Friends of Pheasant Branch

Geology, Cultural History
and Ecology of the

PHEASANT BRANCH CONSERVANCY

AND WATERSHED

IN MIDDLETON, WISCONSIN

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Cover photo by Andrea Gargas

Friends of Pheasant Branch

The Friends of Pheasant Branch Conservancy, Inc. was founded in 1995 to help restore, preserve and understand the value of conservancy lands, other natural habitats, and cultural sites in the Pheasant Branch Watershed for today and for tomorrow. This booklet, published on our tenth anniversary, offers readers an brief summary of what we have learned about the Pheasant Branch Conservancy and its watershed.

During our organization's first decade

- Our volunteers, including hundreds of students, donated more than nine thousand hours to restoring prairie and oak savanna habitats in the Conservancy.
- Our volunteers used donations from members, community residents and businesses to construct two observation platforms at the northern end of the Conservancy, one of which overlooks the Pheasant Branch marsh, and the other, the Pheasant Branch springs.
- We obtained nearly $700,000 in grants to promote research, sound environmental planning, and restoration projects in the Pheasant Branch Conservancy and watershed in order to protect the Pheasant Branch springs, enhance wildlife habitat in the Conservancy and improve the quality of water that Pheasant Branch discharges into Lake Mendota.

We continue to

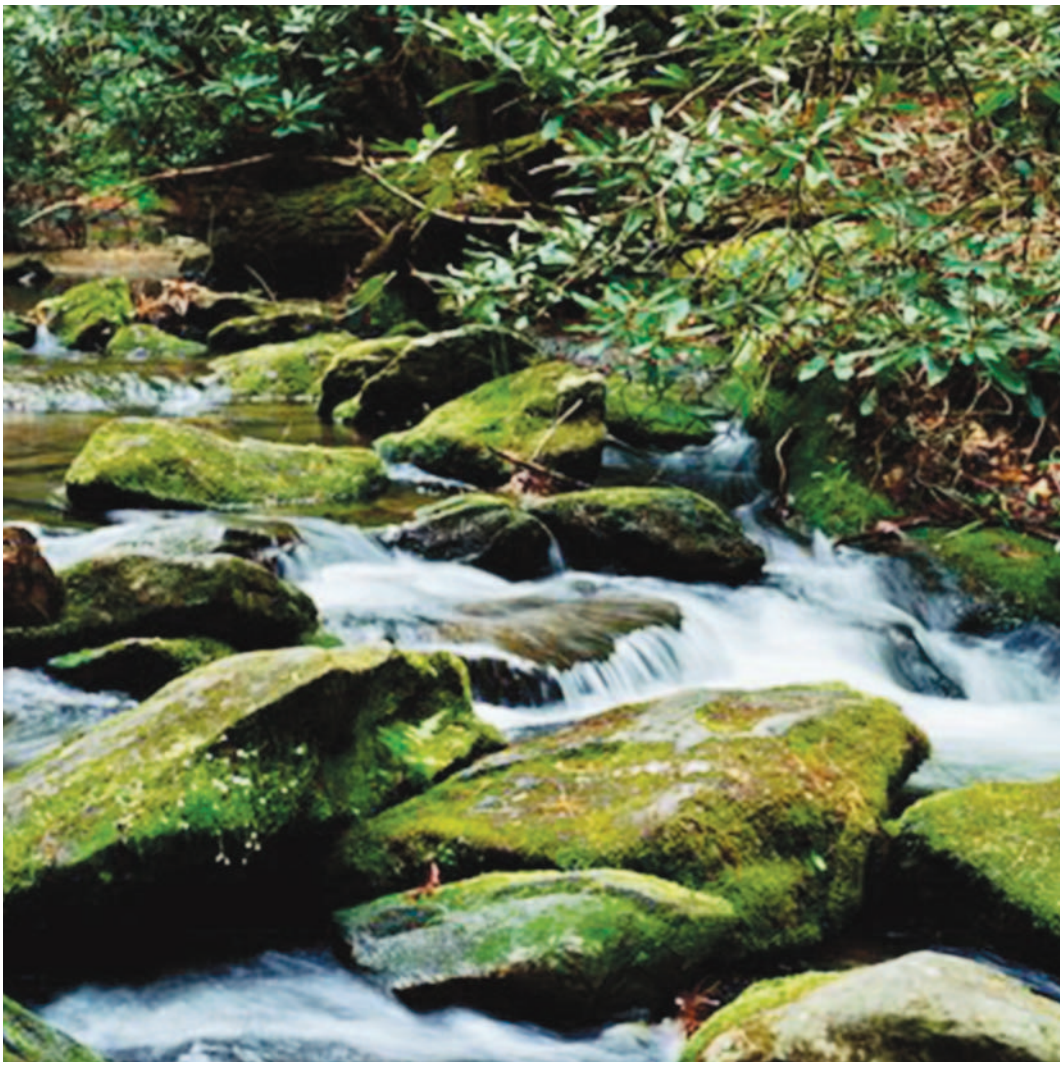
- Work with federal, state and local units of government, and private foundations, to purchase other ecologically significant parcels of land adjacent to the Conservancy.
- Encourage cultural, ecological and hydrological research in the Conservancy and watershed.
- Sponsor educational field trips and public meetings throughout the year.
- Sponsor Kids for the Earth, a program that helps teachers, parents and youth group leaders introduce children of all ages to learning opportunities in the Conservancy and promote the values of environmental stewardship.

For further information, visit our website at **www.pheasantbranch.org**,
email us at **office@pheasantbranch.org**,
or write to Friends of Pheasant Branch, Inc., P.O. Box 628242, Middleton, WI, 53562.

Publication of this booklet was made possible by the many photographers who graciously gave their permission for us to use their photos, grants from the American Girl's (formerly Pleasant Company) Fund for Children and the Wisconsin Department of Natural Resources, and generous donations from Rich Morey of Morey Airplane Company, Printing Services Management, Inc., and members of Friends of Pheasant Branch, Inc.

I

Description of the Pheasant Branch and its Watershed

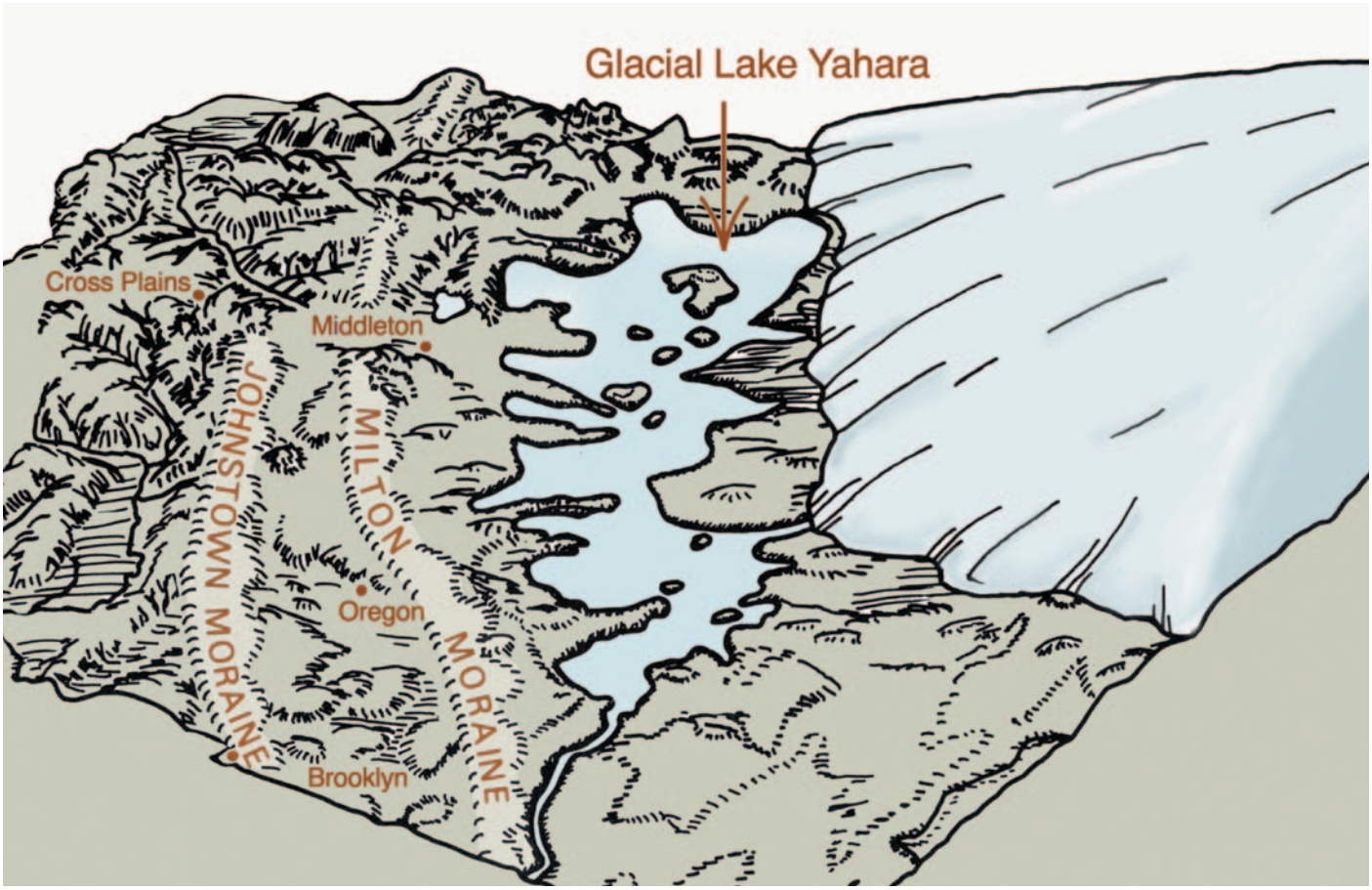


The Watershed

Pheasant Branch *Watershed** drains into Lake Mendota. It covers approximately 24 square miles in an area that includes portions of the Towns of Middleton and Springfield and the Cities of Madison and Middleton. (See map on page 5.)

As the last glaciers began to melt about 13,000 years ago, much of the land west of present-day Highway 12 drained into the bed of Glacial Lake Middleton, the wetland flat along Airport Road in Middleton.

Today, Pheasant Branch** originates out of a *glacial moraine* in the Towns of Middleton and Springfield, and flows through the City of Middleton before entering Lake Mendota. The seven-mile long creek has four distinct parts: the South and North Forks upstream from and west of Highway 12, and the upper and lower portions of the main channel. Each of these reaches has its own particular conditions and problems.

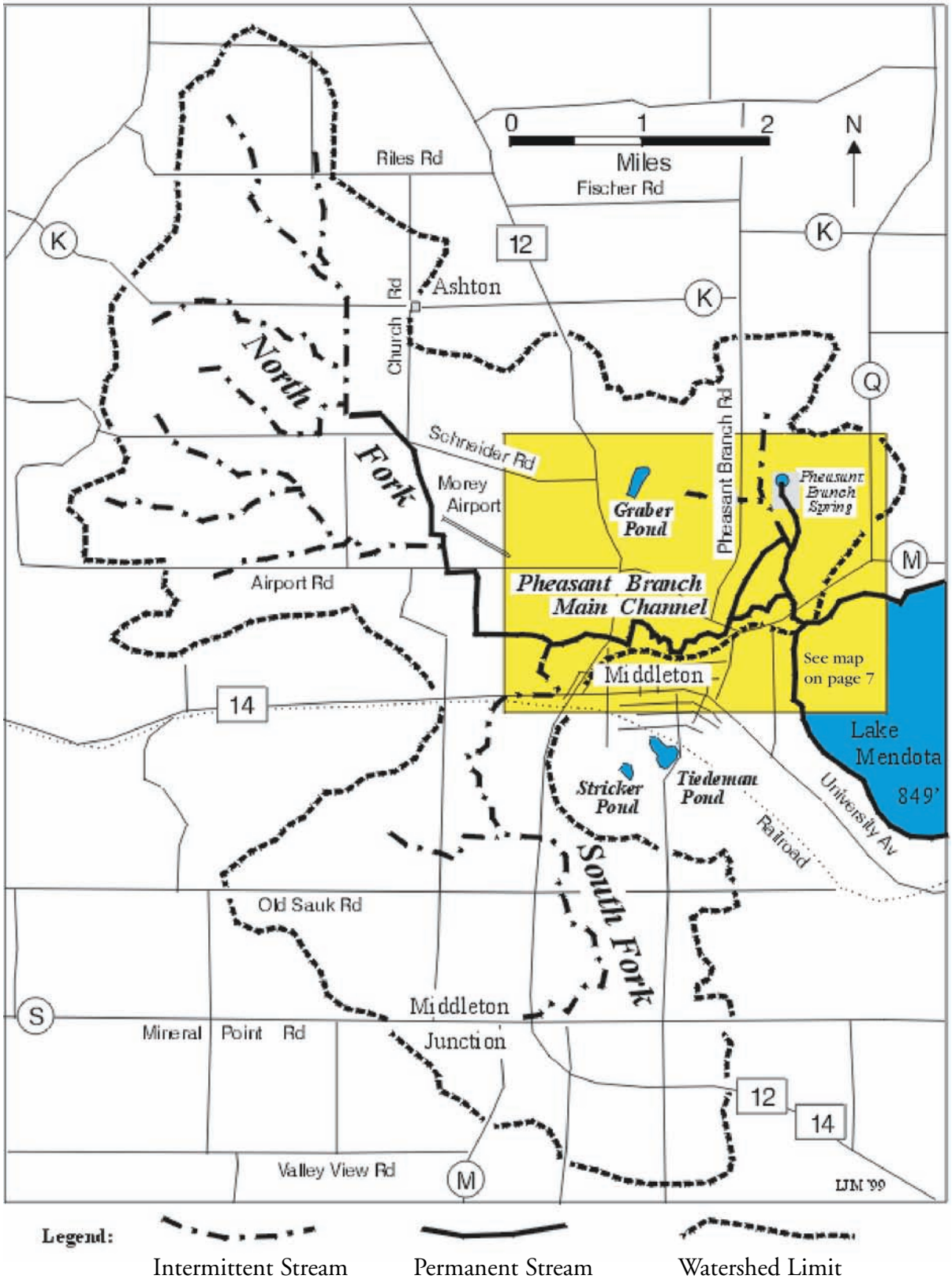


Schematic view of Dane County as ice retreated to produce glacial Lakes Middleton and Yahara, adapted from David M. Mickelson, *A Guide to Glacial Lands of Dane County, Wisconsin* (Wisconsin Geological and Natural History Survey, 1983)

*** Section V defines italicized words and terms in the text.**

**** The words "branch," "stream," and "creek" can be used interchangeably.**

Pheasant Branch Watershed

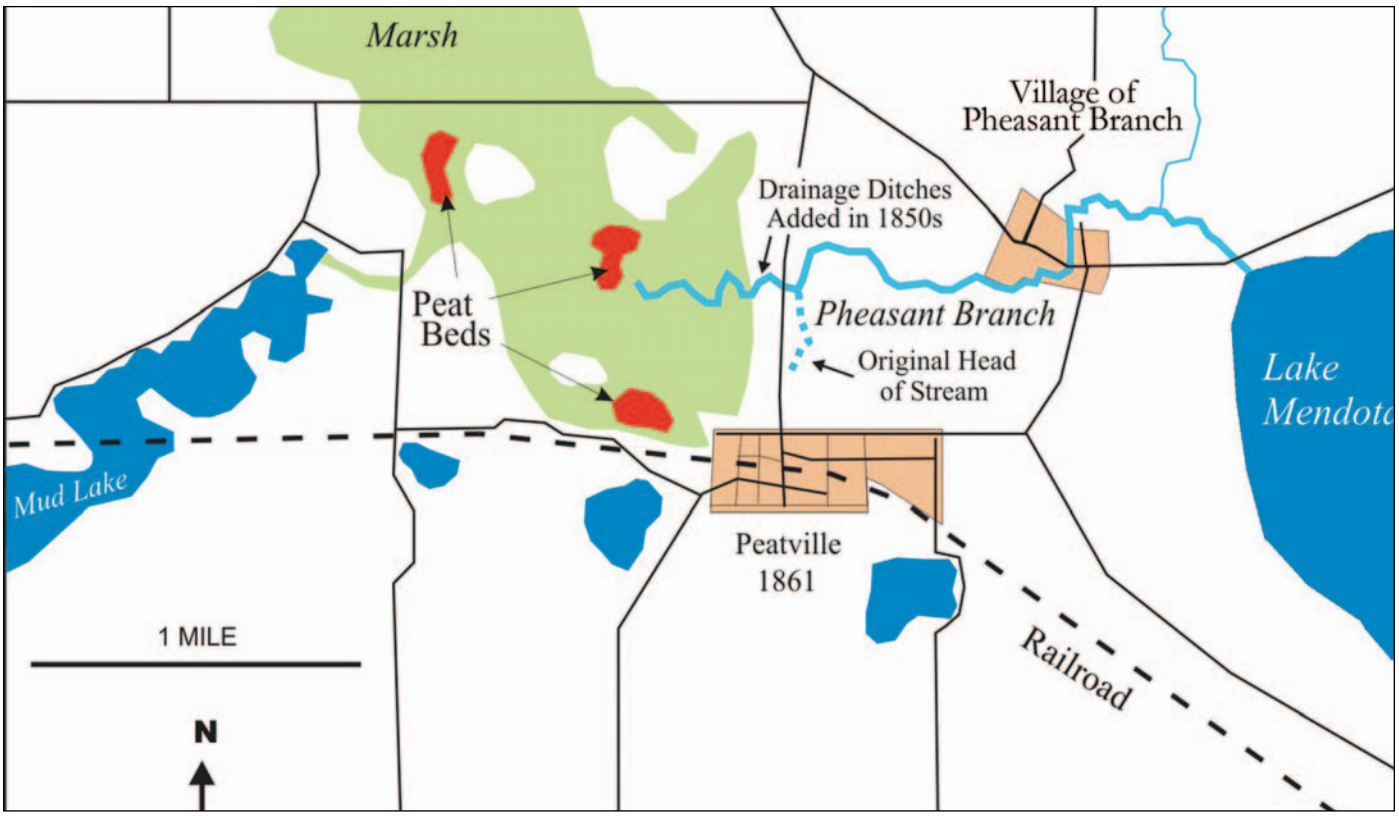


L. Maher

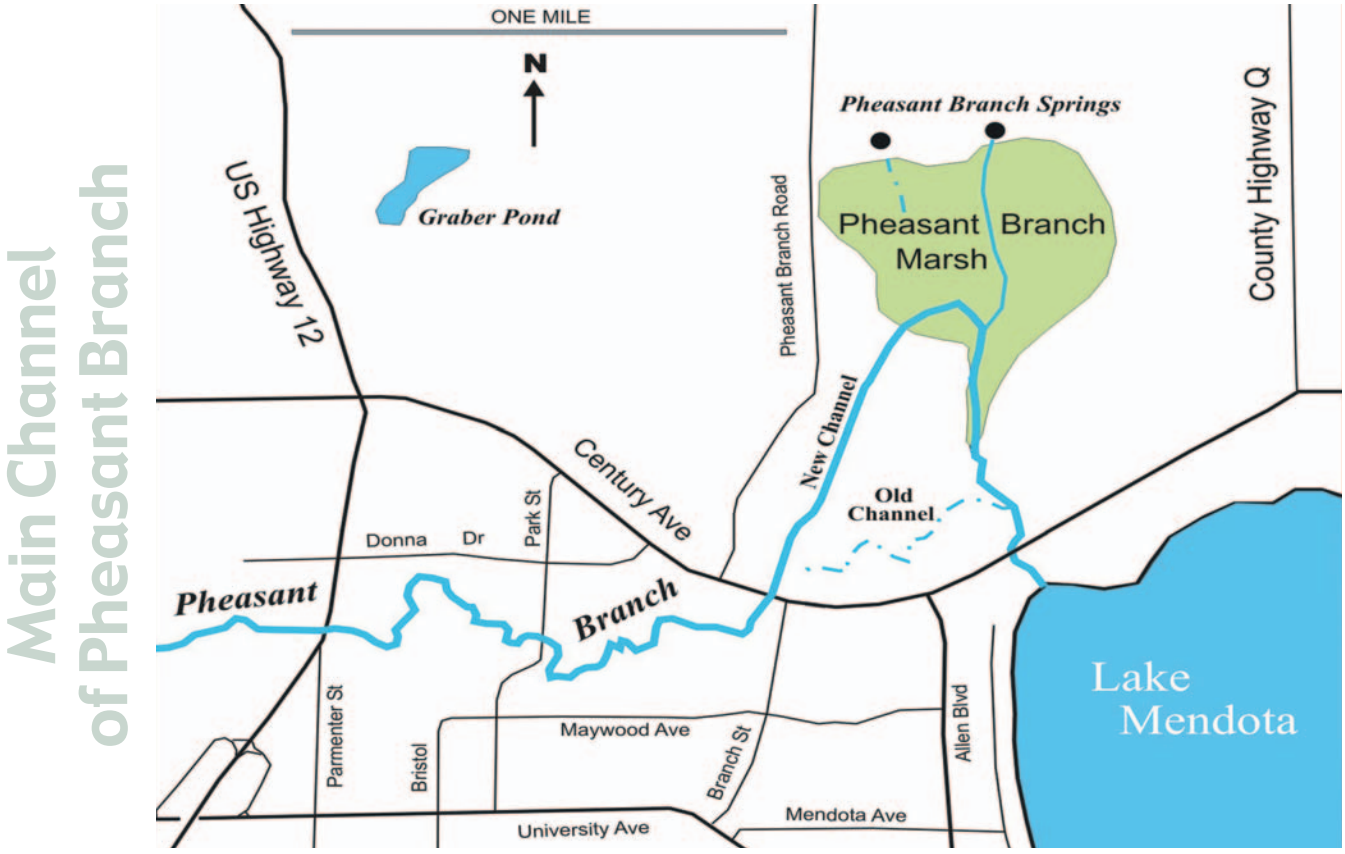
The South Fork of Pheasant Branch probably had no well-defined channel prior to the arrival of European and East Coast settlers. Today land in the **South Fork Watershed** is almost fully developed. The present channel results from agricultural and urban development, and is little more than a s*torm water* drainage ditch, with no *baseflow* and minimal ecological value. During intense rains, the channel has flash flows that carry high concentrations of *suspended sediment* from the channel and construction site erosion downstream to Pheasant Branch Marsh and Lake Mendota. Given the degree of development, opportunities for building storm water retention devices and restoring the stream are limited.

European and East Coast settlers created the **North Fork Watershed** in the 1850s when they ditched and drained a peat bog north of present-day Airport Road into the headwaters of the Pheasant Branch. (See map below.) That bog developed over thousands of years as an ancient glacial lake bed filled with soil and vegetation. Today the north fork channel flows through a floodplain. It has a small amount of base flow, most of which occurs south of Schneider Road. Wetland destruction, sediments and nutrients from agricultural fields, and barnyard runoff have destabilized stream banks downstream, elevated water temperatures and destroyed fish habitats.

If the **North Fork Watershed** were to be developed without adequate storm water management, heavy rains would accelerate channel erosion, and loss of *groundwater recharge* could further reduce channel base flows. Inadequate management of construction site erosion would result in delivery of large quantities of sediment to the Pheasant Branch Marsh, causing further destruction of wildlife habitats. Increased loads of phosphorous that are associated with sediment would also cause



Agricultural drainage ditches created in the mid 1800s greatly increased the amount of land that drained into Pheasant Branch.
L. Maher



L. Maher

more turbidity and exacerbate summer algae blooms in Lake Mendota. Conversely, good planning before development occurs, and use of sound management practices now, would greatly enhance ecological conditions in the North Fork. Such practices include innovative storm water and erosion control techniques, improved agricultural conservation methods designed to reduce sediment and nutrient discharge, and wetland restoration to increase baseflow and trap sediment.

Recommendations formed by consensus of a large group of citizens, developers, scientists and city and county officials, who served on the Pheasant Branch Taskforce in the 1990s, helped preserve prime agricultural land in the Town of Springfield, north of Airport Road. The taskforce also encouraged the City of Middleton to purchase the Morey Airport and several other parcels of land along Airport Road so that the City could widen the old agricultural drainage ditches, protect open spaces, slow stream flows and enhance wetlands in the floodplain.

The **Main Channel of Pheasant Branch** runs through the City of Middleton from Highway 12 downstream to Lake Mendota. Storm water runoff is largely responsible for eroding the upper portion of this channel. Since European and eastern settlers arrived in the mid-1800s, farming and urban development have increased runoff and inhibited water infiltration. The channel's flow, accelerated by a large elevation drop (about 90 feet in 2 miles), has widened and deepened the channel banks, which are composed of sandy, non-cohesive soils. Opportunity for erosion is further enhanced by a forest canopy that inhibits groundcover growth, exposing bare soil along the stream bank.

Efforts to decrease storm water runoff could reduce erosion rates,

and the public and private costs of repairing erosion damage. Presently, erosion in the upper reach of the main channel valley threatens several structures. The City of Middleton recently contracted for repairs of slope failure that endangers a private residence. Erosion also threatens two bridges, an old sanitary sewer interceptor buried along the channel and a newly constructed sewer crossing. Since the late sixties, the city has spent about a half million dollars for main channel stabilization. These attempts to *mitigate* upstream problems include stream bank reinforcement, and installation of structures that reduce flow during peak periods but also prevent upstream fish migration.

Slope failure endangers a private residence on the Main Channel. Robert Queen, Wisconsin Department of Natural Resources

The lower portion of the main channel flows into Pheasant Branch Marsh where it receives an estimated 1,840 gallons of water per minute from two major spring complexes to the north. The combined flow is then conveyed through the Pheasant Branch Marsh to Lake Mendota. Because the land in this area is very flat, the lake level controls water levels in the final section of the creek. This portion of the channel is ecologically important because it connects the lake to a spring-fed marsh. Until heavy silting occurred, fish and other aquatic species living in the lake used the lower channel for spawning and other life needs. Today, a large population of carp has reduced northern pike spawning in the marsh.

Sedimentation is a major problem in the Lower Branch. Some of the sediment carried by the creek is deposited in the marsh; the rest is conveyed to Lake Mendota. Turbid water prevents vegetative growth in the channel and severely limits wildlife habitat potential. Better erosion control and storm water management would greatly improve conditions in this reach.

The City of Middleton received a Wisconsin Department of Natural Resources grant in 2004 to develop a plan to improve water quality and aquatic habitat in the lower portion of the main channel and remove sediment that clogs the creek's outlet into Lake Mendota.

Muddy water from the main channel meets clear water from the springs in the Pheasant Branch Marsh before Pheasant Branch flows into Lake Mendota. L. Maher

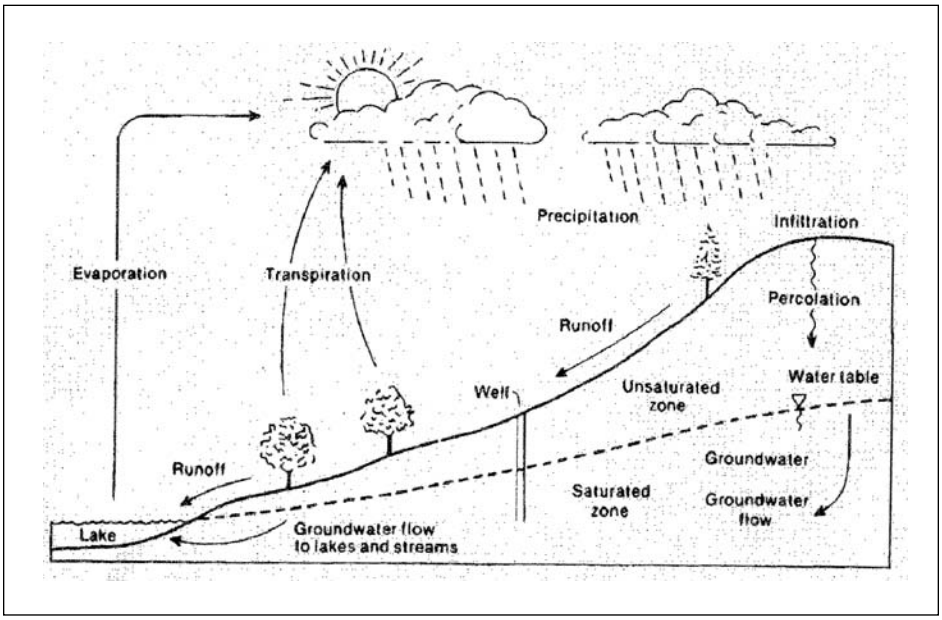
For more information about the Pheasant Branch Watershed, see a report that U.W. Geology Professor Lou Maher prepared for the Pheasant Branch Watershed Taskforce at http://www.geology.wisc.edu/~maher/pheasant_branch.html

II

Geology of the Pheasant Branch Conservancy

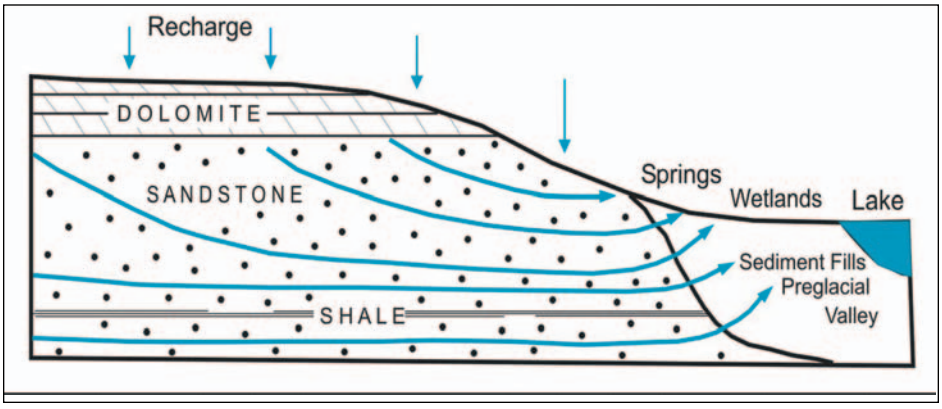
Dan Geocaris

Water is the big story in the Pheasant Branch Conservancy. As glaciers began to melt about 13,000 years ago, they stripped soil cover from rocky hilltops, filled valleys with glacial debris and outwash, and created many new streams, rivers, ponds and lakes. The surrounding hilltops are capped by hard dolomite rock that once covered much of Wisconsin. Weathering and erosion gradually cut through the dolomite, exposing a softer sandstone layer that carries water very well. Once exposed, the sandstone eroded rapidly, forming the smooth broad valley. Several springs and seepages in the conservancy flow from the sandstone layer, contributing about 2.6 million gallons of water each day to the marsh and Lake Mendota.



Water Recycling Diagram from U.W. Madison Geology Department

The diagram above shows how our environment recycles water. Some precipitation runs off the land into streams, rivers and lakes where it is evaporated and forms clouds to make more rain or snow. After using water to process their food, trees and other plants give off a watery vapor that helps produce more precipitation. Rain and melting snow that are absorbed by soils *percolate* down through many layers of rock to where they provide cool, clear groundwater for wells, streams, rivers, and lakes.



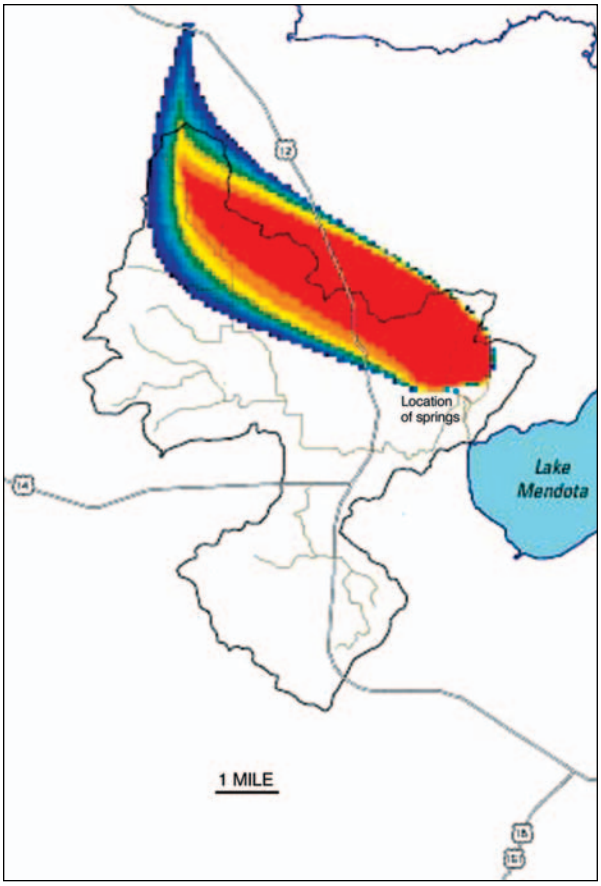
Water from recharge areas is carried through layers of sediment and bedrock to the springs, wetlands and lake. L. Maher

The diagram below shows how some water that *infiltrates* soils eventually seeps through relatively soft layers of rock to surface at springs. Using *isotopes* and other means, scientists can identify areas of land that provide groundwater for specific sets of springs.

Recent studies by Randy Hunt and Jeff Steuer of the U.S. Geological Survey show that some of the water for the Pheasant Branch Springs comes from miles away. Their map on page 11 shows the recharge area for the springs superimposed on a map of the Pheasant Branch Watershed boundaries. The red portion of the plume covers land in the Town of Springfield that Hunt and Steuer identified as the primary recharge area for the springs.

The Pheasant Branch Springs look as if they will flow forever. But many large springs in the Madison area were lost because of recent development. Their recharge areas were covered by buildings, roads and parking lots, and municipal wells captured their groundwater. Planners now recognize the need to control how land is developed and where wells are placed in order to preserve spring flows. Loss of spring flows would adversely affect many plants and animals in the Conservancy's marsh and Lake Mendota.

These springs have flowed for thousands of years but could dry up, like others in the Madison area, as a result of poor planning. Dan Geocaris



Simulation of recharge area for Pheasant Branch springs superimposed on map of the Pheasant Branch watershed. Adapted from map by Randy Hunt

For more information about the Pheasant Branch hydrology, see:

Randall J. Hunt and Jeffrey J. Steuer, "Simulation of the Recharge Area for Frederick Springs,* Dane County, Wisconsin," U.S. Geological Survey Water Resources Investigative Report, 00-4172, 2000.

Jeffrey J. Steuer and Randall J. Hunt, "Use of Water Modeling Approach to Assess Hydrological Effects of Urbanization in North Fork of Pheasant Branch, Middleton, Wisconsin," U.S. Geological Survey Resource Investigative Report, 01-4113, 2001.

Randall J. Hunt and Jeffrey J. Steuer, "Evaluating the Effects of Urbanization and Land-Use Planning Using Ground-Water and Surface-Water Models," U.S. Geological Survey Fact Sheet, 102-01, 2001.

Randall J. Hunt, Kenneth R. Bradbury, and James T. Krohelski, "The Effects of Large-Scale Pumping and Diversions of Water Resources in Dane County, Wisconsin," U.S. Geological Survey Fact Sheet 127-01, 2001.

* Now called Pheasant Branch Springs

III

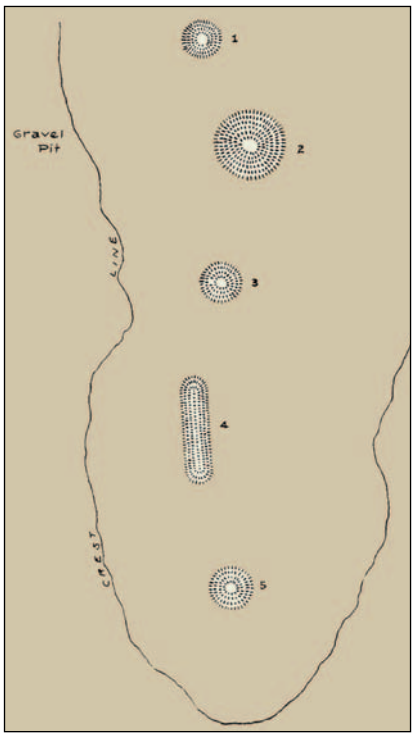
Cultural History in the Pheasant Branch Watershed

American Indians arrived in what is now southern Wisconsin about 12,000 years ago, shortly after the glaciers receded. Archeologists know very little about the Paleo-Indians who lived in this area between 10,000 BC and 6,500 BC and shared their environment with mammoths and mastodons. For thousands of years native people gathered and worshiped at the Pheasant Branch Springs and other springs in this area during their seasonal migrations. They believed that natural springs were scared and their water possessed a spiritual quality.* Between 800 B.C and 500 A.D., their descendents, the Early and Middle Woodland peoples,

This man, depicted by Ho-Chunk elder (White Hawk) Chloris Lowe, Sr., is giving thanks for spring water.

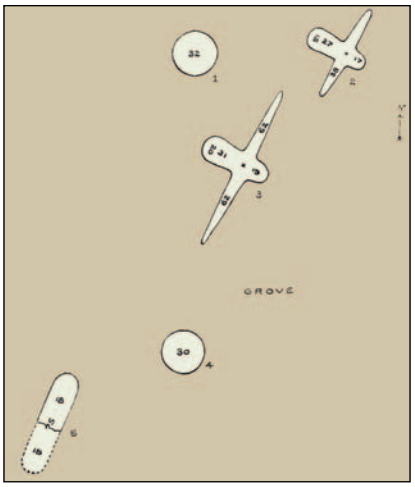
began to build conical and linear mounds near springs, wetlands and lakes. On a nearby hill overlooking the springs and Lake Mendota, they built a group of conical and linear mounds that may have been used for burials as well as other ceremonies.

Later, immigrations from the south introduced social, ideological, technical, and economic changes that enabled native peoples to build



The mounds on the hill are intact and protected by the Dane County Parks Department. Wisconsin Historical Society, Charles E. Brown papers

more elaborate earth works. Some time between 650 A.D. and 1200 A.D., Late Woodland societies constructed many groups of massive *effigy mounds* throughout southern Wisconsin. One group of effigy mounds south of the hill and east of the springs included two bird forms, one with a wingspread of 143 feet. The Pheasant Branch effigy mound group gradually disappeared in the 1950s when the land on which they



These large mounds used to lie east of the springs on private property. Wisconsin Historical Society, Charles E. Brown papers

stood was converted to cropland. Wisconsin had 15,000 to 20,000 mounds and other large earthworks when East Coast and European settlers arrived but only 4,000 remain today. Eighty percent of 1,500 mounds in and around Madison have been destroyed.

Pheasant Branch Watershed offered a great variety of food for native peoples. Depending on the season, they harvested milk weed blossoms, wild plums, blueberries, blackberries, acorns, cattail tubers, tips of young ferns, lily pad roots, and wild rice. Wild rice, an annual grass that reseeds itself each year, was plentiful in Madison's lakes and marshes before settlers arrived. (Pheasant Branch marsh is now one of the few places in southern Wisconsin where it still grows.)

* Today, people of many faiths revere water that flows from springs and use it in their religious ceremonies. The Ho-Chunk call springs "ma e peen," meaning beautiful or sacred waters.

Late Woodland Indians camped at this site on the shore of an old lake bed just north of present day Airport Road.

The early mound builders cultivated sumpweed, sunflower, and goosefoot. By the Late Woodland period, American Indians also grew corn, squash, and tobacco. Nearby lakes and streams contained a large variety of fish. In addition, white-tailed deer, elk, moose, beaver, geese, ducks, sharp-tailed grouse, prairie chickens and passenger pigeons all offered a plentiful supply of meat.

In 2001, archeologists found evidence of a small Late Woodland encampment on the shore of a glacial lake bed, just north of Airport Road and on the western edge of the Highway 12 corridor. In an area sheltered from northerly winds by Murphy's Hill, they excavated storage pits and foundations of "keyhole houses." These igloo-shaped depressions in the ground would have been covered with domed roofs made of bent branches and reeds or animal skins. Their long entrances faced south and slightly downhill so as to retain heat within the small living chambers.

The Ho-Chunk people claim kinship with the ancient mound builders. When first encountered by French explorers in 1634, their lands extended far to the south and west of present-day Green Bay. The explorers and later the U.S Government called the Ho-Chunk people Winnebago. The Ho-Chunk traditionally called themselves Hotcangara, "the people of the big speech," but changed their name to Ho-Chunk, meaning "people of the sacred language or master language," when they adopted a new tribal constitution in November 1994.

French Canadians met the Ho-Chunk for fur-trading rendezvous in fields below the Pheasant Branch hill in the 1700s and early 1800s. The French called the nearby springs "Belle Fontaine," meaning beautiful fountain. Michael St. Cyr was one of the earliest settlers in the Pheasant Branch Watershed. He was born in 1806 to a French father and Ho-Chunk mother in Canada, where he worked as a hunter, trapper, and fur trader. After hearing in 1833 about a chain of lakes "like a rosary" in "Ouiconsin," St. Cyr moved his Ho-Chunk wife and four children to the northwest shore of Lake Mendota near the Pheasant Branch outlet. Upon his arrival, he bought a 12-foot square log cabin from Wallace Rowan, another fur trader who lived in the area. St. Cyr's cabin served as his

Archeologist Marlin Hawley examines the foundation of a newly excavated keyhole house constructed by Late Woodland Indians about 3,000 years ago.

Michael St. Cyr's trading post on the north shore of Lake Mendota may have resembled this sketch.

family's home, a trading center, and a refuge for travelers.

The Northwest Ordinance of 1787 gave the United States title to Indian-occupied land that now includes the states of Ohio, Indiana, Illinois, Michigan and Wisconsin. By then, French fur-trading and eastern settlement pressures had dislocated many tribes from their traditional lands.* Between 1829 and 1833, the U.S. Government used a series of treaties to force native peoples living in present-day Wisconsin from their lands in order to make way for new settlers.

After the Ho-Chunk were pressured to sign a treaty in 1832 involving the eastern portion of their territory, including most of Dane County, federal troops attempted to remove them west of the Mississippi River. Some Ho-Chunk escaped capture and others, who survived their arduous trip across the Mississippi, struggled to return the following year. Many who stayed or returned to this area starved when newly-arriving settlers began to farm the land that the Indians had used for hunting, gathering and growing crops. Charles Ellis, who was a young boy in the early 1860s, remembered seeing summer encampments of Indians in the Pheasant Branch area. Even in the early 1900s, Mary Vasen recalled seeing small groups of Ho-Chunk camping near Pheasant Branch springs on her father's farm.

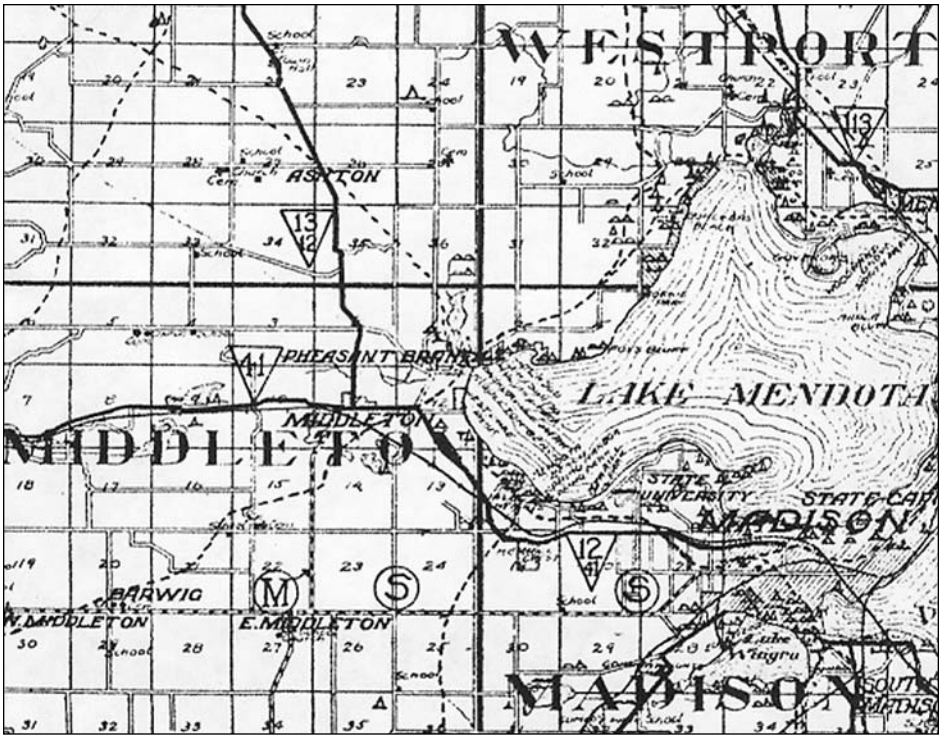
For more information about American Indians, see Robert A. Birmingham and Katherine H. Rankin, *Native American Mounds in Madison and Dane County: A Natural Heritage Publication* (Madison: City of Madison and State Historical Society of Wisconsin, 1996); and Robert A. Birmingham and Leslie E. Eisenberg, *Indians Mounds of Wisconsin* (Madison: University of Wisconsin Press, 2000); Patty Lowe, *Indian Nations of Wisconsin: Histories of Endurance and Renewal* (Madison: Wisconsin Historical Society Press, 2001); and Bobbie Malone and Kori Oberle, *Native People of Wisconsin/Teacher's Guide and Student Materials* (Madison: Wisconsin Historical Society Press, New Badger History series, 2003)

* For example, the Sauk had been forced by other Indian tribes and the French to move from Central Wisconsin into abutting portions of Wisconsin, Illinois, and Iowa during early historical times. In 1804, they signed a treaty in which they unknowingly forfeited their lands east of the Mississippi River to the U.S. Government. After fighting on the side of the British, who lost the War of 1812, the Sauk resettled in Iowa. When threatened with further dislocation less than twenty years later, a Sauk warrior named Black Hawk led a small band of men, women and children back across the Mississippi to reclaim their native lands. Attacked and outnumbered by Federal troops and militia, Black Hawk retreated with his followers toward the Wisconsin River, stopping briefly at Lake Mendota and Pheasant Branch Springs. Most of Black Hawk's followers were eventually captured and killed, but he was taken prisoner.

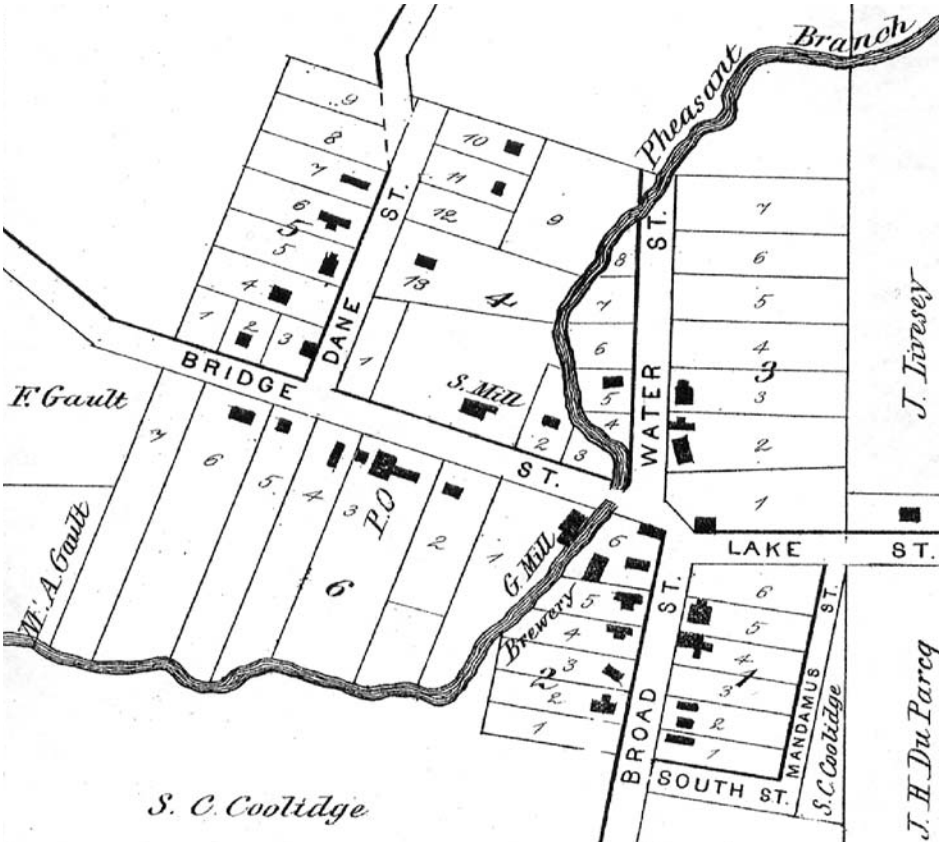
U.S. Government surveyors walked across the land north of Lake Mendota in 1833, platting it mile by mile into towns and sections, but Europeans and Easterners had little incentive to settle this region until the Wisconsin Territory and Dane County were created in 1836. Earlier that year, the area soon to be designated Dane County had only thirty-six non-native inhabitants.

One of them was Colonel William B. Slaughter, an entrepreneur from Virginia, who acquired St. Cyr's cabin in about 1836 when St. Cyr moved his family first to Minnesota and then to a Ho-Chunk reservation in Iowa. Colonel Slaughter is credited for naming Pheasant Branch because Ruffed Grouse, which were very common in Dane County in the mid-1800s, are called Pheasants and a small creek is called a branch back in Virginia. Early settlers began to call the stream "Pheasant Branch Creek" after they established the Village of Pheasant Branch in 1853.

In 1836 a wealthy couple from Boston bought hundreds of acres of land in the Pheasant Branch area for about $1.25 per acre. Their local land agents sold parcels to newly arriving, mostly German, immigrants who subdivided the land many times, creating a patchwork of farms on the landscape. After Congress allowed U.S. presidents to give land to men



Many Indian trails, identified by dashed lines, led through Pheasant Branch in the early 1800s. Wisconsin Historical Society, Charles E. Brown papers WHi 6230



Village of Pheasant Branch in 1861. Wisconsin Historical Society, WHi 6831

who served in the military, some parcels in this area were distributed to former service men. For example, in 1858 President James Fillmore awarded John Ford 160 acres of land for his services in the Mexican War.

The Village of Pheasant Branch was located at the westernmost edge of Lake Mendota at the intersection of several Indian and military trails and on the Old Sauk Trail, a rutted dirt road running between Milwaukee and Minneapolis.

The Village straddled the stream after which it was named, at the intersection of Broad Street (present-day Branch Street), Lake and Bridge Streets (now Century Avenue) and Water Street. Water Street served at least three farm houses before it was abandoned. (It now serves as an entrance to the Conservancy.)

John Ford developed his farm in the early1860s on land that is now occupied by the Northlake Neighborhood. Photo courtesy of the Walter J. Acker family

Carriages, wagons and stage coaches carried people and goods through the village.

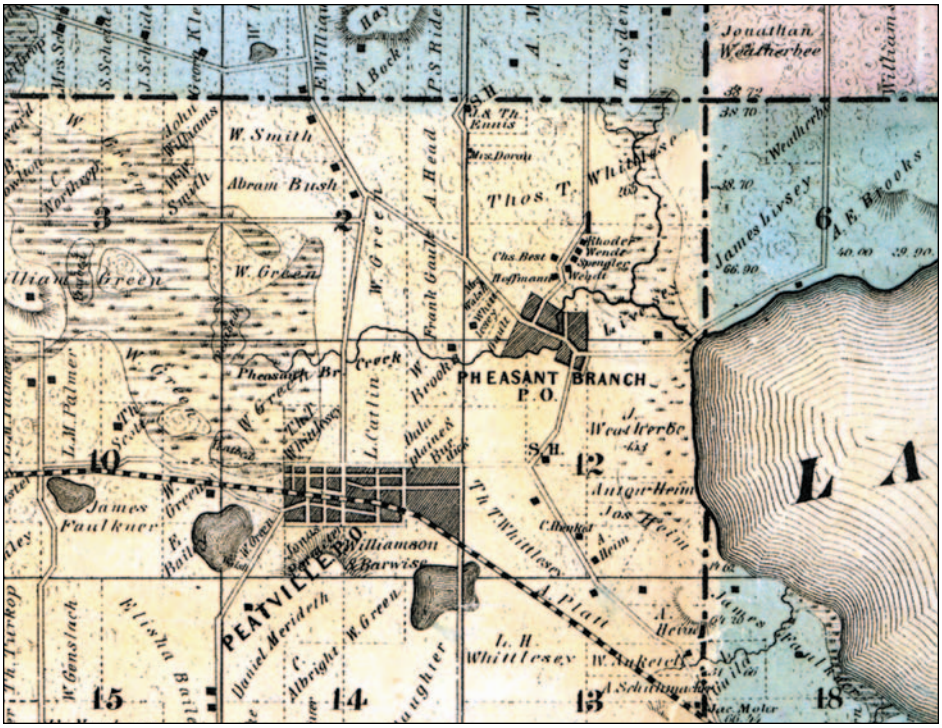
Several businesses, including a blacksmith shop, livery, hotels and saloons, catered to travelers. At various times during its early years, the village also supported a flour mill, a lumber mill, a general store, a school, and the Pheasant Branch Brewery. Early settlers expected Pheasant Branch to prosper because it was on a well-traveled road with good access to other parts of the state. The Stamm House, on Bridge Street just west of the village intersection, was built in three stages between 1847 and 1852. It began as a general store but was quickly converted to an inn named Pheasant Branch Hotel. While providing food and small rooms to travelers, and a big corral out back for their horses, the building also housed a post office and harness shop for a few years.

The Stamm House may have served as a station on the underground railroad in the 1800s when it was called the Pheasant Branch Hotel. Wisconsin Historical Society, WHi 8676

Some old-timers reported that the Pheasant Branch Hotel also served as a station on the Underground Railroad until the Fugitive Slave Acts were repealed in 1864. This "railroad" was actually a clandestine network of Northerners who were willing to hide and transport runaway slaves to areas where they would be protected from their former masters. Arriving at the hotel under cover of darkness, hidden in wagons under hay or other cargo, the runaways were led to the cellar where they could rest and eat in relative safety. In case of

danger, a 200-foot tunnel, leading from the cellar to the Pheasant Branch channel, provided an escape route to Lake Mendota and another hiding place in Shorewood Hills.

Pheasant Branch lost its transportation advantage when the Milwaukee and Mississippi Railroad Company arrived in 1856. The company built its line just south of the village and located a depot at Peatville, another small community established with the coming of the railroad. Burgess C. Slaughter, who named that village, had an interest in the local peat business and served as its first postmaster. Today, the Peatville depot stands in downtown



In 1861, five years after a railroad built a depot at what became known as Peatville, that village was much larger than the Village of Pheasant Branch. Wisconsin Historical Society, WHi 6230

This 1937 aerial photo shows extensive farming in what is now the Pheasant Branch Conservancy. Wisconsin Department of Transportation

Middleton, just south of Hubbard Avenue on Parmenter Street. The railroad attracted many new businesses around its new depot. Within five years, the 1861 map above shows that Peatville was already much larger than Pheasant Branch.

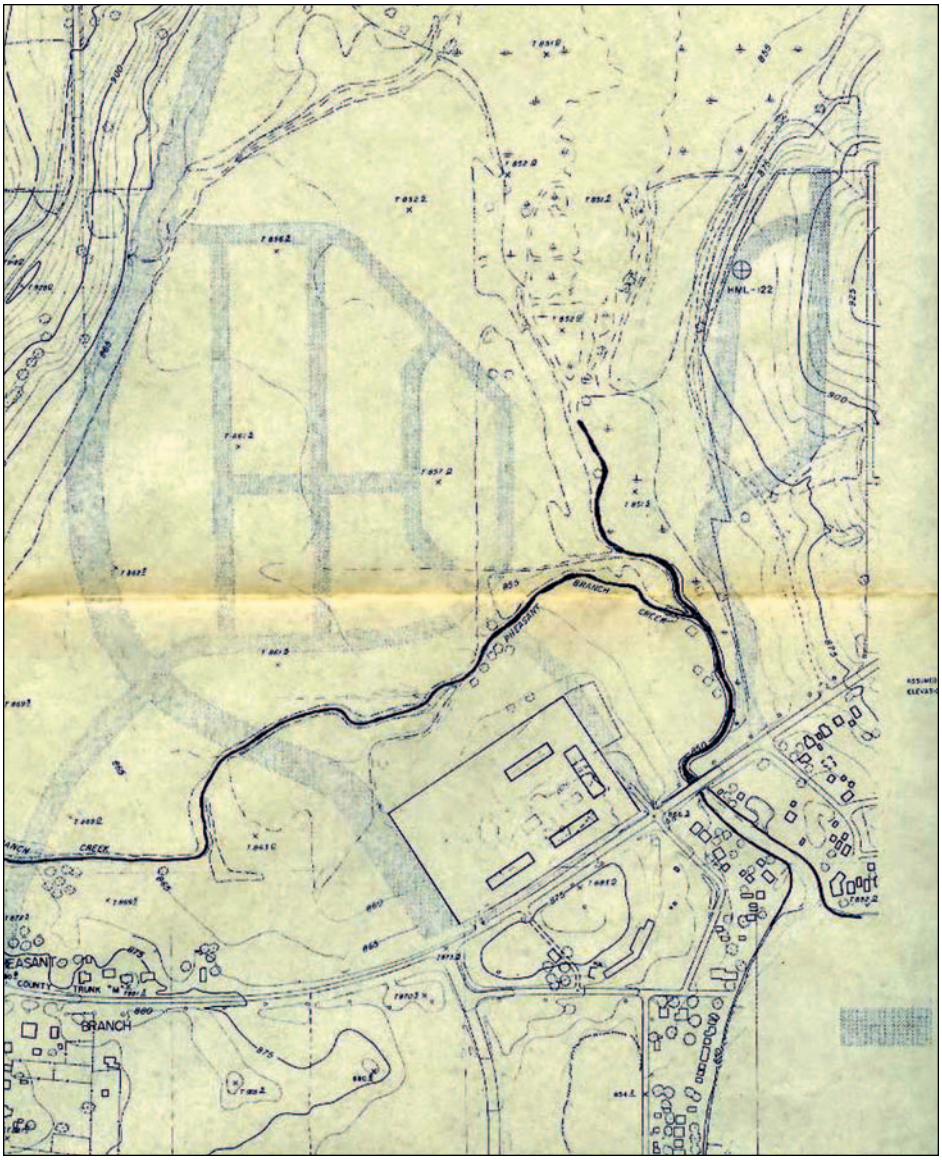
As a huge wheat-growing movement swept Wisconsin, making it the "King of Wheat," the Middleton Station shipped some 500,000 bushels of wheat in 1868. Until the late 1870s, when the land wore out and the wheat weevil moved in, Middleton exported a full trainload of grain a day at the height of harvest.

Middleton would eventually engulf

the Village of Pheasant Branch, but the 1937 aerial photo shows that most of the land around the Pheasant Branch (including some now in the conservancy) was devoted to agriculture. Allen Boulevard did not exist and Middleton Springs were springs rather than a strip mall.

As Middleton grew in the 1950s and 1960s, the city built nine major storm sewers that empty into the Pheasant Branch channel south of Century Avenue. Water draining from roofs, parking lots, roads, and other impervious surfaces increased creek flows during rain storms and carried sediment-laden water into Lake Mendota. Tons of silt created a large delta out into the lake. The maps on this and the previous page both show the original west-to-east creek channel that led directly to Lake Mendota.

A group of residents formed the Middleton Conservation Committee in 1965 in an effort to reduce Pheasant Branch channel erosion and sediment deposits in the lake. According to their minutes, they hoped to create a nature trail and greenways along the creek, and preserve the marsh for passive recreation. In the late sixties, the Committee helped acquire easements so community volunteers could stabilize the channel south of Century Avenue. The Committee also prevented a proposed development in the marsh (see above map) that would have created a marina for 300 boats north of Century Avenue, extended Allen Boulevard northward through the marsh to Pheasant Branch Road, and constructed a 300-lot subdivision in the marsh.



The City of Middleton turned down this proposed development that would have created a marina and subdivision in the Pheasant Branch Marsh. Pheasant Branch Creek Study, A.J. D'Onofrio & Associates, 1967

With encouragement from the Middleton Conservation Committee, the City also dredged tons of sediment from the Pheasant Branch outlet, and rerouted the main channel of the creek so that it would flow northward into the marsh, depositing sediment in the marsh rather than in the lake.

Aerial photo of Pheasant Branch outlet after a heavy rainstorm

Committee members also helped the City secure state and federal funding so it could buy parcels of land in and around the marsh for the Pheasant Branch Conservancy in the 1970s and 1980s.

Dane County added a 160-acre parcel at the north end of the conservancy in 1994. More recently the City bought several small parcels with help from Dane County Land Conservation Fund, Wisconsin Department of Natural Resources Stewardship Fund, and the Friends of Pheasant Branch.

Although the marsh traps a large amount of sediment, flash flooding periodically flushes sediment deposits from the marsh into Lake Mendota. The aerial photo above shows a large brown sediment-laden plume of water entering the lake after a rain storm. Once again sediment clogs the creek outlet and contributes to the lake's green algae blooms in the summer.

Chronological list of Middleton-area history resources:

* Wisconsin Public Land Survey Records: Original Field notes at **http://libtext.library.wisc.edu/SurveyNotesHome.html#**
* C.B. Chapman, "Early Events in the Four Lake County," Collections of the Wisconsin Historical Society, edited by Lyman C. Draper, Volume IV, 1859.
* Daniel S. Durrie, *History of Madison, the Capital of Wisconsin, including the Four Lake County* (Madison: Atwood and Culver, 1874).
* *History of Dane County, Wisconsin* (Chicago: Western Historical Company, 1880).
* *Celebrating Our Centennial, 1847-1947: 115 Years of Early History of Pheasant Branch and the Town of Middleton,* 1947.
* Robert Ellarson, "Vegetation of Dane County, Wisconsin in 1835," *Transactions of Wisconsin Academy of Science, Arts and Letters*, Volume 39 (1947-1949).
* Frederic G. Cassidy, *Dane County Place Names* (Madison: University of Wisconsin Press, 1968).
* Robert C. Nesbit, *Wisconsin: A History* (Madison: University of Wisconsin Press, 1973).
* David V. Mollenhoff, *Madison: A History of the Formative Years* (Kendall/Hunt, c 1982).
* "The Early History of the Pheasant Branch Watershed, Middleton, Wisconsin" by Louis J. Maher, Department of Geology & Geophysics, University of Wisconsin, **www.geology.wisc.edu/~maher/history.html**
* Julie Pherdehirt, *Stories of the Underground Railroad in Wisconsin*, (Middleton: Living History Press, 1998).
* Allen Ruff and Tracy Will, *Forward: A History of Dane, the Capital County* (Woodhenge Press, 2000).
* "Wisconsin Mosaic, A Brief History of the Demographics, Education, Economics, Music and Art of Wisconsin," "Special Collections in the Digital Environment," created by Jeff Gibbens, Muriel Gunderson, Cheng Shang, Carrie Seib, and Allen Verbrugge for the University of Wisconsin-Madison School of Library and Information Studies class; Marija Dalbello, instructor at **http://www.scils.rutgers.edu/~dalbello/FLVA/background/**
* Wisconsin Historical Society library and archives, 816 State Street, Madison.
* Middleton Historical Society, 7410 Hubbard Avenue, Middleton.

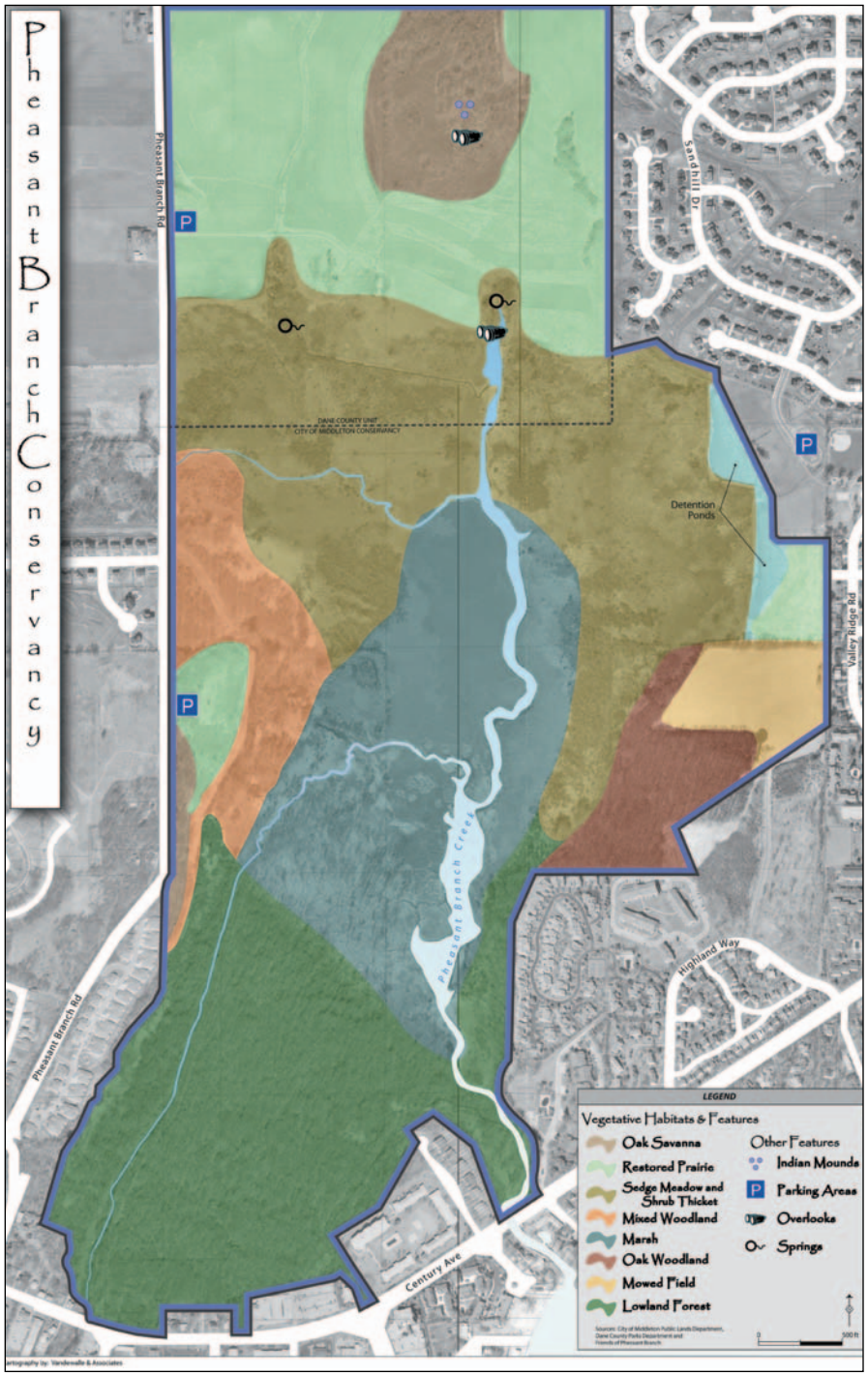
IV

Plants and Animals in the Pheasant Branch Conservancy

Pheasant Branch Conservancy is a regionally significant natural area that is bounded on three sides by residential development. Within its 500 acres are oak savannas, wooded hills, mesic and dry prairies, a spring-fed marsh, sedge meadows, open waters and a lowland forest. This unique combination of soils, elevations, hydrological conditions and vegetation support an incredibly large variety of wildlife that stop to rest and feed during seasonal migrations or use the Conservancy's vegetative habitats to breed and rear their young.

The City of Middleton owns about 340 acres of land in the southern portion of the Conservancy, while Dane County Parks Department owns about 100 acres in the northern portion and manages another 60 acres of spring-fed wetlands owned by the Wisconsin Department of Natural Resources. A master plan developed in the late 1990s helps the city and county manage the Conservancy as a single natural area.

Dane County Parks Department originally assigned the name of Belfontaine to its portion of the Conservancy. However, the county agreed in 2001 to adopt the name of Pheasant Branch Conservancy in order to emphasize the ecological continuity of the city and county units and reduce public confusion.



Vegetative habitats and selected features in the Pheasant Branch Conservancy
Vandewalle and Associates, 2005

When U.S. government surveyors began their work on the north shore of Lake Mendota in 1833, they found a very open landscape of prairie dotted with occasional groves of oak trees. A small stream carried water from the Pheasant Branch springs through an open wetland

Government surveyors and early settlers were greeted by fields of rolling prairie when they arrived here in the early 1800s. Dan Geocaris

meadow to Lake Mendota. The valley was filled with sedges and grasses, along with a colorful array of flowering wetland plants during the growing season.

Hydrology in the Conservancy's valley changed rapidly when East Coast and European settlers arrived. The wetland meadow began to disappear in the 1850s when Burgess C. Slaughter and Frank Gault drained the glacial lake bed near present-day Airport Road so they could harvest, dry and sell peat from the bog for fuel, and grow crops on the drained land. Their peat-for-fuel venture was unprofitable but the land proved fertile for farming. When they drained the bog into the headwaters of Pheasant Branch, the volume of water flowing into the Pheasant Branch marsh increased dramatically because the bog had previously absorbed stormwater runoff from a very large area of land to its north. In fact, draining the bog increased the size of the Pheasant Branch watershed twenty-fold.

About the same time, settlers living in Madison built a dam for a mill to grind grain at the outlet of Lake Mendota. That dam raised water levels in the lake and the marsh about four feet. As a result of early settlers' activities, the wetland meadow with its meandering stream was soon transformed into a marsh with open water. Property owners around the marsh also changed its water levels in the 1900s. One built a dam near the Pheasant Branch outlet to improve fishing in the marsh. Another ditched and drained water from some springs in the northwest corner of the marsh so he could dry a parcel of wetland meadow for grazing pasture and growing crops.

In 2003 the Friends of Pheasant Branch spearheaded efforts by the U.S. Fish and Wildlife Service and the Wisconsin Waterfowl Association to fill the drainage ditch and reseed the area with wetland plants.

Prior to the arrival of settlers, the north shore of Lake Mendota had

Various activities by early settlers changed water levels in the Conservancy's valley creating a marsh with open water. Wisconsin Department of Natural Resources, Robert Queen

been cleared of all but the most fire-resistant prairie plants and oak trees because American Indians started fires nearly every fall to increase the ease with which they could hunt. The prairies began to disappear as settlers broke the fertile prairie sod and began to farm the land. The lack of fire allowed steeper areas that could not be farmed to become thick woodlands populated by opportunistic invasive species. European trees and shrubs like buckthorn and honeysuckle soon shaded out native grasses and oak seedlings. Although few examples of oak savanna landscape are left today, remnants of an oak savanna and dry prairie survived on the hill at the north end of the Conservancy.

The steep western slope of the hill is perfect for dry prairie plants that thrive on thin sandy, rocky soils. Such plants include the pasque flower, pearly everlasting, bird's foot violet, purple prairie clover, and short grasses like prairie dropseed, little bluestem, and needle grass. A trail along the top edge of the steep hillside prairie allows visitors to view these plants without disturbing the fragile, easily eroded soils.

Pasque flower by Merel R. Black, Wisconsin State Herbarium.

The remnants of an oak savanna and dry prairie survived on this hill at the north end of the Conservancy because it was too steep to farm.

Little blue-stem by Robert K. Kowol, Wisconsin State Herbarium.

Volunteers have been clearing invasive species from the hill's oak savanna and dry prairie since 1996. Small native plants flourished in some cleared areas but volunteers have reseeded areas under the oaks with shade-tolerant prairie flowers and grasses such as bottle brush grass, showy tick-trefoil, silky aster and ox-eye. Periodic controlled burns help suppress invasive plants.

A foundation grant and memorial donations have made it possible for

Showy tick-trefoil by Kitty Kohout, Wisconsin State Herbarium

Blazing star by Kitty Kahout, Wisconsin State Herbarium

Dane County Parks Department and Friends of Pheasant Branch volunteers to complete the reseeding of former cropland surrounding the hill to mesic prairie. Some of the mesic prairie plants that are now growing in that area include bottle brush grass, blazing star, compass plant and pale purple coneflower.

A $50,000 North American Wildlife Conservation Act grant from the U.S. Fish and Wildlife Service in 2004 enabled the Friends of Pheasant Branch to hire a contractor to remove persistently invasive re-growths of honeysuckle and burdock on the County's hill

Compass plant by Paul Drobot, Wisconsin State Herbarium

and thickets of red-osier dogwood and willow in the adjacent sedge meadow. This work will provide a safe and suitable breeding area for declining grassland birds, such as the Dickcissel, Bobolink, Henslow's Sparrow, Lincoln's Sparrow, Harris's Sparrow, Sedge Wren and Eastern Meadowlark, all of which have lost much of their sedge meadow habitat due to agricultural runoff and development pressures. The dogwood and willows that are being removed have great value for many birds like the Willow Flycatchers, Song Sparrows, and Goldfinches, but there is no shortage of shrubby habitat for those more common birds. Removal of the invasive plants will provide a continuum of improved habitats from marsh to sedge meadow to mesic and dry prairie and oak savanna for many wildlife species that require a variety of conditions and vegetation in order to breed and nurture their young.

City crews and volunteers are clearing other vestiges of oak savanna along the southeast and western edges of the Conservancy that have been invaded by alien trees and shrubs so they too can be reseeded with native savanna species.

Springs at the northern end of the conservancy and seepages along the base of its eastern and western hills support native plants like marsh marigold, angelica and common lake sedge. These lovely native plants are being displaced by highly

Purple cornflower by James R. Sime, Wisconsin State Herbarium

Marsh marigold by Paul Drobot, Wisconsin State Herbarium

Angelica by Robert W. Freekmann, Wisconsin State Herbarium

invasive reed canary grass at the main springs.

Sedge meadow wetlands are home to many plants and animals. The colorful blossoms of Joe-Pye weed, great blue lobelia, swamp milkweed and boneset are scattered among sedges and grasses.

Monarch by Michael Reese at www.wisconsinbutterflies.com

Butterflies and song birds, each attracted to favorite plants, add even more beauty and interest to the native prairies and other restored areas in the Conservancy. Some of the butterflies commonly seen there are the Aphrodite fritillary,

Joe-Pye weed by Asa Thompson, Wisconsin State Herbarium

Black swallowtail by Michael Reese at www.wisconsinbutterflies.com

Baltimore checkerspot, Black swallowtail, Great spangled fritillary, Painted lady and Monarch.

Some of the many songbirds that eat seeds and insects in the Conservancy's open prairie, sedge meadows and marsh include the

Common Yellowthroat by Jack Bartholmai, Wisconsin Breeding Bird Atlas

Tree Swallow, Eastern Bluebird, Sedge Wren, Red-winged Blackbird, Yellow Warbler, Common Yellowthroat and Swamp Sparrow

Seed and insect-eating animals, like voles, moles, shrews, mice, frogs and eastern garter snakes thrive in areas where sedge meadows blend into grassy prairie.

Eastern Bluebird by Jack Bartholmai, Wisconsin Breeding Bird Atlas

Common garter snake by Michael Redmer of Wisconsin Department of Natural Resources

Western chorus frog by Fred Resetar, © California Academy of Science

The wetland meadows and marsh also provide food for hawks and owls, as well as red and grey foxes

Cooper's Hawk by Jack Bartholmai, Wisconsin Breeding Bird Atlas

and coyotes that live on higher ground. Frogs, snails and small fish support many other predators in the marsh including turtles, raccoons and mink. Opossums, the Conservancy's only marsupials, are omnivores. Great blue herons, common egrets and belted kingfishers are easy to see when they

Great-horned Owl by Roger Hill, USDA Natural Resource Conservation Service

are searching for prey, but sora and Virginia rails hide among cattails and bulrushes when they feed on insects, snails and seeds.

Eastern painted turtles and snapping turtles are common in the marsh but until 2004 the rare Blanding's turtle had not been spotted in or near the Conservancy for sixteen years.

The open water in the marsh is also a reliable gathering place for many

Mink by Dennis Larson, USDA Natural Resource Conservation Service

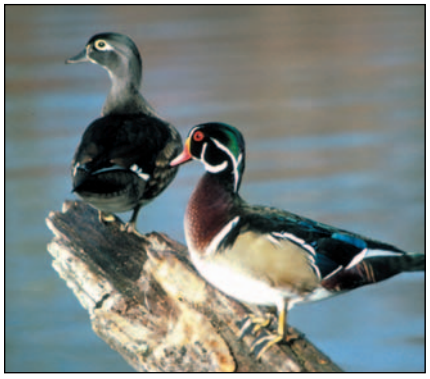
Opossum family by Alden R. Johnson, © California Academy of Science

Western painted turtles by Dennis Larson, U.S.D.A. Natural Resource Conservation Service

species of waterfowl during their spring and fall migrations. Some, like Canada Geese, Mallards, and Wood Ducks, stay all year long and nest in the Conservancy.

During Sandhill Crane migrations in the early spring and late fall, as

Sandhill cranes by Don Baccus



Pair of Wood Ducks by Dave Menke, U.S. Fish and Wildlife Service

many as one hundred cranes are in the marsh at one time. However, only a few pairs nest in the Conservancy because they need a lot of space to separate their young from predators. Sandhill chicks and their parents are camouflaged to match dried marsh grasses. Nesting parents stain their grey feathers with reddish-brown clay, and their chicks grow tan feathers soon after hatching. Both parents and chicks remain tan until they molt in the fall. Although Sandhill cranes nest in marsh and sedge meadow areas with short vegetation, they spend a great deal of time foraging in surrounding farmland and grasslands on the east side of the Conservancy and in Orchid Heights Park as their chicks mature.

Recent efforts by the International Crane Foundation to reintroduce the endangered Whooping Crane population have resulted in occasional visits to the Conservancy by those majestic birds.

Conservancy land south of the marsh was originally a wetland meadow. Due to flooding, farming, silting and lack of fire, that area is now a lowland forest. Trees growing near the marsh provide nesting habitat for many woodland birds. The wooded area is large enough to offer Barred Owls some protection from predators such as Great Horned Owls that also nest in the Conservancy. These woods and other woodlands on the edges of the Conservancy also offer refuge

Great-crested Flycatcher by Jack Bartholmai, Wisconsin Breeding Bird Atlas

Barred Owls by Robert Suplee

American Redstart and Eastern Wood-Pewee by Jack Bartholmai, Wisconsin Breeding Bird Atlas

to many other birds throughout the year. They include a great variety of migrating warblers and vireos, as well as the Great-crested Flycatcher, American Redstart, Black-capped Chickadee and Eastern Wood-Pewee.

The mix of different vegetative habitats in the Pheasant Branch Conservancy supports an amazing variety of wildlife. As development pressures increase around the Conservancy, the restoration and preservation of these habitats for wildlife protection and for human visitors to enjoy becomes a greater challenge.

For more information about plants and animals in the Conservancy, visit the Friends of Pheasant Branch website at www.pheasantbranch.org to see:

* John L. Larson's report, "Vegetation and Ecological Condition in the Pheasant Branch and Belfontaine Conservancies: Opportunities for Restoration and Management," 1998
* Cherrie Warren's report, "Pheasant Branch and Belfontaine Conservancy Faunal Inventory," 2000
* Nature Notes

For more information about

* Wisconsin birds, visit the Wisconsin Breeding Bird Atlas at **www.uwgb.edu/birds/wwbba** or Mike McDowell's website at **www.birddigiscoping.com/**
* Wisconsin butterflies, visit Michael Reese's collection at **www.wisconsinbutterflies.org**
* Wisconsin plants, visit the Wisconsin State Herbarium at **www.botony.wisc.edu/herbarium**
* Prairies and wetlands, visit the Northern Prairie Wildlife Center operated by the U.S. Geological Survey at **www.npwrc.usgs.gov.**

V

Definitions of Words and Terms

Aquifer is a geologic formation capable of yielding a sufficient quantity of water to supply a stream, spring or pumping well.

Baseflow is that part of stream flow caused by groundwater discharging into a stream. When groundwater tables are low, streams flow only when they receive water from rain or melting snow runoff.

Bedrock is the solid layer of rock underlying other land formations.

Controlled burns are fires conducted in carefully circumscribed areas in order to suppress invasive plants and encourage the growth and proliferation of fire-resistant native plants in oak savannas, prairies, and sedge meadows.

Effigy mounds are large earthworks built by Late Woodland Indians to resemble animal forms and used for ceremonial and sometimes burial purposes.

Floodplain is a flat expanse of wetland that is likely to flood during prolonged rainfalls or rapid snowmelts.

Glacial moraines are accumulations of earth and stones that are carried and eventually deposited by glaciers.

Groundwater recharge is a process by which water and melting snow infiltrate or are absorbed into soils and replenish underground water supplies for wells, springs, and base flows.

Infiltrate is a process by which liquids ooze through porous substances which may act as a filter.

Isotopes are slightly different forms of chemical elements used in a variety of scientific disciplines to track the movement of related chemical elements.

Invasive species are opportunistic plants or animals that take over an area when conditions no longer support the growth and propagation of original, native species.

Marsupial is an animal species in which the females carry and nurse their young in a pouch.

Mitigation is a process by which the undesirable consequences of one action are at least partially reduced by another. For example, developers are often allowed to mitigate the loss of infiltration capability on individual parcels of land in a subdivision by constructing retention ponds that collect stormwater runoff, where it may infiltrate the soil if the pond bottom is carefully maintained. More recently, planners are promoting rain gardens that collect runoff from individual buildings and promote onsite infiltration.

Omnivore is an animal that eats other animals and plants.

Paleo-Indians were small bands of nomadic people who first populated North America after crossing the Atlantic along the margin of sea ice or crossing from Siberia to Alaska on the land bridge that appeared during the last glacial period. Their sites are often found near what used to be large bodies of water such as old glacial lakes and rivers, where animals they hunted went to drink.

Percolate is similar to infiltrate.

Retrofit is any effort to correct a problem resulting from an initially poor design or unintended consequences.

Sedges are grass-like plants that often grow in dense tufts in marshy places.

Storm water is rain water and snow melt that runs off the land and impermeable surfaces rather than infiltrating the soil.

Suspended sediment is liquid clouded by very fine particles. Stormwater runoff containing soils and nutrients from roads, parking lots, construction sites, cropland, and barn yards can harm the habitat of many aquatic species.

Watershed is an area of land that drains into a particular stream, river or lake.

Water table is the upper limit of ground that is wholly saturated with water. It may be near or many feet below the surface.