisconsin their home. Archaeologists call these early Native Peoples, who lived here 12,000 to 10,000 years ago, 'PaleoIndians'. At the time, the Conservancy was covered by tundra and spruce forest. Glacial Lake Yahara had flooded much of the Four Lakes region and Black Earth Creek was a braided torrent choked with glacial debris. We know that people lived in the region, because they left behind tools, stone chips, and other debris at favored points on the shores of Glacial Lake Yahara. It is likely that hunters of this period crossed the Conservancy grounds in search

of mastodons, caribou, musk ox, and other game.

As the climate warmed, spruce forest gave way to deciduous forest and oak savannah. The ancestral Native peoples of the region adapted, ushering in a new way of life that archaeologists call 'Archaic'. Archaic life was based on seasonal cycles of hunting, gathering, and fishing. People lived on the lakeshores or along Black Earth Creek in the warmer months, moved into surrounding uplands to harvest nuts and game in the fall, and found shelter in protected valleys in the winter. The hills within Pope Farm Conservancy not only supported groves of nut trees, they were perfect places for hunters to watch for game.

Farmers working the fields in what would become the Conservancy found dart points left behind by Archaic hunters. The points largely are intact, suggesting that they belonged to darts that were thrown and lost in snow or prairie grass. The oldest dart point found here was made between 8,000 and 5,000 years ago. Visitors can see images of these dart points on the "12,000 Years of Human History" sign on the top of the hill by the upper parking lot. The top of the hill provided a wonderful view of the lowlands between the Conservancy and Lake Mendota. Hunters stopped there to look for game. While they watched, they passed the time by sharpening their stone tools, leaving small chips of flints behind. Archa-



Illustration By: A. Rosebrough

What a View!

Hunters standing on this hill could see for miles and watch for game over a large area. They could also watch for the people traveling to and from villages on the shores of Lake Mendota. A major trail passed through the valley south of Pope Farm Conservancy. For thousands of years, people and goods moved between the Mississippi River and the Four Lakes along this trail. Burial mounds were built along the trail. One, shaped like a bear, was located just southeast of the park. After 1832, traders brought lead and furs to the Rowan-St. Cyr trading post at the mouth of Pheasant Branch Creek. A Ho-Chunk village, one of several in the Yahara valley, was established next to the post.

Presented by the Town of Middleton



*Artist rendering of
Pope Farm Conservancy
thousands of years ago*

eologists found some of the chips during surveys of the fields as the Conservancy was being established.

Life around the Four Lakes changed again around 500 BC, as three innovations spread into Wisconsin—farming, pottery, and the practice of building burial mounds—ushering in what archaeologists call

the ‘Woodland’ tradition. Seasonal camps slowly gave way to more settled communities. The largest stone tool shown on the “12,000 Years of Human History” sign may have been a flint hoe. If so, it is the oldest evidence of farming on the Conservancy grounds. It would have been used to till a small plot where sunflowers, squash, gourds, goosefoot, and probably corn were grown.

By AD 1000, the Madison area was home to a large community. Hundreds of mounds, including Wisconsin’s famous animal-shaped or ‘effigy’ mounds, ringed the lakeshores and topped the hills surrounding them. A major trail ran through the valley south of the Conservancy, linking the portage of the Wisconsin and Fox Rivers to the Mississippi River. Effigy mounds were spaced along the trail all the way from Lake Mendota to Blue Mounds.

By AD 1200, in contrast, few people lived here. Across southern Wisconsin, the residents of small villages gathered together into a few large farming communities. The people who had lived on the lakes east of the Conservancy probably moved southward to new villages on the north shore of Lake Kosh-

konong in Jefferson County. There, they practiced a way of life based on corn farming. Archaeologists call them the ‘Oneota’, but they are likely the ancestors of the Ho-Chunk and related tribes.

When the first Euro-American surveyors journeyed to the lead region in the 1830s, they rediscovered the Blue Mounds trail. Soldiers and settlers used it to travel from Fort Winnebago (modern Portage, Wisconsin) to Fort Crawford (modern Prairie du Chien, Wisconsin), giving it its later name: “The Military Road”. Farms sprang up along it, including the first farms on what would become the Conservancy property. Farmers settling here created two archaeological sites: the Goth Cabin in the west half of the Conservancy grounds, the Conservancy’s famous stone fence. The youngest site on the Conservancy grounds is the 1930s CCC spillway in the ravine on the north side of the Conservancy.

So remember, as you stroll along the trails at Pope Farm Conservancy, you are walking in the footsteps of past generations. Their history may well lie just under your feet.

Artifacts found at Pope Farm Conservancy.



RESTORING THE PRAIRIES

AT THE POPE FARM CONSERVANCY

BY DENNIS SCHENBORN

Last year the Town of Middleton asked the FOPFC to manage four of the prairies in the Conservancy (see map). Thanks to your membership, generous donations, and hundreds of hours of volunteer time we are in a position to save the Town money and manage those prairies at a higher level than the Town could afford. Our management is guided by the Conservancy's 2004 Vision.

In keeping with that vision, several different kinds of prairie were planted on the landscape of the park. Those diverse prairies attract different bird and insect communities and provide the visitor with the opportunity to see and compare different prairie types.

No other Dane County park offers visitors a side-by-side diversity of prairie habitats for comparison, education, aesthetic enjoyment, or research.

Each of these distinct prairies is within easy walking distance of parking for visitors who come for enjoyment or education.

The Blackhawk is a prairie typical of arid soils. Our management will keep this prairie limited to a few species of short grass without the prairie flowers found in the other prairies.

The North and South Prairies are tall-grass prairies with fringes of lower growing prairie flowers.

The Oak Savanna and contiguous Hillside Prairie give visitors and students a rare glimpse of what pre-western settlement Wisconsin looked like.

We began restoration work in the savanna two years ago and many of you helped by collecting and planting seeds, pulling weeds, and helping to purchase and transplant nursery grown plants.

Among the 146 native species that we've planted in the savanna are a suite of species that attract and provide food for monarch and other butterflies.

In the Wheatfield prairie, we're working to suppress the over-abundant white sage to encourage other prairie flower species that are being crowded out. Our goal is to make this prairie a diverse showpiece of color throughout the summer and fall.



Seed Collectors at Pope Farm Conservancy



Pope Farm Conservancy is a place where 4th graders first learn about different prairies, and we hope that some of these same students will return as UW graduate researchers who study the biodiversity, hydrology, and ecology of this unique landscape. Two UW graduate research projects are currently active in the PFC. One study compares erosion rates from farm fields and restored prairies. The other study tracks the foraging behavior of individual bumblebees using radio tags!
(See page 14.)

2016 EVENTS CALENDAR

MAY



Pope Farm Conservancy Archeology Tour **Wednesday, May 18th, 2016** **6:30 - 8:00 pm**

Host: Dr. Amy Rosebrough, State Historical Society

Dr. Rosebrough will take us on an archaeological walking tour of sites in Pope Farm Conservancy and discuss American Indian life in and near Pope Farm. She will show us how they made tools out of stones and provide a fascinating overview of how land usage has changed.



Friends of Pope Farm Conservancy Spring Picnic **Sunday, May 22nd 1:00 - 3:00 pm**

The FOPFC spring picnic will feature the "Surly Surveyor" who will reenact a look at the pre-settlement landscape of the Town of Middleton and the Pope Farm area through the eyes of John Mullett, Deputy Surveyor for the U.S. General Land Office, 1833. This program is highly acclaimed, entertaining, and it will be a special treat for the FOPFC membership. Bring your family and friends and join us for a picnic on top of the hill at Pope Farm Conservancy. Please bring a dish to pass. We will provide the beverages, plates & utensils. This is an exciting event NOT to be missed. No registration necessary.

JUNE

Prairie and Savanna Birding Tour **Saturday, June 25th, 2016** **7:00 - 8:30 am**

Host: Mike McDowell, Photographer and Birding Expert

Join Mike McDowell on this exciting birding excursion to view the bird population at Pope Farm Conservancy. Bring binoculars if you have them, wear comfortable walking shoes, and dress for the weather. If you are in need of binoculars, please contact Mike at (800) 289-1132 or mmcdowell@eagleoptics.com.

Pope Farm Conservancy Bees and Pollinators Tour **Tuesday, June 28th, 2016** **6:30 - 8:00 pm**

Host: Jeremy Hemberger, UW Madison Department of Entomology

How does the world look from the perspective of a bumblebee? These cute, fuzzy insects zip around their landscape, gathering pollen and nectar for their wiggly, grub-like sisters. How do these resourceful ladies do it? In the world of bees, the females run the show. The queen lays the eggs and tends to the larvae, while her clone-daughters, called workers, do the housekeeping, grocery shopping, and even play police officers for unruly, nest-disturbers like badgers. UW Madison graduate student Jeremy Hemberger spends his days working with these adorable and essential animals. His research examines the behavioral patterns of colonies of bumblebees, and he tracks them with small radio tags. Join him at the Pope Farm Conservancy to learn about bumblebees, the plants that sustain them, and how their environment affects them. Together, you'll explore his active research project, and see how bumblebees are tracked using radio frequency identification. Additionally, Jeremy will discuss the other, closely related wild bee species that share the Conservancy with the humble bumblebee.

JULY

Pope Farm Conservancy Prairie and Savanna Walk **Thursday, July 7th, 2016** **6:30 - 8:00 pm**

Host: Mike Anderson

Join us on this beautiful scenic tour of Pope Farm Conservancy's six different prairies, including an Oak Savanna. Hear the story of how crop fields and bare ground were restored to one of the world's most rare and biologically diverse ecosystems.



Pope Farm Conservancy Geology Tour **Thursday, July 21st, 2016** **6:30 - 8:00 pm**

Host: Eric Carson, Geologist and Assistant Professor, Wisconsin Geological and Natural History Survey

Pope Farm Conservancy has many geological features. Learn how the glacier made this Conservancy the way it is. View the terminal moraine, walk three recessional moraines and stand where three different watersheds come together (overlooking the city of Madison). And find out where the rocks came that were used to build the iconic stone fence! This tour will be a fascinating look back in time.

AUGUST



Photo: Robert Stebler

Sunflower Days **Saturday, July 30 - August 7th** **Sunrise to Sunset**

(Actual dates may vary depending on peak sunflower bloom)

Nine acres of sunflowers; see over 500,000 sunflowers in bloom. Yes, that was half a million flowers, each with possibly 1000 to 2000 seeds per head. You shouldn't miss this visual phenomenon. It is a magical experience. Come. Bring your family. Bring a friend. Bring your camera. Just come.

All FOPFC tours are free and open to the public. No registration is necessary.
 More info: www.popefarmconservancy.org Contact: info@popefarmconservancy.org



Pope Farm Conservancy Annual Tour
Tuesday, August 9th, 2016
6:30 – 8:00 pm
Host: Mel Pope, FOPFC Chair

This free walking tour of Pope Farm Conservancy, led by Mel Pope, will explore the history and features of the conservancy, including seven different prairie restoration projects and a field of Sunflowers. Come and enjoy a 360 degree panoramic view of Lake Mendota, the Capitol, Black Earth Creek valley and the terminal moraine. This is a tour that you won't want to miss!!

SEPTEMBER

Pope Farm Conservancy Native American Garden Tour
Thursday, September 1st, 2016
6:00 - 7:30 pm
Host: Dr. Amy Rosebrough, WI State Historical Society

Travel back in time with Dr. Amy Rosebrough of the Wisconsin State Historical Society as she leads us on a tour of the Native American Garden, which replicates a garden from 1,000 years ago, and the Settler's Garden at Pope Farm Conservancy. Learn how the Native Americans have influenced modern day agriculture and where does the food we eat come from. Amy's talks are always delightful and not to be missed!



Pope Farm Conservancy Tour Soil: The Foundation of Life
Tuesday, September 13th, 2016
5:00 - 6:30 pm
Host: Dr. Nick Balster, UW-Madison Soil Science Department

Join Dr. Nick Balster from the UW-Madison Soil Science Department on this fascinating tour of Pope Farm Conservancy and its connection to SOIL! Come along on this educational adventure at Pope Farm Conservancy and discover:

- What is soil?
- Why is soil critical in our lives?
- Why is erosion a natural process, but one we should control?
- How is the history of soil conservation at Pope Farm Conservancy still evident on the landscape today and a lesson for the future?
- How were the Soil Conservation Service and CCC integral to the management of soil at PFC?



Pope Farm Conservancy Migratory Birding Tour
Saturday, September 24th, 2016
7:30 – 9:00 am
Host: Mike McDowell, Photographer and Birding Expert

Join Mike McDowell on this exciting birding excursion and capture the fall flight behaviors of the bird population at Pope Farm Conservancy. Bring binoculars if you have them, wear comfortable walking shoes, and dress for the weather. If you are in need of binoculars, please contact Mike at (800) 289-1132 or mmcdowell@eagleoptics.com.

2016 PRAIRIE SEED COLLECTION DATES

SEPTEMBER

- September 3, 9:30 a.m. - 11:30 a.m. (Saturday)
- September 16, 9:30 a.m. - 11:30 a.m. (Friday)
- September 24, 9:30 a.m. - 11:30 a.m. (Saturday)

OCTOBER

- October 8, 9:30 a.m. - 11:30 a.m. (Saturday)
- October 22 9:30 a.m. - 11:30 a.m. (Saturday)

NOVEMBER

TBD

Donate to Friends of Pope Farm Conservancy

I would like to make a tax-deductible donation at the level of:

- Sunflower \$50
- Rock Wall\$100
- Oak Savannah\$250
- Capital View\$500
- Other

Donor Information

Name _____
 Address _____
 City _____
 State _____ Zip _____
 Phone _____
 Email _____

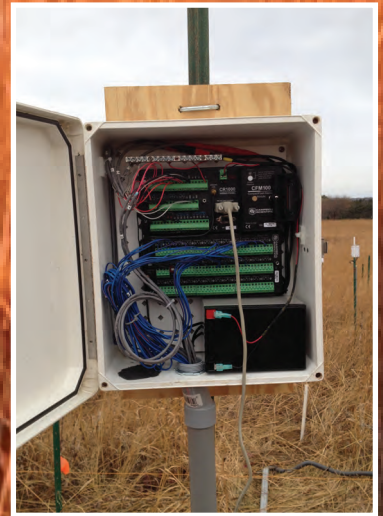


**Please mail this form and your check (payable to FOPFC) to:
 FOPFC, 10333 Blackhawk Rd., Middleton, WI 53526**

We also accept donations securely online at www.popefarmconservancy.org/donate

SOIL SCIENCE

AT THE POPE FARM CONSERVANCY



BY ED BOSWELL, DEPARTMENT OF SOIL SCIENCE AND BIOLOGICAL SYSTEMS ENGINEERING, UW MADISON

There has been a long and rich history of Soil Conservation at the Pope Farm Conservancy, as highlighted in the past feature article (volume 2 issue 1) “Civilian Conservation Corps Spillway”. Continuing in this tradition, a UW-Madison research team from the Departments of Soil Science and Biological Systems Engineering is conducting a winter study at the conservancy to investigate how soil structure is affected by predicted changes in snow cover and freeze-thaw cycles. Soil structure is important for many reasons including resistance to erosion and protection of soil organic

matter, the “life blood” of the soil. Soil erosion remains an important global issue. Yet how winter conditions affect the detachment, or breaking up, of soil during the principle phases of erosion remains unclear. The protection of soil organic matter may be a less familiar concept than soil erosion, but the two are inextricably linked. Under certain management practices, soil has the capacity to store, or sequester, organic matter which potentially reduces the amount of carbon (as carbon dioxide) that is released to the atmosphere. A three-year winter field study was designed and installed at the

conservancy to test the hypothesis that increased freeze-thaw cycles resulting from reduced or more variable snowpack formation will disrupt soil structure and that this disruption will leave the soil more susceptible to erosion.

If you visit the conservancy during the winter months, you may have noticed the 18 experimental plots located in the north-facing agricultural field, as well as in the north prairie. The experiment includes replicated treatments of natural snow accumulation, insulated plots to simulate a thick, sustained snow pack, and snow exclusion plots.

What is not seen from above ground is the network of 90 sensors that are buried in the soil at different depths to measure soil temperature, soil moisture content, and frost depth. These sensors are connected to data loggers (inside the above-ground white enclosures) which allow for measurements to be recorded every 30 minutes over the entire winter season. The data are downloaded to a laptop computer and analyzed back at our lab at UW-Madison. We can then determine how many freeze-thaw cycles occurred, how different snow covers affect soil temperatures and frost depths, and the degree to which the soil structure is disturbed by these winter processes. Additionally, we collect and analyze soil samples for examining differences in soil organic matter between treatments and vegetation types.

Preliminary data suggest that the snow manipulation treatments are effective in changing soil temperatures, freeze-thaw cycles, and frost depths as shown in the above graph. Field samples are currently being analyzed to assess any effects on soil structure, erosion susceptibility, and soil organic matter protection. These preliminary results have been presented at international conferences and once complete, the study will be published in internationally recognized scientific journals. Additionally, the knowledge gained from this research will inform computer models used to predict soil erosion rates. And, most importantly, our work will help us better understand the relationship between soil organic matter and changes in wintertime conditions as they relate to soil erosion. In all presentations and publications, the Friends of Pope Farm Conservancy, as well as the Town of Middleton are acknowledged for their continued support of our research which we have enjoyed immensely. We look forward to another beautiful year at the conservancy and a continued partnership with the Friends and the community.



Top to bottom
Soil temperature and moisture probes
Installing the probes at different depths
Snow exclusion plots, a cold windy day



EASTERN MEADOWLARKS

OF THE POPE FARM CONSERVANCY

BY MIKE McDOWELL



One of the first migratory birds to return to Pope Farm Conservancy during spring migration is the Eastern Meadowlark. As a short-distance migrant, they don't have far to travel to get back to Wisconsin. Many spend the winter months just to our south in Illinois, Missouri, Kansas, and Oklahoma. They announce their arrival with sweet "spring of the year" songs, often singing from elevated perches like treetops, fence posts, or large rocks. Start looking (and listening) for meadowlarks around the second to third week of March.

Though a member of the family Icteridae, which includes blackbirds and orioles, the Eastern Meadowlark is a robin-sized songbird with brown back and wings with stripes

of black and white, a bright yellow throat and belly, and a prominent black chevron displayed across the chest. As ground foragers, a long pointy bill helps them extract grubs and other invertebrates from the soil.

Male Eastern Meadowlarks will usually mate with more than one female. Selecting a spot concealed by dense vegetation, the female constructs a grass-woven cup nest on the ground. Their clutch size generally consists of 2 to 7 eggs. As ground nesters, early mowing of agricultural fields can cause premature mortality of their eggs or young. Fortunately, meadowlarks can have more than one brood per breeding season, so they might be able to raise another family before

returning south in the fall.

Though still relatively common and widespread, Eastern Meadowlarks have experienced some of the steepest population declines of all North American grassland songbirds (72% in the past 40 years). The main cause of their decline is habitat loss. It's also thought that the intensification of agricultural practices has reduced their preferred habitat availability. However, meadowlarks appear to thrive on small family farms with pastureland and grassy fields. Given the nature of Pope Farm Conservancy's unique combination of fields and prairies, it's little wonder that Eastern Meadowlarks keep coming back year after year!

2016 VOLUNTEER OPPORTUNITIES



Share your passion for Pope Farm Conservancy, and join our volunteer efforts. We are committed to sponsoring educational opportunities at Pope Farm Conservancy, preserving the balance of its wildlife and historical features, and protecting the scenic landscapes and tranquility that make PFC a beautiful experience for all of us. We try to make the volunteer experience an enjoyable one!

Please check the box if you would like more information

<input type="checkbox"/> Seed collection in the prairies throughout late summer and fall	2 hr. sessions
<input type="checkbox"/> Sunflower Day before and after set up and tear down	4 hr. sessions
<input type="checkbox"/> Invasive weed control, help control invasive weeds in the prairies	2 hr. sessions
<input type="checkbox"/> Seed processing, process prairie seeds for planting	2 hr. sessions
<input type="checkbox"/> Photography landscapes, photographing the conservancy with camera	1 hr. month
<input type="checkbox"/> Photography events, photographing events and tours (summer and fall)	2 hr. month
<input type="checkbox"/> Photography field trips, photographing field trips at PFC	2 hr. year
<input type="checkbox"/> Goodwill Ambassador, help hand out information about PFC (sunflower days)	2 hr. shifts
<input type="checkbox"/> Trail Ambassador, monitor trails and notify personnel if concerns or problems	if available
<input type="checkbox"/> Education committee, working on all aspects of educating public at PFC	2 hrs. month+projects
<input type="checkbox"/> Events committee, plan, and coordinate, events, tours, and sunflower days	2 hrs.month+projects
<input type="checkbox"/> Writer, to write articles for the newsletters and news updates	1 hr. month
<input type="checkbox"/> Writer, to write articles about events and tours	1 hr. month
<input type="checkbox"/> Writer to write feature articles about natural subjects, or historical aspects	1 hr. month
<input type="checkbox"/> Writing thank you cards to volunteers and speakers	1hr. month
<input type="checkbox"/> Food preparation, helping make trail snacks for volunteers	3 hrs. season
<input type="checkbox"/> Food tent, help prepare hot dogs and hamburgers for sale to the public	2 hr. shifts
<input type="checkbox"/> Parking, help park cars during sunflower day's	2 hr. shifts
<input type="checkbox"/> Graphic Design, help design handouts, posters, and brochures	3 hrs.season
<input type="checkbox"/> Historian, research the many stories about the land at PFC	pr. project
<input type="checkbox"/> Public speaking, conducting tours on various subjects at PFC	5 hrs. season
<input type="checkbox"/> Public speaking to groups and clubs off site about PFC	if available
<input type="checkbox"/> Press contact, send PFC events info over the web to news outlets	3 hrs. season
<input type="checkbox"/> Researchers, to research ideas for the Pope Homestead	2 hrs. month
<input type="checkbox"/> Public Relations Committee, planning and coordinating promotion of PFC events	2 hrs. month
<input type="checkbox"/> Administrative, mailing info to members without email	2 hrs. a week

Please check those items you would like more information on, and mail this to Mel at Friends of Pope Farm Conservancy 10333, Blackhawk Rd, Middleton, WI., or scan and email this to mel@popefarmconservancy.org
Thank you for your interest in advance,

First Name _____ Last Name _____
Phone _____ or email address _____



BUMBLEBEE RESEARCH

AT THE POPE FARM CONSERVANCY

By JEREMY HEMBERGER

Summertime visitors to Pope Farm Conservancy have the privilege of walking amongst some of the most important, adorable, and complex organisms on the planet. Bumble bees, the big, fluffy bees that happily flutter from flower to flower, are incredibly beneficial insects that help to pollinate agricultural and garden crops, as well as other wild flowers throughout the landscape.

Despite their importance, bumble bees, like honey bees, have experienced marked declines in number over the past 10 years. While the

well-known phenomenon of colony collapse disorder does not affect bumble bees, the combination of novel pathogens, habitat destruction, climate change, and increased insecticide use have driven declines of most species of bumble bees throughout the United States. Researchers across the globe have noticed these trends, and have been working feverishly to help understand the causes of declines, and develop strategies to combat them.

Bumble bees are, like honey bees, a social insect. The nest is led

by a single queen, who raises and depends on her exclusively female workforce to gather the important provisions of the nest: pollen and nectar. These workers leave the nest multiple times a day to make “shopping runs,” called foraging trips, to gather these materials. Pollen is the protein source of the nest and is fed to the developing larvae, small white grubs that are housed in small wax cells within the nest. Nectar is the carbohydrate fuel keeping the workers and queen alive. To acquire these resources, bumble bees travel



Above: Bumble Bee with radio tag on its back exits nest to search for food

Right: Capturing bees to tag with a heavily modified vacuum



extensive distances, sometimes up to a mile or more away from their nest, visiting tens of thousands of flowers within the life span of a single worker. This foraging behavior is what we observe when we see bumble bees out and about in our prairies and gardens.

Jeremy Hemberger, a graduate student at the University of Wisconsin's Department of Entomology, is very interested in bumble bee foraging behavior. Understanding the patterns of foraging, like how long bees spend outside their nest and how often they go on foraging trips, can help researchers to understand how many resources bees are utilizing and potentially how suitable the habitat surrounding a bumble bee nest really is.

Think of it this way: If we imagine a bee searching for flowers in a habitat where there are few flowers, it will likely take that bumble bee a longer time to find and gather sufficient pollen and nectar before it returns to its nest. Contrast that to a habitat with lots of flowers. Here, bumble bees likely can find and get the food they need

in a shorter amount of time. That difference in time is something that we can measure and relate to important aspects of the bees habitat to try and determine the best places for the humble bumble bees. Measuring these behaviors is akin to interviewing a bumble bee—their behavior is a language that, given time, researchers can begin to understand.

But how can we measure bees foraging times? Instead of standing over a bumble bee nest with a stop watch, Jeremy has been attaching small radio transmitters, only 2 millimeters wide, to the backs of bumble bees to track when they leave and return to their nest. This technology, called radio frequency identification (RFID), is also used on the Illinois highways IPASS system, building key cards, and pet identification tags.

This technology has allowed Jeremy to record thousands of foraging trips across a range of different habitat types, all aimed to try to determine if there are any patterns in the foraging behavior of bumble bees. Uncovering these patterns

could allow researchers like Jeremy to figure out what types of environments are best for not only bumble bees, but also the other 500 bee species native to Wisconsin. Conserving and expanding beneficial bee environments will help to counter the decline of bees, and secure sustainable pollination services to home gardeners and commercial growers, alike.



Jeremy Hemberger, a graduate student at the University of Wisconsin's Department of Entomology, "Tailgate Lab" attaching radio tags to bumble bee, 30 seconds from capture to release

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