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THE OUTLYING PROPERTIES

OF

THE UNIVERSITY OF WISCONSIN - MADISON
ARBORETUM

BY

JEAN M. LANG

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I. INTRODUCTION

The Arboretum's outlying properties are some of Wisconsin's best examples of specific biotic community types. Finnerud Forest, Oliver and Faville Prairies and Abraham's Woods in particular are unique areas. The importance of these areas for scientific study and research is indicated by their designation as "Scientific Areas" by the Wisconsin Scientific Areas Preservation Council.

Many of the outlying properties contain reverter clauses or detailed descriptions of permitted uses associated with the original gift of the lands to the University Regents. To some degree, the conditions of the gifts determine the accepted management practices and uses of the properties.

Generally, the outlying Arboretum areas are available for research and upper level university teaching. They are not included in the public education program. Research personnel wishing to conduct studies on these lands must obtain permits and have projects approved by the Arboretum Director.

The outlying areas require minimal maintenance. However, at least once a year, a member of the Arboretum staff will make an on-site inspection of each area. As soon as arrangements can be made, each area should have a local "caretaker" who will, on a regular basis, inspect the site for vandalism or biological disturbance such as over-browsing by deer, invasion by exotics and other problems of a similar nature.

Management plans for these areas are approved by the Arboretum Committee. However, problems that arise requiring maintenance of existing facilities or biotic communities are handled by the Director and his staff, calling upon outside expertise when necessary.

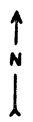
II. SUMMARY DESCRIPTION OF THE AREAS

1. Abraham's Woods - A 40-acre rich in species, mesic, old growth, sugar-maple forest, located two miles south of Albany, $\frac{1}{2}$ mile west of Highway 59 in Green County. An outstanding feature of this area is its rich display of spring ephemerals. Abraham's Woods is a scientific area.
2. Oliver Prairie - A 4-acre dry lime prairie with a northwest exposure. Located three miles southwest of Albany, $\frac{1}{2}$ mile west of Abraham's Woods, south of the town road in Green County. This is a scientific area.
3. Faville Prairie - A virgin wet to mesic prairie five miles north of Lake Mills on "G" then to the end of Lang Road in Jefferson. This 60-acre tract is a scientific area.
4. Observatory Woods - A 14-acre oak woods containing a small oak opening. Located 15 miles west of Madison near Pine Bluff in Dane County.
5. Lodde's Mill Bluff - A scenic sandstone bluff with prairie remnants and cliff communities. Fifteen acres in size, this tract is located five miles west of Sauk City on Highway 60.
6. Pasque Flower Hill - A 4-acre dry prairie on a northwest facing slope, located at the edge of Madison along Raymond Road.
7. Finnerud Forest - This 300-acre lakeshore tract has a 130-year-old virgin red and white pine stand and an open sphagnum bog and marsh. Finnerud Forest is a scientific area. It is located about eight miles southwest of Minocqua in Oneida County.
8. Ashland Forest - An 870-acre tract of second growth forest with sugar maple replacing large tooth aspen. Outstanding features of this area

include a small impounded lake and a scenic gorge. This area is located in Ashland County near Mellen, Wisconsin.

9. Hub City Bog - This is an exceptionally diverse study area containing a number of northern bog species and a tamarack forest in the driftless area of western Wisconsin. The 50-acre tract is located in Richland County.

OUTLYING NATURAL AREAS ADMINISTERED BY THE UNIVERSITY OF WISCONSIN ARBORETUM



- ① ABRAHAM'S WOODS
- ② OLIVER PRAIRIE
- ③ FAVILLE PRAIRIE
- ④ U.W. OBSERVATORY WOODS
- ⑤ LODDE'S MILL BLUFF
- ⑥ PASQUE FLOWER HILL
- ⑦ FINNERUD FOREST
- ⑧ ASHLAND FOREST
- ⑨ HUB CITY BOG

IV. BIOLOGICAL AND PHYSICAL DESCRIPTION OF AREAS

ABRAHAMS WOODS

The 40 acre tract of Abrahams Woods is one of the few remaining maple-basswood forests in southwestern Wisconsin. Though considered the climax forest for this region, the mesic maple woods has been generally restricted to north-facing slopes with adequate micro-climate or to upland areas of southern Wisconsin where slopes are gentle, elevation is high, climate is cooler and rainfall is heavier.

Abrahams Woods is situated in Green County on a northeast slope within the arc of a sandstone ridge. This ridge, which supports oak opening and dry prairie vegetation on its west face, undoubtedly protected the maple woods from grass fires sweeping out of the west. The fires burned themselves out on the ridgetop, unable to penetrate the cool damp forest on the northeast side. However, some maples on the upper slope have fire scars acquired over 60 years ago. (Maples are easily killed by fire and are most susceptible to damage in autumn when leaf fall is heavy and weather is dry).

Judging from the size of the trees and the fact that the maple-basswood climax is reached in southern Wisconsin only after many years of undisturbed growth, this stand has been in existence quite a long time.

Though red oak (Quercus rubra) and sugar maple (Acer saccharum) were once dominant, selective cutting of mature trees has accelerated succession to the point where maple and slippery elm (Ulmus rubra) are now dominants. Dutch elm disease removes a few elm trees from the forest each year.

Basswood (Tilia americana) mixes with the maple on the lower northwest slope near the head of the trail. Slippery elm occurs most abundantly on

the upper northeast slope. Yellowbud hickory (Carya cordiformis), black walnut (Juglans nigra), butternut (Juglans cinerea), hackberry (Celtis occidentalis) and hop-hornbeam (Ostrya virginiana) also occur in smaller numbers as do white oak (Quercus alba), black cherry (Prunus serotina), American elm (Ulmus americana) and shagbark hickory (Carya ovata).

The micro-environment of the southern mesic forest community is one of high soil moisture and low light levels. The light intensity ranges from 40 to 400 foot-candles in the shade and greatly limits understory growth. Shrub species, with the exception of a few vines, are absent. Ground layer species are largely ephemerals which bloom in early spring before the canopy leafs out.

At that time, the forest floor is brightened with flowers of the trout lily (Erythronium albidum), spring beauty (Claytonia virginiana), trillium (Trillium gleasoni), dutchman's britches (Dicentra cucullaria) hepatica (Hepatica acutiloba), blood root (Sanguinaria canadensis) and toothwort (Dentaria laciniata).

As the summer canopy develops and the shade increases, both leaves and flowers of many of these perennials die back. The plants then maintain themselves until the following spring on stored food in underground rhizomes and tubers.

Some annual species are also abundant in spring--bedstraw (Galium aparine) and the false mermaid (Floerkia prosperinacoides), a rare plant in Wisconsin.

By summer, the wood nettle (Laportea canadensis), enchanter's nightshade (Circaea quadrisulcata) and jewel weed (Impatiens pallida)--species that thrive at low light levels--are widespread over the forest floor. The nettle

is found mainly on low moist areas while the nightshade prefers drier spots.

Also present are several species of fern including the rare Goldie's fern (Dryopteris goldiana).

Sedges are represented by at least 10 species, including three that are rare.

FAUNA

Some animals to look for in Abrahams Woods are the cerulean warbler, red-eyed vireo, acadian flycatcher, cowbird, oven-bird, wood peewee and various thrushes, thrashers and tanagers. Hairy, red-headed, and red-bellied woodpeckers are present as well as the white-breasted nuthatch.

Mammals are not abundant since the number of nut-bearing trees and edible vegetation is limited. However, there are occasional squirrels and chipmunks.

GEOLOGY

The entire area is underlain by Galena-Black River dolomite and St. Peter Sandstone and is capped by debris of the Cary ground moraine. The watershed is on the Sugar River, a tributary of the Rock River system.

SOIL

The soils of Abrahams Woods belong to the Dubuque group. Silt loam occurs on the lower, more level areas and loam occurs on the slope below the sandstone ridge. The Dubuque silt loam is a black friable soil derived from weathering of underlying limestone.

Nitrogen, phosphorus and potassium content of the soil are high since large amounts of nutrients are returned to the soil in the annual maple leaf fall. Because the leaf litter is basic to neutral pH, and high in minerals, the soil fauna is well-developed with a large number of earthworms, millipedes and other soil organisms.

WEATHER

The nearest weather station is in Madison, Dane County. Measurements recorded there are as follows:

Total precipitation -----	30.2"
Total snowfall -----	38.4"
January mean temperature ----	17.5 F
July mean temperature -----	71.1 F

DIRECTIONS

Located in the Town of Albany, Green County, about 35 miles south of Madison. From the Village of Albany follow State Highway 59 southwest 1.75 miles. Then turn right on a town road (Oliver Road). The woods is on the left about .25 miles from State Highway 59.

SURVEY DESCRIPTION

Forty acres in the E $\frac{1}{2}$ of the W $\frac{1}{2}$ of the SW $\frac{1}{4}$ of Section 31, Town 3 North, Range 9 East, Township of Albany, Green County, Wisconsin.

ACQUISITION HISTORY

The property was acquired from Benjamin Abraham and four others in 1960 by the Nature Conservancy. Abraham had used the woods as a sugarbush and for

occasional selective cutting. The sheds where the maple sap was made into syrup still stand on the property and Abraham is entitled to continue the operation until his death. The land was transferred to the University of Wisconsin in 1964.

REFERENCES

- Cottam, Grant. Abraham's Woods - Its History, Composition and Reasons for its Conservation. Unpublished report, Wisconsin Chapter, Nature Conservancy.
- Iltis, Hugh. Checklist of the Flowering Plants and Ferns of Abrahams Woods. Unpublished paper, Wisconsin Chapter, Nature Conservancy.
- Smith, B.E. 1965. Spatial Relationships of Mesic Forest Herbs in Southern Wisconsin. Phd. Thesis. Univ. of Wis.
- Warner, J.H. 1963. Some Ecological Relationships of Impatiens pallida Nuttall in a Mesic Hardwood Forest. M.S. Thesis, Univ. of Wis.
- Wolf, S.W. 1971. Foraging Habits of Woodpeckers and Nuthatches in Southern Wisconsin Upland Forests. M.S. Thesis, Univ. of Wis.

Abraham's Woods	Rel. Freq.	% Den.	% Dom.	IV	CI
Sugar Maple	39.0	51.4	46.3	136.7	1367.0
Basswood	8.4	7.4	5.0	20.8	156.0
Slippery Elm	30.3	25.6	25.5	81.4	651.2
Ironwood	8.1	6.8	2.2	17.1	145.4
Red Oak	9.4	6.6	19.4	35.4	194.7
Yellowbud Hickory	1.6	1.0	.2	2.8	23.8
Hackberry	1.2	.8	.7	2.7	21.6
Butternut	.3	.2	.3	.8	6.0
American Elm	.1	.1	.3	.5	3.8
Black Cherry	.3	.2		.5	1.8
White Oak	.2	.1	.1	.4	1.4

Total CI 2572.9

Rel. Freq. = Relative Frequency

% Den. = Percent Density

% Dom. = Percent Dominance

IV = Importance Value

CI = Compositional Index

Trees/acre = 143

Saplings/acre = 84

CHECKLIST OF PLANTS AND FERNS OF ABRAHAM'S WOODS¹

Greene County, Wisconsin

TREESAcer saccharum - Sugar MapleTilia americana - BasswoodJuglans cinerea - ButternutQuercus borealis maxima - Red OakCarya cordiformis - Yellowbud HickoryUlmus rubra - Slippery ElmQuercus alba - White OakOstrya virginiana - Hophorn beamAmelanchier sp. - Shad BushCarya ovata - Shagbark Hickory

Drier upland sites

Celtis occidentalis - HackberryPrunus serotina - Black CherryHERBS AND SHRUBSActaea pachypoda - Bane berryAdiantum pedatum - Maidenhair fernAgrimonia pubescens - AgrimonyAllium tricoccum - Wild LeekAmphicarpa bracteata - Hog-PeanutAnemone quinquefolia - Anemone¹Checklist by Hugh Iltis

Anemonella thalictroides - Rue Anemone

Aplectrum hyemale - Adame and Eve; Putty Root

Aralia nudicaulis - Wild Sarsaparilla

Arisaema atrorubens - Jack-in-the-Pulpit

Aster sagittifolius - Wild Aster

Dry Upland

Aster shortii - Wild aster

Botrychium virginianum - Rattlesnake-Fern

Carex albursina - Sedge

Carex blanda - Sedge

Carex convoluta - Sedge

Carex digocarpa (rare) - Sedge

Carex hirtifolia - Sedge

Carex hitchcockiana (rare) - Sedge

Carex Jamesii (rare) - Sedge

Carex normalis - Sedge

Carex sprengelii - Sedge

Carex Woodii - Sedge

Caulophyllum thalictroides - Blue Cohosh

Celastrus scandens - Bittersweet

Circaea sp. - Enchanter's Night shade

Claytonia virginiana - Spring Beauty

Corallorhiza maculata - Coral root

Cornus sp. - Dogwood

Cryptotaenia canadensis - Honewort

Cystopteris fragilis - Bladder Fern

Dentaria laciniata - Toothwort

Dicentra cucullaria - Dutchman's Breeches

Dioscorea villosa - Wild Yam

Dryopteris goldiana - Goldie's fern (A rare species - large clumps in "Amphi Theater")

Dryopteris spinulosa - Florist's fern

Erythronium albidum - Dogtooth Violet

Eupatorium rugosum - Snakeroot

Floerkea proserpinacoides - Fales Mermaid (A delicate annual, rather rare in Wis., rather abundant here).

Galium aparine - Cleavers; goosegrass - An annual, very common!

Galium concinnum - Pretty Bed Straw

Geranium maculatum - Wild Geranium

Geum canadensis - Avens

Hepatica acutiloba - Hepatica

Hydrastis canadensis - Golden Seal

Hydrophyllum virginianum - Waterleaf

Impatiens biflora - Touch-me-not

Isopyrum biternatum - False Rue Anemone

Laportea canadensis - Wood Nettle

Lonicera sp. (along road) - Honeysuckle

Menispermum canadensis - Moonseedvine

Osmorhiza claytonii - Wild Licorice

Orchis spectabilis - Showy Orchid

Osmunda claytoni - Interrupted fern

On the slopes

Parthenocissus vitacea - Virginia Creeper

Phlox divaricata - Wild Sweet William, Wood Phlox

Phryma leptostachya - Lopseed

Podophyllum peltatum - May apple

Polygonatum pubescens - Solomon's Seal

Polygonum virginianum - Jump seed

Potentilla simplex - Cinquefoil

Prenanthes alba - Lion's foot

Prunus virginiana (Near Road) - Chokecherry

Pteridium aquilinum - Bracken fern

Ranunculus abortivus - Buttercup

Ranunculus recurvatus - Hooked crowfoot

Ranunculus septentrionalis - Swamp Buttercup

Rhus radicans - Poison Ivy

Ribes missouriense - Gooseberry

Sanguinaria canadensis - Bloodroot

Sanicula sp. (gregaria?) - Black Snakeroot

Scrophularia marilandica - Figwort

Smilacina racemosa - False Solomon's Seal

Smilax eccirhata - Carrion Flower

Smilax hispida - Greenbriar

Solidago flexicaulis - Goldenrod

Staphylea trifolia - Bladderbush

Trillium gleasoni - Nodding Trillium

Triosteum perfoliatum - Horse gentian

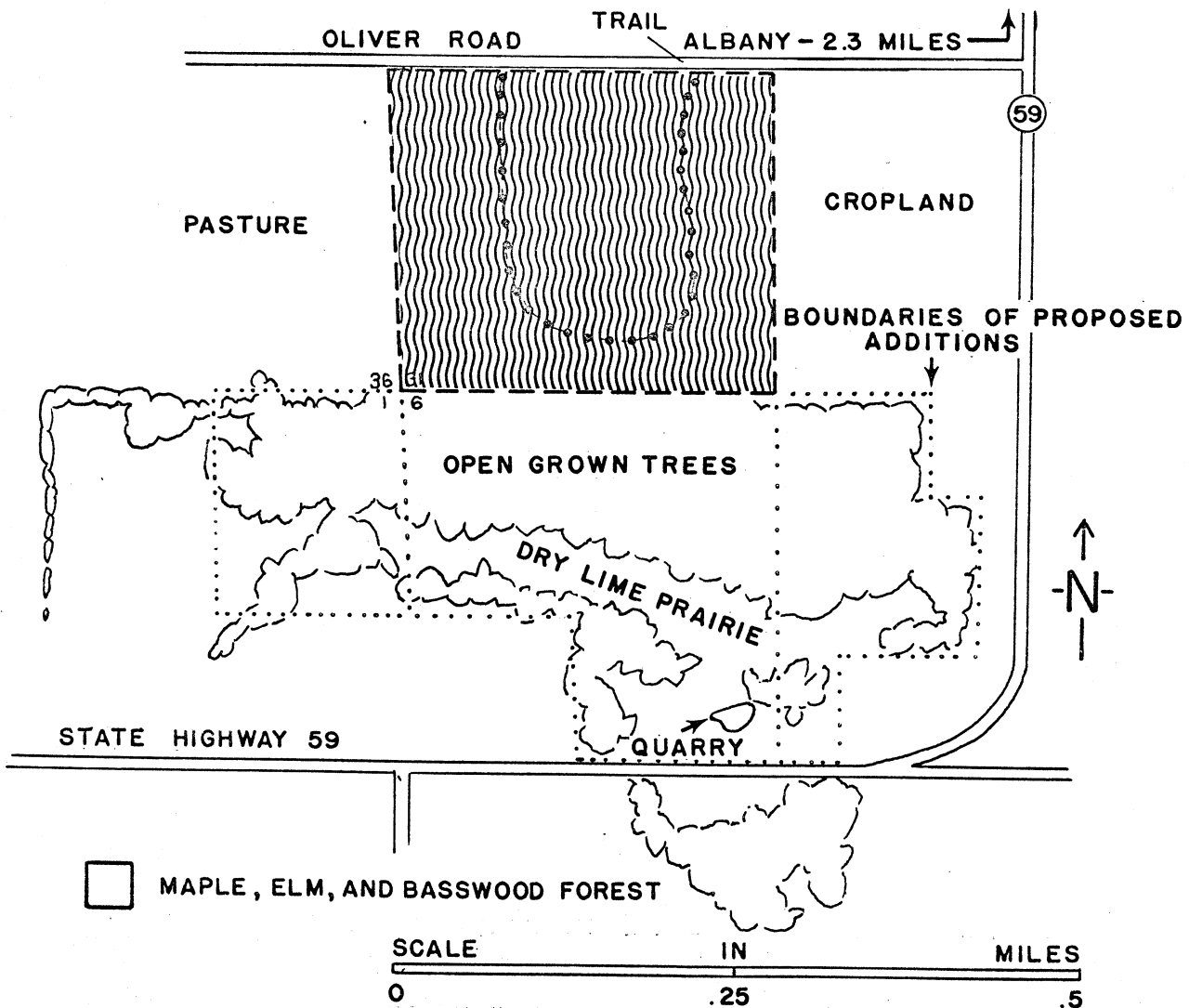
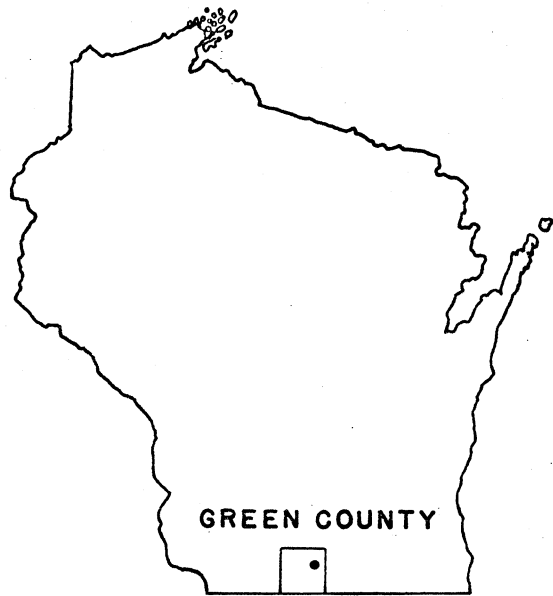
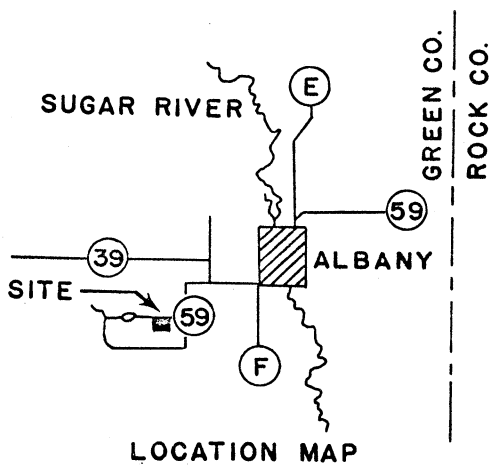
Uvularia grandiflora - Bellwort

Viola sororia - Blue Violet

Viola pubescens - Downy Yellow Violet

Vitis sp. - Wild grape

ABRAHAMS WOODS SCIENTIFIC AREA



OLIVER PRAIRIE

Oliver Prairie typifies the dry hillside prairies once common in southwestern Wisconsin. Called "goat" or "high lime" prairies, they invariably occur on steep slopes with a thin soil cover overlying limestone bedrock. (See also Pasque Flower Hill, pg 70). Though Oliver Prairie has a northwest exposure, most dry prairies occur on southwest slopes.

Their steepness has saved many "goat prairies" from grazing or cultivation. But many others, like the hillside just across the road, have been destroyed in the process of quarrying their readily accessible limestone.

Shallow soil, extensive run-off and high exposure to sunlight contribute to the dry nature of the slope. Yet plant growth is not as sparse as might be expected. Because summer night-time temperatures are very low on the open hillside, heavy dews condense on the vegetation. Like a sponge, organic matter in the soil holds the morning moisture and insulates the soil.

In response to the droughty conditions, plants that grow here are both smaller in stature and less productive than more mesic prairie species. The grasses are those of arid southwest origins - side oats grama (Bouteloua curtipendula), dropseed (Sporobolus heterolepsis), little bluestem (Andropogon scoparius), and panic grass (Panicum perlongum).

Though grasses are the most numerous individuals on the prairie, the Compositae family has the highest number of species - at least twenty - with a strong representation from the asters and goldenrods. These species are conspicuous in autumn when their colors show brightly above the short grasses.

At this time also one can see the stiff gentian (Gentiana quinquefolia), presently a rare species. However, the gentian's population is subject to change at any time since it is a biennial which periodically fluctuates between a few and thousands of individuals.

In spring when other plant communities are still dormant, flowers can be seen on Oliver Prairie. Because its steep slope is windswept, snow cover is never deep and thin soil warms rapidly. Among the plants which flower in profusion over the rocky slope in May and June is Dodecatheon meadia, the plant that gave the prairie its local name "Shooting Star Hill".

Occasional shrubby plants also occur on the prairie - bittersweet (Celastrus scandens), blackberry (Rubus sp.), wild grape (Vitis riparia), smooth sumac (Rhus glabra), and wild crabapple (Pyrus ioensis).

FAUNA

Birds that visit the prairie are the grasshopper sparrow, western meadowlark, and prairie horned lark. Winter and spring visitors include the longspurs, pipits, and snow buntings.

Burrowing animals such as Franklin's gopher, the thirteen-lined ground squirrel, mice and voles are also found here.

GEOLOGY

Bedrock is Galena - Black River dolomite of Ordovician age. Glacial ground moraine surrounds Oliver Prairie and nearby low areas. The region drains into the Sugar River, a tributary of the Rock River system.

SOIL

The soil of Oliver Prairie belongs to a group of grayish-brown hilly silt loams (Fayette-Dubuque association) found in southwestern Wisconsin.

Due to its shallowness, the soil has no distinct profile and fragments of limestone bedrock frequently occur on the soil surface. Not suprisingly, the soil is alkaline (pH 8.0) and high in calcium.

WEATHER

The nearest weather station is in Madison, Dane County. Measurements recorded there are as follows:

Total precipitation -----	30.2
Total snowfall -----	38.4
January mean temperature -----	17.5° F
July mean temperature -----	71.1° F

DIRECTIONS

Located in the Town of Mt. Pleasant, Green County about 35 miles south of Madison. From the Village of Albany, follow State Highway 59 southwest 1.75 miles. Then turn right on a town road (Oliver Road). The prairie is on the left about 1.75 miles from State Highway 59. Immediately across the road on the right is a gravel quarry.

SURVEY DESCRIPTION

4.13 acres in NE 1/4 of SW 1/4 of Section 36, Town 3 North, Range 8 East, Town of Mt. Pleasant, Green County, Wisconsin

ACQUISITION HISTORY

Wisconsin Nature Conservancy bought the prairie from Edward and Arlene Oliver in 1962. The property was subsequently transferred to the University of Wisconsin in 1964. The University Arboretum manages the prairie, periodically burning the slope to discourage invasion by woody plants or weedy species.

REFERENCES

- Curtis, John T. 1971. The Vegetation of Wisconsin. Univ. of Wis. Press.
- Iltis, Hugh. Oliver - 'Shooting Star Hill' - Prairie. Unpublished paper,
Wisconsin Chapter Nature Conservancy.

SPIDER PRESENCE LIST FOR OLIVER PRAIRIE¹THERIDIIDAECrustulina altera (Gertsch & Archer)Crustulina stricta (O. P. Cambridge)Theridion dividuum (Gertsch & Archer)LINYPHIIDAEHelophora insignis (Blackwell)Lepthyphantes Sp.Meioneta unimaculata (Banks)Microneta (new species)Microneta viaria (Blackwell)MICRYPHANTIDAECeraticelus emertoni (O. P. Cambridge)Ceraticelus laticeps (Emerton)Ceratinops crenata (Emerton)Erigone (new species)Scylaceus pallidus (Emerton)ARIGOPIIDAEAraniella displicata (Hentz)

¹Riechert, Susan E. and William G. Reeder. 1970. Effects of fire on spider distribution in S. W. Wisconsin prairies. Proceedings of the Second Midwest Prairie Conference, Madison, Wisconsin. pp. 73-90.

TETRAGNATHIDAEPachygnatha kuratai (Levi)Tetragnatha Sp.CLUBIONIDAEClubiona johnsoni (Gertsch)Clubiona Sp.Phrurotimpus borealis (Emerton)GNAPHOSIDAECalliepsis imbecilla (Kersterling)Haplodrassus signifler (C. L. Koch)Poecilochroa capulata (Walckenaer)Zelotes hentzi (Barrows)Zelotes Sp.LYCOSIDAEArctosa emertoni (Bertsch)Lycosa avida (Walckenaer)Lycosa frondicola (Emerton)Lycosa pratensis (Emerton)Pardosa distincta (Blackwell)Pardosa Sp.Pirata minutus (Emerton)Schizocosa crassipalpis (Emerton)Schizoscosa Sp.Schizoscosa saitatrix (Hentz)

SALTICIDAE

Gertschia dakodensis (Cutler)

Habronattus Sp.

Metaphidippus protervis (Walckenaer)

Phidippus rimator (Walckenaer)

Onondaga lineata (C.L. Koch)

Sitticus floridanus (Gertsch & Mulalk)

Sitticus Sp.

Talavera minuta (Banks)

TRGMISIDAE

Oxyptila byrantae (Gertsch)

Oxyptila Sp.

Thanatus formicinus (Clerck)

Tibellus oblongus (Walckenaer)

Xysticus bicuspis (Keyserling)

Xysticus discursans (Keyserling)

Xysticus luctans (C. L. Koch)

Xysticus ontariensis (Emerton)

CHECKLIST OF FLOWERING PLANTS ON OLIVER PRAIRIE, GREEN COUNTY, WISCONSIN¹

Achillea millefolium - Yarrow

Ambrosia artemisiifolia - Ragweed

Amorpha canescens - Leadplant

Andropogon gerardi - Big Bluestem

Andropogon scoparius - Broom Grass, Blue-stem, Little Blue-stem

Anemone cylindrica - Thimbleweed, Prairie Anemone

Antennaria sp. - Pussy Toes

Apocynum androsaemilifolium - Spreading Dogbane

Asclepias syriaca - Common Milkweed

Asclepias verticillata - Prairie Milkweed

Aster azureus - Aster, Azure Aster

Aster ericoides - Aster, Heather Aster

Aster laevis - Aster, Smooth Prairie Aster

Aster oblongifolius - Aster

Aster ptarmicoides - Aster (white-flowered; probably a Solidago)

Aster sericeus - Aster, Silky Aster

Bouteloua curtipendula - Mesquite-grass, Side-oats Grama

Cacalia tuberosa - Indian-Plantain (rare)

Ceanothus americanus - New Jersey Tea

Celastrus scandens - Bittersweet

Cirsium discolor - Thistle

Cirsium hillii - Hill's Thistle

¹Checklist by Hugh Iltis

- Comandra umbellata - Bastard-Toadflax
- Convolvulus sepium - Wild Morning-Glory
- Coreopsis palmata - Palmate Coreopsis
- Cornus racemosa - Dogwood
- Crataegus - Hawthorn
- Dodecatheon meadia - Shooting-star
- Elymus canadensis - Wild Rye
- Elymus virginicus - Wild Rye
- Equisetum hyemale - Scouring-rush
- Equisetum sp. - Horsetail
- Erygium yuccifolium - Rattlesnake - Master
- Euphorbia corollata - Flowering Spurge
- Gerardia gattingeri - Gerardia (rare)
- Gentiana quinquefolia - Stiff Gentian (rare)
- Geum triflorum - Avens, Prairie Smoke
- Grindelia squarrosa - Gumweed
- Helianthus rigidus - Sunflower, Stiff Prairie Sunflower
- Heuchera richardsonii - Alumroot
- Hypoxis hirsuta - Stargrass (Amaryllis Family)
- Kuhnia eupatorioides - False Boneset
- Koeleria cristata - June Grass
- Lactuca canadensis - Lettuce, Canada Lettuce
- Lactuca ludoviciana - Prairie Lettuce (rare)
- Liatris aspera - Blazing-star

Liatris cylindracea - Small Blazing-star
Linum sulcatum - Flax, Yellow Prairie Flax
Lithospermum canescens - Puccoon
Lobelia spicata - "Highbelia", Pale-spike
Monarda fistulosa- Horsemint, Beebalm
Muhlenbergia racemosa - Muhly Grass
Oenothera biennis - Evening-primrose
Oxalis stricta - Yellow Sorrell
Oxalis violacea - Violet Sorrell
Panicum leibergii - Leiberg's Panic Grass
Panicum perlongum - Panic Grass
Pedicularis canadensis - Wood-Betony, Lousewort
Petalostemum purpureum - Prairie-clover, Purple Prairie Clover
Phlox pilosa - Phlox, Hairy Phlox, Prairie Phlox
Physalis virginiana - Ground-cherry
Poa compressa - Canada Blue Grass
Poa pratensis - Kentucky Blue Grass
Polygonatum commutatum - Solomon's Seal
Potentilla arguta - Tall Cinguefoil
Prenanthes racemosa - Rattlesnake-root (rare)
Pyrus ioensis - Wild Crab
Ratibida pinnata - Prairie Coneflower
Rhus glabra - Smooth Sumach
Rhus radicans - Poison Ivy

Rosa sp. - Rose, Prairie Rose

Rubus sp. - Blackberry

Rudbeckia hirta - Coneflower, Black-eyed Susan

Silphium integrifolium - Rosinweed

Silphium laciniatum - Coneflower, Compass Plant

Sisyrinchium campestre - Blue-eyed Grass

Smilacina stellata - False Solomon's-seal

Solidago nemoralis - Goldenrod

Solidago missouriensis - Missouri Goldenrod

Solidago rigida - Stiff Goldenrod

Solidago speciosa - Showy Goldenrod

Sorghastrum nutans - Indian Grass

Sporobolus heterolepis - Northern Drop-seed

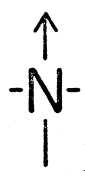
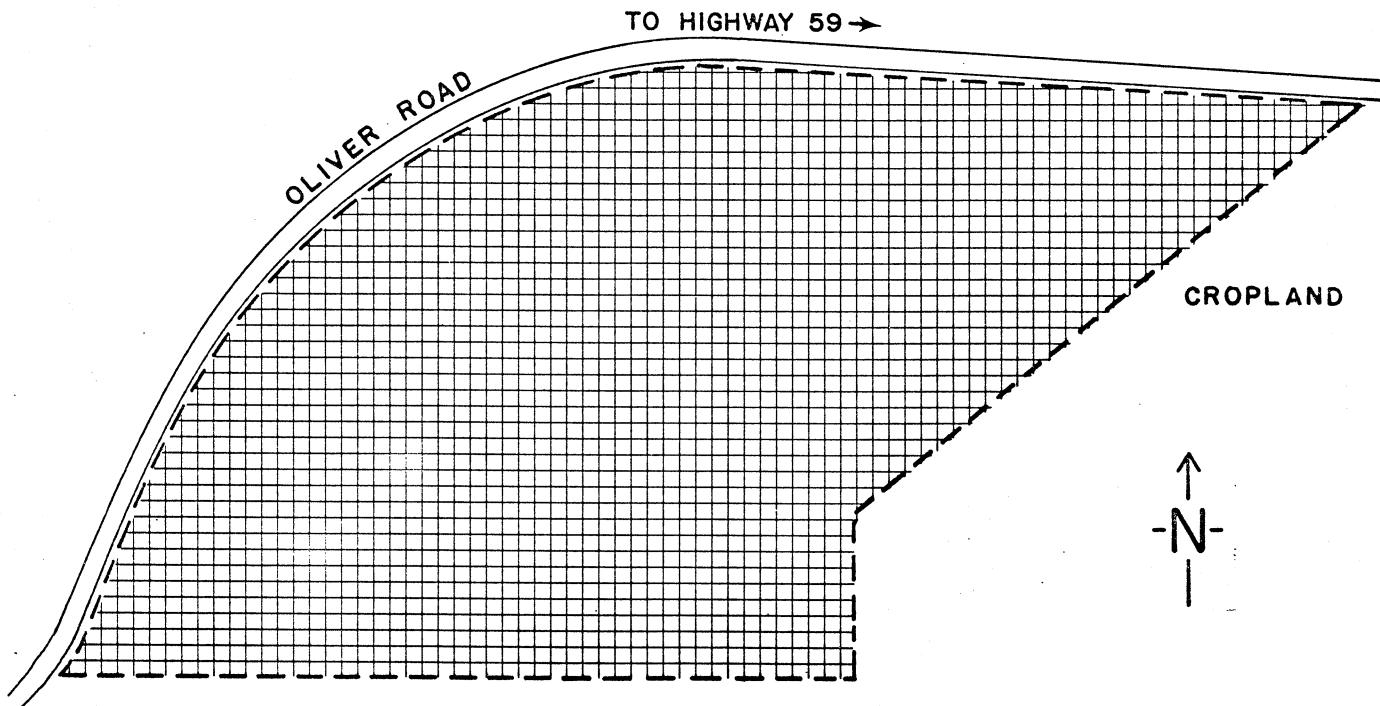
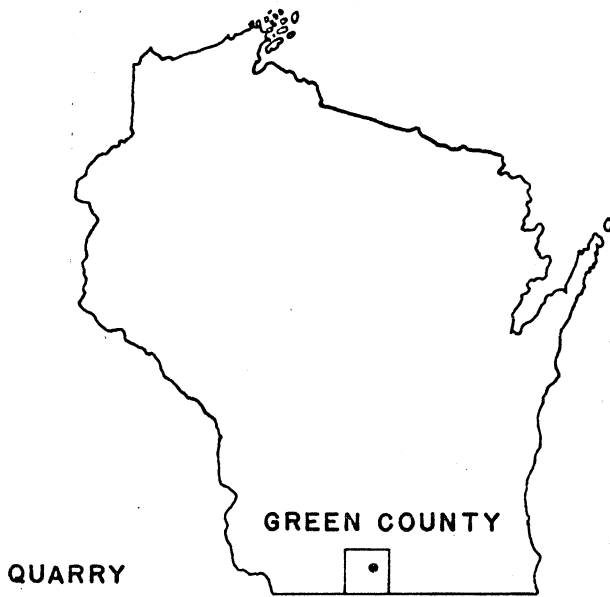
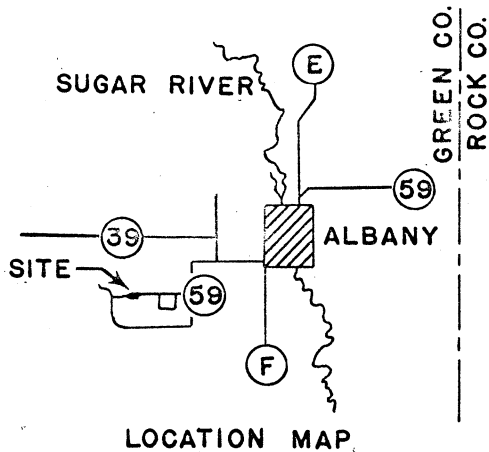
Stipa spartea - Porcupine-Grass, Needle Grass

Triosteum - Feverwort

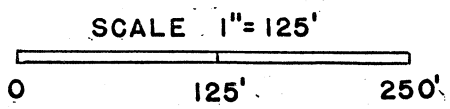
Viola pedata - Pansy-Violet, Bird's-foot Violet

Vitis riparia - River-bank or Frost-Grape

OLIVER PRAIRIE SCIENTIFIC AREA



 DRY PRAIRIE



FAVILLE PRAIRIE

Faville Prairie is a 60 acre tract of wet prairie on the west bank of the Crawfish River in Jefferson County. Though most of the surrounding low prairie area has been drained and cultivated, Faville Prairie has been preserved in an essentially virgin state.

Wet prairie has been the established vegetation on this portion of the river plain for a considerable period. In pre-settlement times, the prairie was more extensive (early settlers reported endless acres of shoulder high blue-joint grass covering the prairie) and was bounded on the southwest by oak openings.

The prairie presently has over 150 native plant species. The plants are distributed irregularly across the area due to slight but important differences in elevation (6"-12") and soil moisture.

Growing on the lowest ground, which is submerged through spring, are emergent aquatics such as cattail (Typha latifolia), arrowhead (Sagittaria sp.), sweet flag (Acorus calamus) and bulrush (Scirpus sp.).

In the transition zone between this "prairie slough" and drier ground are skullcap (Scutellaria epilobiifolia), false dragonhead (Physotegia sp.), boneset (Eupatorium perfoliatum), Canadian anemone (Anemone canadensis), spreading dogbane (Apocynum androsaemifolium), slough grass (Spartina pectinata) and blue flag (Iris virginica).

Occuring only on the driest sites are flowering spurge (Euphorbia corollata), leadplant (Lespedeza capitata), starry false solomon's seal (Smilacina stellata), panic grass (Panicum leibergii), bird-foot violet (Viola pedata) and hard-leaved goldenrod (Solidago rigida).

Important grasses of the entire prairie are little blue-stem (Andropogon scoparius), big blue-stem (Andropogon gerardi), and prairie dropseed (Sporobolus heterolepis). In localized moist spots, blue-joint grass (Calamagrostis canadensis) is important.

Faville's many species of goldenrod and aster also show distinct moisture preferences. Azure aster (Aster azureus), for instance, is found only on dry ground while the New England aster (Aster novae-angliae) favors the wet sites.

In early times, both prairie and oak opening were maintained by fires which swept out of the west in late fall or early spring. The fires were apparently checked by the Crawfish River, since lands immediately east of the river were originally under a heavy cover of mature lowland hardwood forest.

Wet prairies in general are fairly unstable and tend to be quickly invaded by lowland trees in the absence of fire. Such invasions did begin on Faville Prairie in the late 1800's when sedges and thickets of willow and aspen moved in. Agricultural weeds have also invaded as adjacent lands have been drained and cultivated.

The Faville, or Crawfish Prairie as it was known to settlers, was never grazed because of its wet nature. But it was occasionally mowed during dry years when regular hay crops failed.

FAUNA

Birds to look for in the area are pheasant, quail, mallard, blue-winged teal, upland plover, canvasback, lesser scaup, shoveller, American egret, little blue heron, marsh hawk, duck hawk, osprey, sharp-shinned hawk, rough legged hawk, sparrow hawk, short-eared owl, screech owl, saw-whet owl, cardinal and meadowlark.

Occasionally seen are the white crossbill, red crossbill, grosbeak, siskin, northern shrike and Bohemian waxwing.

Mammals which live in or visit the prairie and adjacent river bank are the gray fox, mink, raccoon, badger, mice, shrews, voles, rabbits and weasels.

GEOLOGY

The prairie lies on ground moraine overlying Prairie DuChien dolomite of Ordovician age. It is in the Rock River drainage basin and claims a feature unique to the Jefferson County portion of the Rock River watershed--a perched water table and artesian wells. The water table is suspended or "perched" by impervious layers of clay in the former lake sediment. Though the Crawfish River cut down through the lake deposits in post-glacial times to a level below the original lake bed, rain and run-off waters continue to collect on the old lake bottom and build up a pressure that results in flowing wells. Such a well can be seen immediately south of the prairie.

SOIL

Capping the dolomitic loam till is a Kokomo gray-brown silt loam. This soil is poorly drained and water will stand on the ground after rain or flooding. A major portion of the soil is former glacial lake sediment and is rich in organic matter and nutrient salts.

The lowest point on the prairie near the river is still receiving alluvial deposits during flooding and may be part of a former river bed. Parallel to this wet zone or slough is a raised, slightly sandy alluvial soil which is a former natural levee.

CLIMATE

The nearest weather recording station is Watertown, Jefferson County, about 20 miles to the east. Measurements recorded there are as follows:

Total precipitation----- 30.9"

Total snowfall----- 41.9"

January mean temperature-- 21.3° F

July mean temperature----- 73.1° F

Because of its location over an ancient glacial lake, Faville Prairie tends to gather cold air draining from nearby uplands. In summer, blanket-fogs may form over the prairies, adding more moisture to an already wet site and giving rise to an extremely high humidity by noon. For the same geographic reasons, the wet prairie is also subject to late spring and early autumn frosts.

DIRECTIONS

The prairie is four miles north of the Village of Lake Mills. From Lake Mills, go north on State Highway 89 1.5 miles to County Trunk Highway "G". Take County "G" 1.5 miles to ^{PRAIRIE} Lang Road. Go east on Lang Road 1 mile than north .5 miles to the end of the road. Walk east about 660 feet across Milwaukee Audubon Society land to a stile in the west boundary fence of the scientific area.

SURVEY DESCRIPTION

Sixty acres in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 19, Town 8 North, Range 14 East, Town of Milford, Jefferson County, Wisconsin.

ACQUISITION HISTORY

In response to a plea by Aldo Leopold and the Arboretum Committee to save the remainder of the once extensive Faville Prairie, Philip E. and Alice B.

Miles purchased the land and donated it to the University of Wisconsin in 1945. The prairie was dedicated to Stoughton W. Faville, a pioneer botanist in the area. In 1952, the land was made a State Scientific Area. It is managed by the U.W. Arboretum and is occasionally burned to control invasion of exotic species.

REFERENCES

- Hawkins, A.S. 1937. "Winter feeding at Faville Grove, 1935-1936," American Midland Naturalist 18: 417-425.
- Hawkins, A.S. 1940. "A Wildlife History of the Faville Grove." Trans. Wis. Academy of Science, Arts and Letters 32: 29-95.
- Partch, Max 1949. "Habitat studies of soil moisture in relation to plants and plant communities." Phd. Thesis, Univ. of Wis.
- Unpublished papers in files of Botany and Wildlife Ecology departments at the University of Wisconsin.

FAVILLE PRAIRIE SPECIES LIST₁

<u>Scientific Name</u>	<u>Rel. Freq. (%)</u> ₂	<u>Common Name</u>
<u>Acalypha</u> sp.	----	----Three-seeded mercury
<u>Acorus calamus</u>	----	----Sweet flag
<u>Achillea millefolium</u>	---- 13.8	----Common milfoil
<u>Agrostis alba</u>	----	----Redtop
<u>Alisma triviale</u>	----	----Wild onion
<u>Allium cernuum</u>	----	----Wild garlic
<u>Allium canadense</u>	----	----Water plantain
<u>Amorpha canescens</u>	----	----Lead plant
<u>Andropogon gerardi</u>	---- 16.6	----Big blue-stem
<u>Andropogon scoparius</u>	---- 26.6	----Little blue-stem
<u>Anemone canadensis</u>	---- 26.1	----Canada anemone
<u>Antennaria</u> sp.	---- 5.0	----Pussy-toes
<u>Apocynum androsaemifolium</u>	----	----Spreading dogbane
<u>Arenaria lateriflora</u>	---- 6.1	----Grove sandwort
<u>Asclepias incarnata</u>	----	----Swamp milkweed
<u>Asclepias sullivanti</u>	----	----Sullivant's milkweed
<u>Asclepias syriaca</u>	---- 18.3	----Common milkweed
<u>Asclepias verticillata</u>	----	----Whorled milkweed
<u>Aster azureus</u>	---- 38.8	----Azure aster
<u>Aster laevis</u>	----	----Smooth aster
<u>Aster novae-angliae</u>	---- 6.6	----New England Aster
<u>Aster puniceus</u> var. <u>firmus</u>	----	----Purple-stemmed aster
<u>Aster simplex</u> var. <u>ramosissimus</u>	----	----Panicled aster
<u>Aster pilosus</u>	----	----

¹From P.E.L. Checklists and Max Partch thesis (U.W., 1949)

²Frequency data from Partch

<u>Scientific Name</u>	<u>Rel. Freq. (%)</u>	<u>Common Name</u>
<u>Blephilia ciliata</u>	---- 8.3 ----	Downy wood-mint
<u>Cacalia tuberosa</u>	----	Indian plantain
<u>Calamagrostis canadensis</u>	---- 8.8 ----	Blue-joint grass
<u>Caltha palustris</u>	----	Marsh marigold
<u>Campanula aparinoides</u>	----	Marsh bellflower
<u>Carex Bicknelli</u>	---- 13.8 ----	Sedge
<u>Chelone glabra</u>	----	Turtlehead
<u>Cicuta maculata</u>	----	Spotted cowbane
<u>Cirsium discolor</u>	----	Field thistle
<u>Comandra umbellata</u>	---- 4.4 ----	Bastard toadflax
<u>Comandra richardsiana</u>	----	
<u>Convolvulus sepium</u>	---- 8.8 ----	Hedge bindweed
<u>Cornus stolonifera</u>	----	Red-osier dogwood
<u>Cyperus Schweinitzia</u>	----	Sedge
<u>Cyripedium candidum</u>	----	Small white lady's slipper
<u>Dodecatheon meadia</u>	---- 20.0 ----	Shooting star
<u>Eleocharis sp.</u>	----	Spike rush
<u>Equisetum arvense</u>	----	Scouring rush
<u>Equisetum kansanum</u>	----	Scouring rush
<u>Epilobium glandulosum</u>	---- 10.0 ----	Northern willow-herb
<u>Erigeron philadelphicus</u>	---- 5.0 ----	Common flea-bane
<u>Erigeron strigosus</u>	---- 8.3 ----	White-top
<u>Eupatorium perfoliatum</u>	---- 8.8 ----	Boneset
<u>Eryngium yuccifolium</u>	----	Rattlesnake master

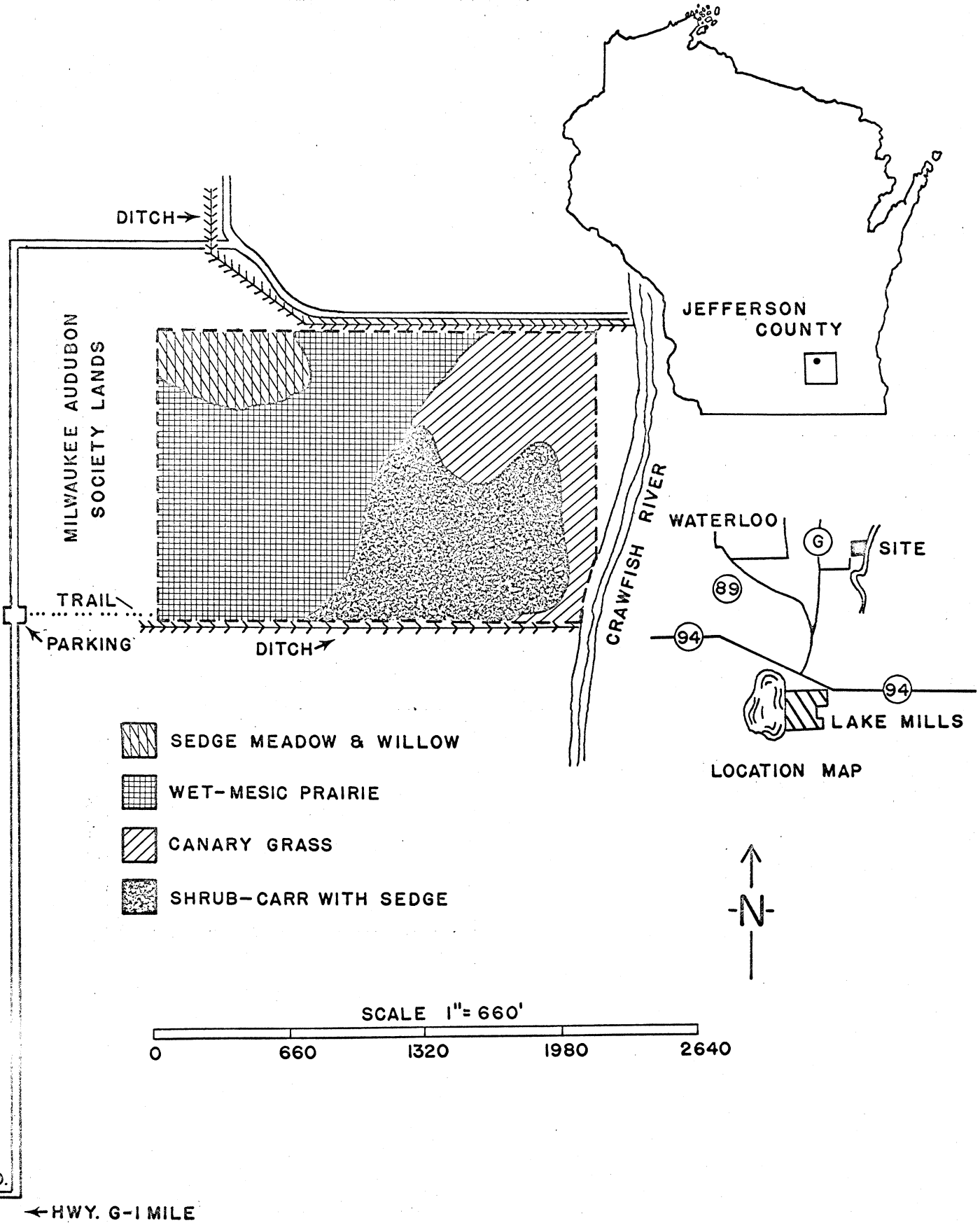
<u>Scientific Name</u>	<u>Rel. Freq. (%)</u>	<u>Common Name</u>
<u>Euphorbia corollata</u>	---- 10.5 ----	Flowering spurge
<u>Fragaria virginiana</u>	---- 7.7 ----	Strawberry
<u>Galium boreale</u>	----	Northern bedstraw
<u>Galium tinctorium</u>	---- 7.2 ----	Bedstraw
<u>Gentiana Andrewsii</u>	---- 3.8 ----	Closed gentian
<u>Gentiana procera</u>	----	Smaller fringed gentian
<u>Gentiana quinquefolia</u>	----	Long-plumed purple avens
<u>Gnaphalium obtusifolium</u>	----	Cat-foot; everlasting
<u>Habenaria leucophaea</u>	----	Prairie white-fringed orchis
<u>Helenium autumnale</u>	---- 16.6 ----	Sneezeweed
<u>Helianthus grosseserratus</u>	---- 30.0 ----	Saw-toothed sunflower
<u>Helianthus laetiflorus</u>	----	Showy sunflower
<u>Heuchera richardsonii</u>	---- 7.7 ----	Alumroot
<u>Hierochloe odorata</u>	----	Indian grass
<u>Hypoxis hirsuta</u>	---- 48.8 ----	Yellow star-grass
<u>Iris virginica</u>	---- 24.4 ----	Southern blue-flag
<u>Koeleria cristata</u>	----	
<u>Krigia biflora</u>	----	Shimmers
<u>Lactuca canadensis</u>	----	Wild lettuce
<u>Lactua ludoviciana</u>	----	Louisiana lettuce
<u>Lathyrus palustris</u>	----	Vetchling
<u>Lathyrus venosus</u>	----	
<u>Lespedeza capitata</u>	---- 2.7 ----	Bush clover
<u>Liatrix pyncnostachya</u>	---- 41.1 ----	Little blazing star

<u>Scientific Name</u>	<u>Rel. Freq. (%)</u>	<u>Common Name</u>
<u>Lilium michiganense</u>	-----	----- Michigan lily
<u>Lilium philadelphicum</u>	-----	-----Wood lily
<u>Linum sulcatum</u>	-----	-----Wild flax
<u>Lithospermum canescens</u>	----- 8.3	-----Puccoon
<u>Lobelia Kalmii</u>	-----	-----Lobelia
<u>Lobelia spicata</u>	----- 2.7	-----Pale-spike Lobelia
<u>Lycopus americanus</u>	----- 29.4	-----American water-horehound
<u>Lysimachia quadrifolia</u>	----- 26.1	-----Whorled loosestrife
<u>Lysimachia thrysifolia</u>	-----	-----Tufted loosestrife
<u>Lythrum alatum</u>	----- 13.8	-----Wing-angled loosestrife
<u>Mimulus ringens</u>	-----	-----Square-stemmed monkey-flower
<u>Monarda fistulosa</u>	-----	-----Wild bergamot
<u>Oxalis stricta</u>	-----	-----Yellow wood-sorrel
<u>Oxypolis rigidior</u>	-----	-----Cowbane
<u>Panicum leibergii</u>	----- 7.7	-----Panic grass
<u>Panicum virgatum</u>	-----	-----Panic grass
<u>Parnassia glauca</u>	-----	-----Grass-of-Parnassus
<u>Pedicularis lanceolata</u>	-----	-----Wood betony
<u>Petalostemum purpureum</u>	-----	-----Purple prairie clover
<u>Phalaris arundinacea</u>	-----	-----Reed-canary grass
<u>Phlox pilosa</u>	-----	-----Phlox
<u>Physalis heterophylla</u>	-----	-----Ground cherry
<u>Physostegia sp.</u>	-----	-----False dragonhead
<u>Polygala verticillata</u>	-----	-----Milkwort
<u>Polygonum amphibium</u>	----- 5.0	-----Water smart-weed
<u>Potentilla arguta</u>	----- 5.0	-----Tall cinquefoil

<u>Scientific Name</u>	<u>Rel. Freq. (%)</u>	<u>Common Name</u>
<u>Potentilla canadensis</u>	---- 6.6 ----	Dwarf cinquefoil
<u>Potentilla recta</u>	----	Rough-fruited cinquefoil
<u>Prenanthes racemosa</u>	----	Rattle-snake root
<u>Prunella vulgaris</u>	----	Self-heal
<u>Pycnanthemum virginianum</u>	---- 28.3 ---	Virginia mountain mint
<u>Ranunculus pennsylvanicus</u>	----	Bristly buttercup
<u>Ratibida pinnata</u>	---- 40.0 ---	Prairie coneflower
<u>Rorippa islandica</u>	----	Yellow cress
<u>Rosa sp.</u>	---- 13.3 ---	Rose
<u>Rudbeckia hirta</u>	---- 25.0 ---	Black-eyed susan
<u>Sagittaria sp.</u>	----	Arrowhead
<u>Salix sp.</u>	---- 28.3 ---	Willow
<u>Scirpus sp.</u>	----	Bulrush
<u>Scutellaria epilobiifolia</u>	---- 3.3 ----	Common skullcap
<u>Scutellaria parvula</u>	----	Smaller skullcap
<u>Senecio aureus</u>	---- 10.0 ---	Golden ragwort
<u>Silphium laciniatum</u>	---- 47.8 ---	Compass plant
<u>Silphium terebinthinaceum</u>	---- 43.3 ---	Prairie dock
<u>Sisyrinchium campestris</u>	---- 16.6 ---	Blue-eyed grass
<u>Sium suave</u>	---- 8.3 ---	Water parsnip
<u>Smilacina stellata</u>	---- 3.3 ---	Starry false Solomon's seal
<u>Solidago altissima</u>	----	Tall goldenrod
<u>Solidago gigantea</u>	----	Late goldenrod
<u>Solidago graminifolia</u>	----	Lance-leaved goldenrod
<u>Solidago nemoralis</u>	---- 22.2 ---	Gray goldenrod
<u>Solidago juncea</u>	----	Early goldenrod

<u>Scientific Name</u>	<u>Rel. Freq. (%)</u>	<u>Common Name</u>
<u>Solidago riddellii</u>	---- 31.1 ----	
<u>Solidago rigida</u>	---- 23.3 ----	Hard-leaved goldenrod
<u>Sorghastum nutans</u>	---- 7.7 ----	Indian grass
<u>Spartina pectinata</u>	---- 23.8 ----	Marsh grass; cord grass
<u>Spirae alba</u>	---- 25.5 ----	Meadow-sweet
<u>Spiranthes cernua</u>	----	Nodding ladies-tresses
<u>Sporobolus heterolepis</u>	----	Drop-seed
<u>Stachys palustris</u>	---- 17.1 ----	Wound-wort
<u>Thalictrum dasycarpum</u>	---- 13.8 ----	Purple meadow-rue
<u>Tradescantia ohioensis</u>	----	Spiderwort
<u>Trifolium pratense</u>	----	Red clover
<u>Trifolium repens</u>	----	White clover
<u>Typha latifolia</u>	----	Common cattail
<u>Valeriana ciliata</u>	---- 6.6 ----	
<u>Verbena hastata</u>	---- 15.5 ----	Blue vervain
<u>Vernonia fasciculata</u>	---- 14.4 ----	Western ironweed
<u>Veronicastrum virginicum</u>	---- 14.4 ----	Culver's root
<u>Viola cucullata</u>	---- 15.0 ----	Marsh blue violet
<u>Viola pedata</u>	----	Birdfoot violet
<u>Viola petatifida</u>	----	Prairie violet
<u>Viola sagittata</u>	----	Arrow-leaved violet

FAVILLE PRAIRIE SCIENTIFIC AREA



LANG RD.

← HWY. G-I MILE

OBSERVATORY WOODS

Observatory Woods is a 13 acre oak-hickory woods typical of Wisconsin's dry southern forests. It is also a good example of the transition from oak-opening vegetation to red oak forest.

While hickory forest sits atop the ridge that runs southeast-northwest, the base of the moist northeast slope supports a pocket of red oaks and mesic forest herbs. At the northwest corner of the ridge, taking the brunt of the sun, is a small goat prairie surrounded by oak opening.

It is believed that from approximately 700 A.D. until the 1830's the entire ridge was an oak-opening with prairie grasses and bur oak as the dominant vegetation. Frequent fires prevented forest trees from becoming established. Since white settlement, the woods has rapidly progressed toward a closed forest. But in the center of the woods, among the straight trunks of surrounding younger trees, there can still be seen old bur and white oaks with open-grown branching patterns.

The most conspicuous trees of Observatory Woods are the white oak (Quercus alba), black oak (Quercus velutina), bur oak (Quercus macrocarpa), shagbark hickory (Carya ovata) and black cherry (Prunus serotina). Mixed in with these dry forest species are smaller groups of trees more commonly found in the southern mesic forest: ironwood (Ostrya virginiana), yellowbud hickory (Carya cordiformis), red maple (Acer rubra), American elm (Ulmus americana) and slippery elm (Ulmus rubra). The red oak (Quercus rubrum) is a transition species characteristically found in a dry-mesic situation. Big-tooth aspen (Populus grandidentata) occurs on the north slope between bur oak and red

oak stands, and quaking aspen (Populus tremuloides) clusters on disturbed, cut-over spots.

The closed oak forest has a dense understory of shrubs, including blackberry (Rubus allegheniensis), gooseberry (Ribes cynobati), hazelnut (Corylus americana), gray dogwood (Cornus racemosa), round-leaved dogwood (Cornus rugosa) and Virginia creeper (Parthenocissus inserta). The common herbs are enchanters nightshade (Circaea quadrisulcata) lopseed (Phyrma leptostachya), wild geranium (Geranium maculatum), hog-peanut (Amphicarpa bracteata) and false Solomon's seal (Smilacina racemosa).

The patch of dry prairie in the northwest corner of the woods is dominated by the short, hardy side-oats grama grass (Bouteloua curtipendula). Herbs typical of the rocky, "high lime" prairies also occur: shooting star (Dodecatheon meadia), pussy-toes (Antennaria plantaginifolia), puccoon (Lithospermum canescens), spiderwort (Tradescantia ohioensis), Pasque flower (Anemone patens), stiff gentian (Gentiana quinquefolia) and prairie milkweed (Asclepias verticillata).

In the red oak corner of the woods are several species of ferns, mosses and spring ephemerals: interrupted fern (Osmunda claytoniana), sensitive fern (Onoclea sensibilis) lady-fern (Athyrium filix-femina), bulblet fern (Cystopteris bulbifera), shining club-moss (Lycopodium lucidulum), pipsis-sewa (Chimaphila umbellata), Dutchman's breeches (Dicentra cucullaria), downy yellow violet (Viola pubescens) and bellwort (Uvularia grandiflora).

The woods has a history of several minor disturbances. Prior to 1935, the woods was lightly grazed. During the 1930's, three small sections were clearcut. In the late 1940's, the owner, with expectations of building a home on the property, quarried a small amount of limestone and made plantings

of red and white pine and red dogwood. He also transplanted several species of spring ephemerals from their native maple forest to the ridgetop. The ephemerals continue to grow in the area where originally planted and apparently have not spread.

In 1958, an 85-foot steel tower was built on the ridgetop for the use of the nearby UW observatory. The tower has had little effect on the vegetation.

FAUNA

Because Observatory Woods is adjacent to corn fields and is only a small part of a larger wooded area, animal life is fairly abundant. Mammals casually observed in the woods include white-tailed deer, rabbits, gray squirrel, chipmunks, skunk, mice and moles. Numerous song-birds, as well as crows, great horned owls, pheasants and ruffed grouse have also been seen.

GEOLOGY

The woods lies on an unglaciated ridge of Prairie du Chien dolomite which overlies St. Peter sandstone. Both formations are of Ordovician age. In the prairie opening, bedrock is about 3 inches below the soil in places.

Three miles to the east is the Johnstown moraine deposited by the Labrador ice sheet.

The ridge drains into Garfoot Creek and thence to Black Earth Creek which is part of the Wisconsin River drainage basin.

SOIL

Except for the dry prairie where soil is so shallow as to have no developed profile, the woods is underlain by a gray-brown podzolic soil

of the Fayette-Dubuque association. The depth varies from 18 inches to 36 inches above bedrock.

CLIMATE

The nearest weather station is located in Madison, approximately 14 miles to the east. Annual averages recorded there are as follows:

Total precipitation----- 30.2 inches

Total snowfall----- 38.4 inches

January mean temperature----- 17.5 F

July mean temperature----- 71.1 F

DIRECTIONS

From State Highway 12 at Madison, go west on Mineral Point Road (County S) about 7 miles to the town of Pine Bluff. At Pine Bluff, take County P north .5 miles to Observatory road on the left. Follow Observatory Road 1.3 miles to the observatory. From the observatory, walk northwest to the woods.

SURVEY DESCRIPTION

13.5 acres consisting of part of $S\frac{1}{2}$ of $NE\frac{1}{4}$ of $SW\frac{1}{4}$ west of Observatory Road and part of $NW\frac{1}{4}$ of $SW\frac{1}{4}$ of Section 16 of Town 7 North, Range 7 East, Town of Cross Plains, Dane County, Wisconsin.

ACQUISITION HISTORY

When the U.W. Observatory was built at Pine Bluff in 1953, it was placed extremely close to the northern property line. Consequently, it was felt that land to the north should be purchased as a buffer strip. The U.W. Botany Department suggested that the buffer strip, which included the oak

woods, would be a valuable research area. The University purchased the land from John Barton in 1956 and its management was turned over to the Arboretum Committee. The prairie and oak opening are periodically burned to prevent encroachment by the woods.

REFERENCES

Burgess, R.L. 1959. An Intrastand Ordination of an Oak Forest Community in Southern Wisconsin. University of Wis. Masters Thesis.

_____ 1959. "Observatory Woods", University of Wisconsin Arboretum News, Vol. 8, No. 2.

Observatory Woods	Rel. Freq.	% Den.	% Dom.	IV	CI
Black Oak	19.1	18.8	24.2	62.1	155.3
White Oak	21.4	23.8	29.8	75.0	262.5
Bur Oak	9.2	8.5	17.8	35.5	124.3
Red Oak	7.2	6.1	9.3	22.6	124.3
Black Cherry	10.3	7.5	2.4	20.2	70.7
Shagbark Hickory	27.2	31.6	14.7	73.5	330.8
American Elm	1.9	1.2	.5	3.6	27.0
Slippery Elm	.7	.5	.2	1.4	11.2
Yellowbud Hickory	.5	.3	.1	.9	7.7
Large-toothed Aspen	1.9	1.4	.5	3.8	17.1
Red Maple	.4	.2		.6	4.2

Total CI 1135.1

Rel. Freq. = Relative Frequency

% Den. = Percent Density

% Dom. = Percent Dominance

IV = Importance Value

CI = Compositional Index

Trees/acre = 152.8

Saplings/acre = 211.5

CHECKLIST FOR OBSERVATORY WOODS

TREES:

Acer rubrum - red maple

Carya cordiformis-yellowbud hickory

Carya ovata - shagbark hickory

Ostrya virginiana - ironwood

Pinus resinosa - red pine

Populus deltoides - cottonwood

Populus grandidentata - big-tooth aspen

Populus tremuloides - quaking aspen

Prunus serotina - black cherry

Pyrus ioensis - wild crabapple

Quercus alba - white oak

Quercus macrocarpa-bur oak

Quercus rubra - red oak

Quercus velutina - black oak

Ulmus americana - american elm

Ulmus rubra - slippery elm

SHRUBS & HERBS

Achillea millefolium - yarrow

Adiantum pedatum - maiden hair fern

Agrimonia gryposepala - agrimony

Agrimonia pubescens - agrimony

Agropyron smithii - western wheatgrass

Agrostis alba - redbtop

Ambrosia artemisiifolia - common ragweed

Amelanchier canadensis - juneberry

Amorpha canescens - lead plant

Amphicarpa bracteata - hog-peanut

Anemone canadensis - canadian anemone

Anemone cylindrica - thimbleweed

Anemone patens - pasque flower

Anemone quinquefolia - wood anemone

Antennaria plantaginifolia - pussy-toes

Apocynum androsaemifolium - spreading dogbane

Aquilegia drummondii - rock cress

Aralia nudicaulis - wild sarsaparilla

Aralia racemosa - wild spikenard

Asarium canadense - wild ginger

Asclepias verticillata - prairie milkweed

Aster azureus - azure aster

Aster lateriflorus

Aster sagittifolius - arrow-leaf aster

Athyrium filix-femina - lady fern

Botrychium virginianum - rattlesnake fern

Bouteloua curtipendula - side-oats grama

Carex albursina - sedge

Carex pennsylvanica - sedge

Ceanothus americanus - New Jersey tea
Celastrus scandens - bittersweet
Chimaphila umbellata - pipsissewa
Circaea quadrisulcata - enchanter's nightshade
Cirsium vulgare - thistle
Convolvulus spithameus - low bindweed
Corallorhiza maculata - coral root
Cornus alternifolia - pagoda dogwood
Cornus racemosa - gray dogwood
Cornus rugosa - round-leaved dogwood
Corylus americana - american hazelnut
Craetaegus sp. - hawthorn
Cryptotaenia canadensis - honewort
Cynoglossum officinale - hound's tongue
Cypripedium calceolus - lady's slipper
Cystopteris bulbifera - bublet fern
Dactylis glomerata - orchard grass
Daucus carota - wild carrot
Desmodium glutinosum - tick-trefoil
Desmodium nudiflorum - tick-trefoil
Dicentra cucullaria - dutchman's breeches
Diervilla lonicera - bush-honeysuckle
Dioscorea villosa - wild yam
Dodecatheon meadia - shooting star
Dryopteris austriaca

Erigeron pulchellus - showy fleabane
Eupatorium rugosum - joe pyeweed
Fragaria virginiana - strawberry
Galium aparine - bedstraw
Galium circaezans - bedstraw
Galium concinnum - pretty bedstraw
Galium triflorum - three-cleft-bedstraw
Gentiana quinquefolia - stiff gentian
Geranium maculatum - wild geranium
Geum canadense-avens, prairie smoke
Hackelia virginiana - stickweed
Helianthus strumosus - sunflower
Hystrix patula - bottlebrush grass
Ilex verticillata - winterberry holly
Koeleria cristata - june grass
Lactuca biennis - lettuce
Lathyrus ochroleucus - vetchling
Lespedeza capitata - prairie clover
Lithospermum canescens - puccoon
Lonicera prolifera - honeysuckle
Lycopodium lucidulum - shining club moss
Lysimachia quadrifolia - whorled loosestrife
Maianthemum canadensis - moonseed vine
Mitchella repens - partridge berry
Monarda fistulosa - wild bergamot

Monarda punctata - horsemint
Monotropa uniflora - Indian pipe
Nepeta cataria - catnip
Oenothera biennis - evening primrose
Onoclea sensibilis - sensitive fern
Osmorhiza claytoni - wild licorice
Osmorhiza longistylis - anise-root
Osmunda claytoniana - interrupted fern
Oxalis montana - common wood-sorrel
Oxalis stricta - yellow sorrel
Panicum sp. - panic grass
Parietaria pennsylvanica - pellitory
Parthenocissus inserta - virginia creeper
Phyrma leptostachya - lopseed
Poa pratensis - kentucky bluegrass
Podophyllum peltatum - may-apple
Polemonium reptens - Jacob's-ladder
Polygonatum canaliculatum - Solomon's seal
Potentilla simplex - old-field cinquefoil
Prenanthes alba - white lettuce
Prunella vulgaris - self-heal
Prunus americana - wild plum
Prunus virginiana - choke-cherry
Pyrola elliptica - shin-leaf
Ranunculus abortivus - kidney-leaf buttercup

Rhamnus catharticus - common buckthorn
Rhus glabra - smooth sumac
Rhus radicans - poison ivy
Ribes cynosbati - prickly gooseberry
Rosa sp. - wild rose
Rubus allegheniensis - blackberry
Rubus occidentalis - black raspberry
Sambucus canadensis - elderberry
Sanicula marilandica - black snakeroot
Senecio pauperculus - poor groundsel
Sisyrinchium campestre - blue-eyed grass
Smilicina racemosa - false Solomon's seal
Smilicina stellata - starry false Solomon's seal
Smilax ecirrhata - greenbriar
Smilax herbacea - carrion-flower
Solidago canadensis - Canadian goldenrod
Solidago flexicaulis - zigzag goldenrod
Solidago missouriensis - missouri goldenrod
Solidago ulmifolia - elm-leaved goldenrod
Taraxacum officinale - dandelion
Tradescantia ohioensis - spiderwort
Urtica dioica - stinging nettle
Uvularia grandiflora - bellwort
Verbascum thapsus - common mullein
Viburnum lentago - nannyberry

Viburnum rafinesquianum - downy arrow-wood

Vicia americana - vetch

Viola cucullata - hooded violet

Viola pedata - bird's-foot violet

Viola pubescens - downy yellow violet

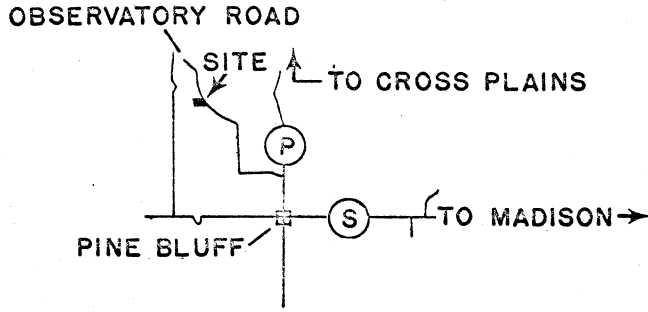
Vitis riparia - river-bank grape

Vitis aestivalis - summer grape

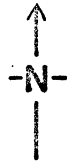
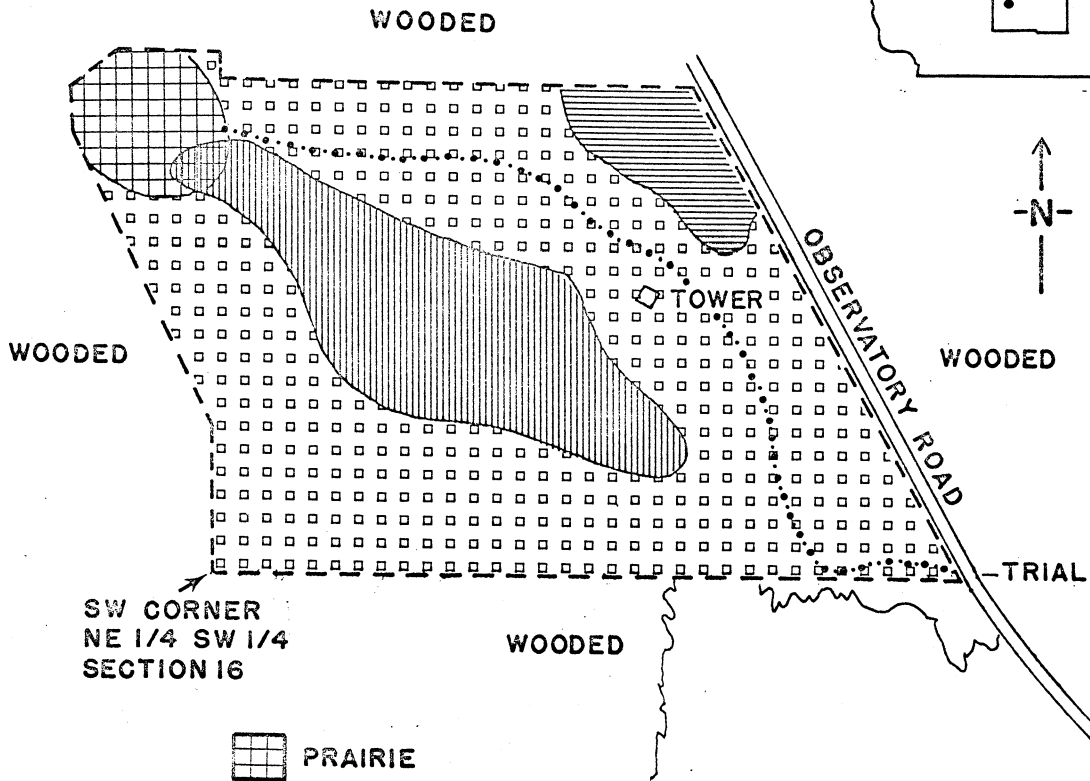
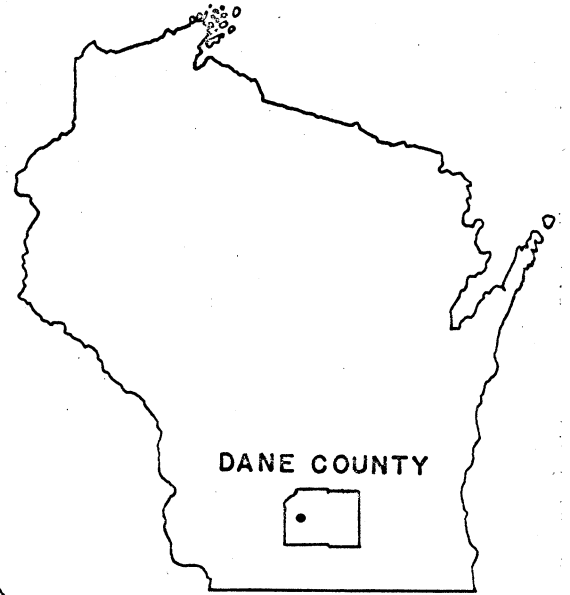
Xanthium strumarium - cocklebur





Zanthoxylum americanum - northern prickly ash

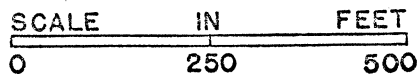
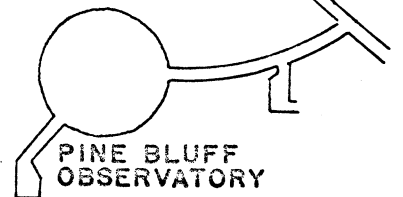
U. W. OBSERVATORY WOODS SCIENTIFIC AREA



LOCATION MAP



-  PRAIRIE
-  RED OAK
-  BUR OAK
-  BLACK AND WHITE OAK



LODDE'S MILL BLUFF¹

Rising 300 feet above Honey Creek in Sauk County, Lodde's Mill Bluff harbors unique cliff-dwelling plant communities.

Located in the unglaciated or Driftless Area of Wisconsin, the bluff with its 80 foot high sandstone cliffs is a vegetational island. Some of the species found here are endemic to the area. Others are not encountered again until one gets south of the area of major continental glaciation and into Missouri, Kentucky, or Pennsylvania.

From the base of the talus slope to the top of the bluff, eight different plant communities can be recognized:

(1) Mesic basswood forest lies beneath the cliff on the north and northeast slopes. Amidst paper birch (Betula papyrifera) and big-tooth aspen (Populus grandidentata) are clusters of stump-sprouted basswood (Tilia americana). Shagbark hickory (Carya ovata), red oak (Quercus rubra), and hop-hornbeam (Ostrya virginiana) also occur here. The herb layer contains a diverse group of spring-flowering ephemerals as well as several ferns and shade-loving plants.

(2) Sandstone cliff flora is found on the north-facing cliff above the mesic forest. Here a variety of ferns, mosses, liverworts, common plants, weedy species and strictly cliff-dwelling plants compete for a foothold. Many of the cliff plants are species with the ability to extract water and nutrients from the tiniest cracks in the cool, moist rocks.

¹From vegetation description by Hugh Iltis

The largest population of blue monkshood (Aconitum columbianum) in the eastern U.S. occurs on these cliffs. This is an extremely rare plant which originated in the Rocky Mountain region. Another rare cliff-dweller with Western mountain affinities is Sullivantia renifolia. Slender cliff brake (Cryptogramma stelleri), an arctic species of world-wide distribution occurs here as does cliff goldenrod (Solidago sciaphila), a plant endemic to the cliffs of the Driftless Area.

(3) Above the cliff on the steep rocky north slope is a dry upland red oak woods. In addition to second growth red and white oak, there are big-tooth aspen and yellow-bud hickory (Carya cordiformis).

(4) Covering the ridge top is an oak opening dominated by old bur oak (Quercus macrocarpa), quaking aspen (Populus tremuloides), paper birch and black oak (Quercus velutina).

(5) Crossing the ridge to the south slope, the oak opening gives way to a dry prairie community. To the east, the prairie maintains a typical vegetation of short grasses, asters and goldenrods. But to the west, the prairie is being invaded by red cedar (Juniperus virginiana) and bur oak and is on its way to becoming a cedar glade.

It is apparent from fire scars on older tree trunks that until recently the ridge top and south slope were kept open and free of woody growth by periodic prairie fires.

(6) Below the upper south slope are a dry sandstone cliff and sandy ledges with full sunny exposure. Here again are found members of the dry prairie community plus prickly pear cactus (Opuntia macrohiza).

(7) Adjacent cliffs to the east are of dolomite and harbor dry prairie and cliff-dwelling species.

(8) At the southwest base of the sandstone cliff is a mesic oak forest of bur oak, red oak, and white oak.

FAUNA

There are no reports available on fauna of the area.

GEOLOGY

Cambrian sandstone forms the 80 foot north-facing cliff and portions of the south facing ledges. It also underlies the lower north and southwest sandy slopes.

The upper slopes and ridgetop are of Prairie du Chien dolomite. This rock of Ordovician age caps the sandstone layers that lie below and protects them from erosion.

The bluff is at the extreme edge of the Driftless Area, regions to the east being outwash plain and to the north, glacial lake beds. The bluff and nearby uplands drain into Honey Creek which is part of the Wisconsin River system.

SOIL

The soils beneath both the basswood-aspen-birch forest and mesic oak woods are Boone fine sandy loams with a patch of Boone fine sand.

The slope above the cliff has a poorly developed soil profile. The soil is shallow and is filled with calcareous rock fragments.

Along Honey Creek, the soil is Wabash silt loam, an alluvial material characteristic of valley bottoms in the Baraboo range. (The corn field adjoining Honey Creek was once a mill pond for the Lodde family's mill.)

CLIMATE

Lodde's Mill Bluff lies between two weather stations. Though the Madison, Dane County station is closer, the Richland Center, Richland County station may be more accurate, being situated in the Driftless Area.

	<u>Madison</u>	<u>Richland Center</u>
Total precipitation	30.2"	32.2"
Total snowfall	38.4"	36.2"
January mean temperature	17.5 F	19.4 F
July mean temperature	71.1 F	73.1 F

LOCATION

From Sauk City, take State Highway 60 west 4.7 miles to a town road which is on the right immediately after crossing the Honey Creek bridge. The bluff is most easily approached from the south side or by an old road at the west end.

SURVEY DESCRIPTION

Fifteen acres lying south and west of the town road in NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 17, Town 9 North, Range 6 East, Town of Prairie du Sac, Sauk County, Wisconsin.

ACQUISITION HISTORY

With funds raised by the Green Tree Garden Club in Milwaukee, the Nature Conservancy purchased the bluff from Mr. and Mrs. Carl Lichter of Sauk City in 1963. The property was subsequently transferred to the University of Wisconsin in 1963.

REFERENCES

Iltis, Hugh. Lodde's Mill Bluff, a Wisconsin flora treasure house.
Unpublished paper, Wisconsin Chapter, Nature Conservancy.

A CHECKLIST OF VASCULAR PLANTS OF LODDE'S MILL BLUFF²

- Aconitum columbianum (A. noveboracense) - Blue Monkshood; cool sandstone cliff
- Actaea rubra - Red Baneberry; mesic Basswood forest
- Adiantum pedatum - Maidenhair fern; mesic Basswood forest
- Agropyrum trachycaulum var. glaucum - Wheat grass; oak opening at top of bluff
- Ambrosia trifida - oak woods
- Anemone cylindracea - Prairie Anemone; any prairie habitat & oak opening
- Anemone patens var. Wolfgangiana - Pasque Flower
- Anemone quinquefolia - Wood Anemone; mesic Basswood forest
- Anemone virginiana - Thimble-weed, Anemone; mesic Basswood forest
- Andropogon gerardi - Big Blue Stem; prairies, sandy slope base end of bluff, E-end
- Andropogon scoparius - Little Blue Stem; prairies & calcareous cliffs
- Antennaria (dioica?) - Pussy Toes; prairies & rocky oakwoods
- Antennaria (parlinii?) - Pussy Toes; oak opening
- Aquilegia canadensis - Columbine; cool and dry, sunny or shady cliffs and mesic forests
- Arabis lyrata - Rock Cress; sandstone & limestone cliffs, Juniper glade
- Aralia nudicaulis - Wild Sarsaparilla; Basswood forest
- Aralia racemosa - Spikenard; Basswood forest and cliff
- Arenaria lateriflora - Grove Sandwort; edge of woods
- Arenaria stricta ssp. stricta - Sandwort; limestone Juniper glade & cliffs on top
- Arisaema triphyllum - Jack in the Pulpit; mesic Basswood forest
- Artemisia caudata - Wormwood; sandstone cliff and calcareous cliffs on top
- Artemisia ludoviciana - Wormwood; prairie in saddle, west end of bluff
- Asarum canadense - Wild Ginger,; mesic Basswood forest

²Checklist by Hugh Iltis

- Asclepias verticillata - Prairie Milkweed; prairies & oak openings
- Asclepias exaltata - Showy Milkweed; mesic Basswood forest
- Asclepias tuberosa - Orange Milkweed or Butterflyweed; prairie in saddle, W-end
- Aster azureus - Rough Prairie Aster; prairies and dry cliff ledges
- Aster laevis - Smooth Aster; open sandy base of cliff
- Aster oblongifolius - Prairie Aster; prairie and calcareous cliff
- Athyrium felix-femina - Ladies Fern; mesic Basswood forest
- Aureolaria grandiflora - False Foxglove; oak opening top of bluff
- Betula papyrifera - Paper birch; mesic Basswood forest and top of cliffs on edge of prairie
- Bouteloua curtipendula - Side oats Gramma; prairies and dry calcareous ledges
- Bouteloua hirsuta - Hairy Grama; prairies and dry calcareous ledges or sandy outcrops
- Campanula rotundifolia - Harebell; sandstone cliffs and calcareous outcrops
- Camptosorus rhizophyllus - Walking fern; cliffs
- Carex spp. - Sedge; Maple woods
- Carex eburnea - Sedge; calcareous cliff
- Carex pensylvanica - Sedge; woods and goat prairies
- Carex sprengelii - Sedge; Maple woods
- Carya cordiformis - Bitternut Hickory; dry oakwoods on top
- Carya glabra - Shagbark Hickory; dry oakwoods on top and mesic woods near base
- Caulophyllum thalictroides - Blue Cohosh; mesic Basswood forest
- Celastrus scandens - Bittersweet; oakwoods and oak openings
- Celtis occidentalis - Hackberry; open damp sandy top of talus
- Cheilanthes Feei - Fragile Lip Fern; calcareous cliffs near and on top
- Chenopodium gigantospermum - Maple-leaved Goosefoot; cliff and dry ledges

- Chenopodium spp. - Goosefoot; dry sandstone cliff ledges
- Clematis virginiana - Virgins Bower; mesic woods
- Cornus racemosa - Prairie Dogwood; open woods
- Cornus rugosa - Dogwood; Basswood forest base of cliff
- Cryptogramma stelleri - Fragile Cliff Bracke; cool shade cliff
- Cystopteris fragilis - Fragile Fern; sandstone cliff
- Cystopteris bulbifera - Bulbet Fern; sandy woods & cliff
- Danthonia spicata - Poverty Grass, Oat Grass; oak opening and prairies
- Desmodium illinoiense - Tick-trefoil; prairies and oak openings
- Dicentra (cucullaria?) - Dutchmans Britches; Basswood forest
- Diervilla lonicera - Bush-Honeysuckle; cool woods near base of cliff
- Dioscorea (villosa) - Wild Yam; cool woods near base of cliff
- Draba reptans - Whitlow Grass; dry, calcareous Juniper glade, top of ridge
- Elymus canadensis - Wild Rye; sandstone cliff
- Eragrostis spectabilis - Lovely Love Grass; prairie and sandy places
- Erigeron pulchellus - Showy Fleabane; open upland oakwoods
- Erigeron strigosus - Prairie Fleabane (Comp.); - oak opening and prairie
- Euonymus atropurpurea - Wahoo; base of cliff near open E-end of bluff
- Eupatorium purpureum - Joe Pye Weed; damp base of cliff, oakwoods
- Eupatorium sessilifolium - White Joe Pye Weed; oak opening on top of bluff
- Euphorbia corollata - Flowering Spurge; prairie & oak opening
- Fragaria (virginiana?) - Strawberry; sandstone cliff
- Galium boreale - Northern Bedstraw; mesic Basswood forest
- Galium concinnum - Pretty Bedstraw; mesic Basswood forest
- Galium triflorum - Three flowered Bedstraw; Basswood forest

- Gentiana quinquefolia - Gentian; thickets and edge of prairie near top
- Geranium maculatum - Wild Cranesbill; mesic Basswood forest
- Gerardia aspera - Gerardia; Xeric Prairie
- Goodyera pubescens - Rattlesnake Plantain; oakwoods, upper slopes
- Habenaria viridus var. bracteata - oak woods
- Hackelia virginiana - Beggars Lice; sandstone cliff
- Helianthus strumosus - Sunflower; prairie, saddle W. end
- Helianthemum canadense - Prairie on top.
- Heuchera (richardsonii?) - Alum root; sandstone cliff
- Humulus lupulus - Hops; talus at open damp base of sandstone cliff
- Hydrophyllum virginianum - Waterleaf; mesic Basswood forest
- Hystrix patula - Bottlebrush Grass; mesic Basswood forest
- Ilex verticillata - Deciduous Holly; thickets, base of cliff
- Isopyrum bitermatum - Mesic basswood
- Juncus tenuis - Rush; oak opening top of bluff
- Juniperus communis depressa - Juniper; sandstone cliffs and rocky outcrops on top
- Juniperus virginiana - Red Cedar; mostly oak opening and prairies
- Koeleria cristata - June Grass; prairie and oak opening
- Krigia biflora - Dwarf Dandelion; open oak woods
- Kuhnia eupatorioides - False Boneset; prairies
- Lespedeza capitata - Prairie Clover; prairies
- Linum medium - Wild or Prairie Flax; prairies
- Lithospermum canescens - Orange Pucoon; prairies and limestone glade
- Lithospermum incisum - Yellow Pucoon; prairies at base of SW slope
- Lonicera dioica - Honeysuckle; sandstone cliff, shade or sun

- Lysimachia ciliata - Fringed Loosestrife; open sandy top of talus at base of cliff
- Maianthemum canadensis - Canada Mayflower; sandstone cliff and sandy cool woods
- Melilotus alba - White Sweet Clover; very common, top of cliff & in prairie
- Menispermum canadensis - Moonseed Vine; mesic woods and cliff
- Monarda fistulosa - Beebalm; prairies and oak openings
- Monarda punctata - Horse Mint; sunny sandstone ledges, base of cliff, E-end
- Muhlenbergia (racemosa?) - Muhly Grass; sandstone cliff
- Napaea dioica - Prairie Mallow; low thicket just below farm road on Honey Creek, just beneath big N-facing cliff.
- Nepeta cataria - Catnip; sandstone cliff
- Oenothera rhombipetala - Sand prairie Evening Primrose; ledges, prairies
- Oenothera biennis - Evening Primrose; prairie top of cliff
- Opuntia macrohiza - Prickly Pear Cactus; dry limestone glade on top, soft sandy ledges at base of cliff
- Orchis spectabilis - Showy Orchid; mesic Basswood forest
- Osmorhiza claytoni - Wild Licorice; mesic Basswood forest
- Ostrya virginiana - Hop hornbeam; woods
- Panicum latifolium - Broadleaved Panic Grass; open oakwoods, base of SW slope
- Panicum oligosanthos var. Scribnerianum - Panic Grass; oak opening, top
- Panicum perlongum - Panic Grass; oak opening, top of bluff
- Panicum praecocius - Panic Grass; oak opening
- Panicum virgatum - Switch Grass; prairies
- Parietaria pensylvanica - Pellitory; sandstone cliff
- Parthenocissus quinquefolia - Virginia Creeper; rich woods
- Pellaea glabella - Smooth Cliff Brake; sandstone and esp. limestone cliffs
- Penstemon gracilis var. wisconsinensis - Bearded tongue; oak opening

- Petalostemum purpureum - Purple Prairie Clover; prairies
- Phlox pilosa - Wild Phlox; open edge of upland forest
- Physocarpus opulifolius - Ninebark; sandstone cliff
- Phryma leptostachya - Lop seed; rich Basswood forest
- Poa compressa - Canada Blue grass; (alien) prairies and oak openings
- Poa pratensis - Kentucky Bluegrass - (alien) open habitat
- Polemonium reptans - Jacobs Ladder; rich Basswood forest
- Polygonatum commutatum - Solomons Seal; edge of prairies
- Polypodium virginianum - Polypody; sandstone cliffs
- Populus grandidentata - Bigtooth Aspen; mesic Basswood forest
- Populus tremuloides - Trembling Aspen; top of bluff
- Potentilla arguta - Prairie Cinquefoil; prairies and oak openings
- Prenanthes alba - Colts foot; rich woods
- Pteretis pensylvanica - Ostrich Fern; rich woods near base of bluff
- Pyrola elliptica - Shinleaf; upland oakwoods, mesic basswood
- Quercus alba - White Oak; mesic oakwoods
- Quercus macrocarpa - Bur Oak; oak opening on top and mesic oakwoods
- Quercus rubra - Red Oak; mesic N-facing Basswood forest and upland oak forest
- Quercus velutina - Black Oak; oak opening and upland oak forest
- Rhus glabra - Smooth Sumac; prairies and oak opening
- Rhus radicans - Poison Ivy; Common, Rich Basswood forest, dry oak forest opening
on top
- Ribes cynosbati - Gooseberry; oak and Basswood forest
- Rubus "alleghehiensis" Blackberry; mesic oakwood SE base
- Rubus strigosus - Raspberry; sandstone cliff
- Rudbeckia hirta - Blackeyed Susan; sandstone cliff

- Rudbeckia laciniata - Coneflower; talus at open damp base of sandstone cliff
- Sanguinaria canadensis - Bloodroot; rich Basswood forest
- Sanicula spp. - Black Snakeroot; rich Basswood forest
- Scrophularia lanceolata - oak woods
- Scutellaria leonardi - Prairie Skullcap; dry limestone glade and prairie
- Sedum Telephium - telephium
- Silphium perfoliatum - Cup plant; damp open base of cliff
- Sisyrinchium sp. - Blue-eyed Grass; dry open on top
- Smilacina racemosa - False Solomons Seal; rich Basswood forest
- Smilacina stellata - False Solomons Seal; sandy open base of sandstone cliff at E-end top of talus
- Smilax ecirrhata - Carrion Flower; rich Basswood forest
- Smilax herbacea - Carrion Flower; rich Basswood forest
- Smilax hispida - Catbrier; rich Basswood forest
- Solanum nigrum - Black Nightshade; sandstone cliff
- Solidago flexicaulis - Zigzag Goldenrod; rich Basswood forest
- Solidago gigantea - Smooth Goldenrod; rich Basswood forest at base of cliff
- Solidago nemoralis - Goldenrod; prairies
- Solidago sciaphila - Cliff Goldenrod; open sandstone cliff, but mainly limestone cliffs at very top
- Solidago speciosa - Showy Goldenrod; prairies and open sandy places
- Solidago ulmifolia - Elm-leaved Goldenrod; open dry woods
- Sorghastrum nutans - Indian Grass; prairies
- Sporobolus (neglectus?) - Dropseed grass; prairies and calcareous outcrops
- Staphylea trifolia - Bladdernut; rich woods
- Stipa spartea - Needle and Thread Grass, Porcupine Grass; dry sandy prairie at S. point.

Sullivantia renifolia - Sullivantia; cool shady sandstone cliff

Tilia americana - Basswood; sandy steep cool N-facing slope below cliff

Thalictrum dioicum - Early Meadow-Rue; rich Basswood forest

Trillium Gleasoni (flexipes) - Nodding White Trillium; rich Basswood forest

Triosteum perfoliatum - Horse Gentian; oak opening, top of bluff

Uvularia grandiflora - Yellow Bellwort; oak opening, top of bluff

Verbascum thapsus - Mullein; calcareous "diggings" top of cliff

Veronicastrum virginicum - Culvers Root; open woods, top of bluff

Viburnum acerifolium - Maple-leaved Viburnum; upland oakwoods

Viburnum rafinesquianum - Downy Arrow-wood; upland oakwoods, mesic basswood

Viola pedatifida - False Birdsfoot Violet; oak opening

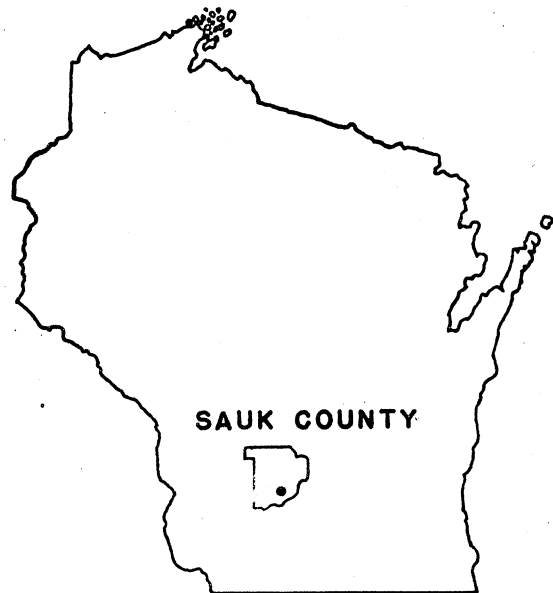
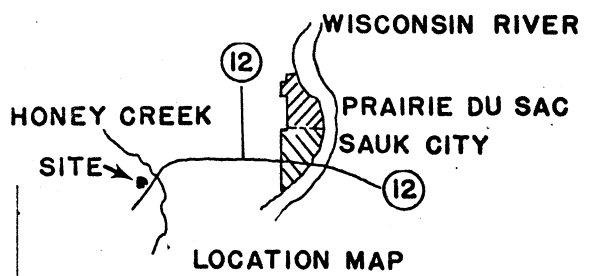
Viola sororica - Hairy blue violet; on summit

Vitis riparia - Riverbank Grape; thickets, woods and oak openings

Xanthoxylum americanum - Prickly Ash; oak opening, top of bluff

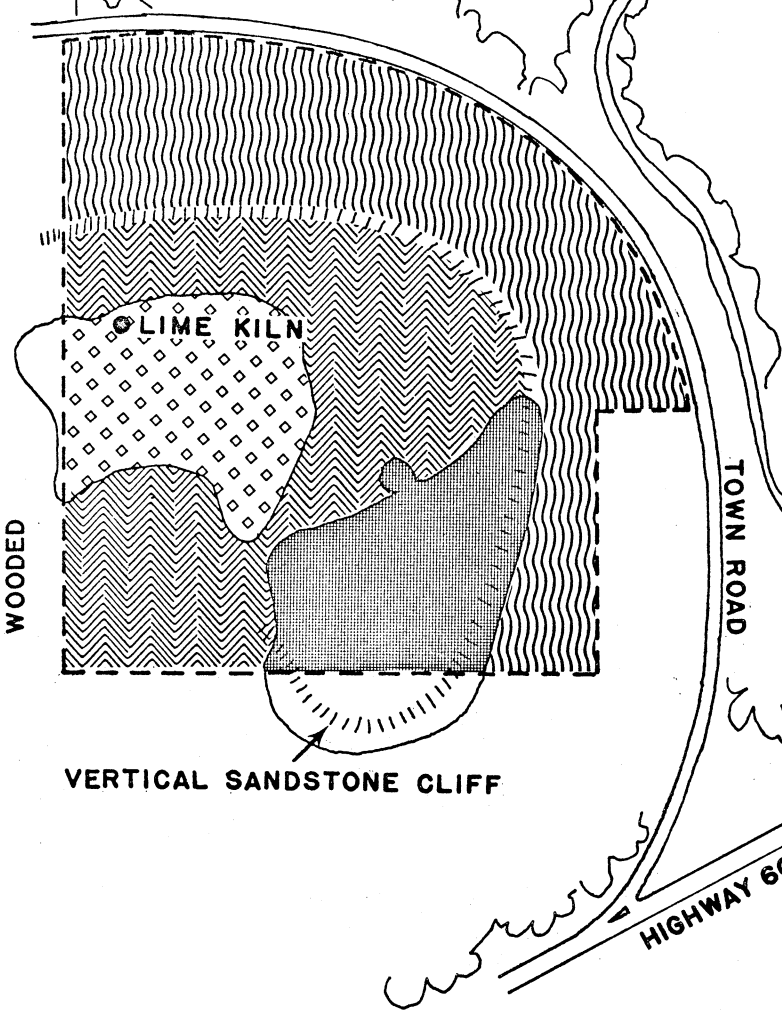
Zigadenus elegans ssp. glaucus - White Camass or Death Camass - N-facing sunny calcareous sandstone cliff and open slope.





LODDE'S MILL BLUFF SCIENTIFIC AREA

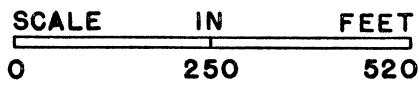
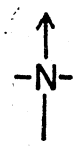


DITCH

CROPLAND



-  BASSWOOD - BIRCH - ASPEN
MESIC WOODS
-  DRY WOODS
-  OAK OPENING
-  CEDAR GLADE



PASQUE FLOWER HILL

Pasque Flower Hill, a 5.7 acre tract of dry prairie on the outskirts of Madison is a good example of the grassland vegetation which once was found on steep calcareous hillsides throughout southwestern Wisconsin.

Like Oliver Prairie, another unique "high lime" prairie 35 miles to the south (see page 18), Pasque Flower Hill has a steep slope and a shallow soil that thinly covers the limestone bedrock beneath. These factors plus rapid run-off of rainfall and the prairie's unprotected exposure on a northwest slope, make for a very dry environment.

As a consequence, short hardy grasses generally found on the arid western plains thrive here. Especially important are side oats grama (Bouteloua curtipendula), dropseed (Sporobolus heterolepsis) and little bluestem (Andropogon scoparius). Other less numerous grasses are Indian grass (Sorghastrum nutans), big bluestem (Andropogon gerardi), purple love grass (Eragrostis spectabilis), fall witchgrass (Leptoloma cognatum), early panic grass (Panicum praecocius), and Leiberg's panic grass (P. leibergii).

Grasses from nearby pastures, such as timothy and bluegrasses are also found amidst the true prairie species.

Several small tough species of sedge grow abundantly among the limestone chips including Carex richardsonii, a rare species. Other plants seeming to prefer the rockiest areas are pussy-toes (Antennaria plantaginifolia), birds-foot violet (Viola pedata), and showy goldenrod (Solidago speciosa). Outstanding among the many flowering plants on the prairie are the shooting star (Dodecatheon meadia) and the pasque flower (Anemone patens var. Wolfgangiana). Both plants are spring-bloomers but the pasque flower is the earliest, showing its short-stemmed lavender flowers and silky leaves in April.

This early blooming habit has enabled the pasque flower to flourish in adjacent pastures where other prairie species have been destroyed by grazing. The pasque flower survives by blooming and completing its yearly cycle of growth well before cattle are turned out to graze in the spring.

Left undisturbed, this perennial apparently can grow to a considerable age. A plant reported from Grant County had a crown four inches in diameter that sent up more than 30 flowering stems.

Yellow star grass (Hypoxis hirsuta), which follows a spring display of shooting star, blooms through September. It is joined in early autumn by flowers of the silky aster (Aster sericeus), stiff gentian (Gentiana quinquefolia), small blazing star (Liatris cylindricea) and showy goldenrod (Solidago speciosa).

Trees and shrubs, especially pioneer species of the oak-hickory forest, are well represented here. Disturbed ground surrounding an old limestone quarry on the north slope of the hill now supports a growth of quaking aspen (Populus tremuloides), pin cherry (Prunus pennsylvanica), smooth sumac (Rhus glabra) and raspberry (Rubus occidentalis). Though the aspen are all of about the same age, their height varies considerably with the depth of underlying soil. Some stems, only one foot high, are 25 years old.

While aspen growth is slow on the rocky soil and does not pose much threat to the prairie, sumac growth is more vigorous. Unless controlled by periodic fires of the type once common on the prairies, the sumac would eventually spread over the hillside and shade out the sun-loving grasses and herbs.

More typical of the successional species to be found on dry prairie openings are the bur oak (Quercus macrocarpa), prairie willow (Salix humilis), and red cedar (Juniperus virginiana).

BIOTA

Animals found on the steep, open hillside are generally ground-dwelling or burrowing species such as mice, ground squirrels, woodchucks, gophers and rabbits. Most of the animal dens are on the north face, below the edge of the ridge. Here ant hills are also numerous.

Birds seen in the area include the grasshopper sparrow and meadowlark, robin, blue-jay, starling and various hawks.

GEOLOGY

The bedrock is Platteville dolomite of the Galena-Black River formation. It is underlain by St. Peter Sandstone. Though this hill is covered by very little glacial debris, surrounding areas are capped by the Johnson ground moraine.

SOIL

Soil depth and texture varies from slightly sandy silt loam, two to three inches deep on the ridgetop, to silty loam two feet deep at the base of the slope.

Due to the thinness of the soil, its profile is generally poorly developed and contains many fragments of bedrock. The soil is rich in calcium and high in organic matter. This decomposed plant material, which is often twice the amount found in deciduous forest soil, not only increases the soil water holding capacity but also insulates the soil.

WEATHER

The nearest weather station is in Madison, Dane County. Measurements recorded there are as follows:

Total precipitation----- 30.2"

Total snowfall----- 38.4"

January mean temperature-- 17.5 F

July mean temperature----- 71.1 F

DIRECTIONS

At the junction of State Highway 18/151 and State Highway 12/14, take Highway 18/151 south 0.1 mile to the Raymond Road exit. Follow Raymond Road west 2.5 miles to intersection with Gammon Road. About 250 feet west of the intersection on the left side of Raymond Road is Pasque Flower Hill.

SURVEY DESCRIPTION

In NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 2, 5.76 acres, Town 6 North, Range 8 East, Town of Verona, Dane County, Wisconsin.

ACQUISITION HISTORY

The Friends of the Arboretum purchased the property from the First Unitarian Society of Madison in 1967. The Friends deeded the property to the University of Wisconsin in the same year. The University manages the land, occasionally burning the slope in early spring to prevent woody growth from encroaching on the prairie. The last burn was in April of 1971.

REFERENCE

Zimmerman, J. and Loucks, O.L., "The Raymond Road Prairie", unpublished.

CHECKLIST FOR PASQUE FLOWER HILL

DANE COUNTY, WISCONSIN¹

Acer negundo - Boxelder

Agrostis alba - Redtop

Ambrosia artemisiifolia - Ragweed

Amorpha canescens - Leadplant

Andropogon gerardi - Big Bluestem

Andropogon scoparius - Little Blue-stem (abundant)

Anemone cylindrica - Thimbleweed

Anemone patens - Pasque Flower (abundant)

Antennaria sp. - Pussy Toes

Arenaria stricta - Startwort

Asclepias syriaca - Common Milkweed

Asclepias verticillata - Prairie Milkweed

Asparagus officinale - Common Asparagus

Aster azureus - Azure Aster

Aster ericoides - Heath Aster

Aster laevis - Smooth Prairie Aster

Aster linariifolius - Flax-leaved Aster

Aster oblongifolius - Rigid Aster

Aster ptarmicoides - Early White Aster

Aster pilosus

Aster sericeus - Silky Aster

Botrychium sp. - (probably simplex)

¹Checklist by James Zimmerman.

Bouteloua curtipendula - Side-oats Grama
Carex abdita - Sedge (abundant)
Carex Meadii - Sedge
Carex richardsonii - Sedge (abundant)
Carex pensylvanica - Sedge
Cirsium hillii - Hill's Thistle
Convolvulus sepium - Wild Morning-Glory
Corylus americana - American Hazelbush
Coreopsis palmata - Palmate Coreopsis
Cornus racemosa - Gray Dogwood
Dodecatheon meadia - Shooting-star (abundant)
Eragrostis spectabilis - Purple Love Grass
Erigeron strigosus - Daisy Fleabane
Euphorbia corollata - Flowering Spurge
Gentiana quinquefolia - Stiff Gentian (abundant)
Gentiana puberula or hybrid - (one plant)
Geum triflorum - Avens, Prairie Smoke
Gnaphalium obtusum - Cudweed
Helianthemum bicknellii - Frostweed
Helianthus rigidus - Staff Prairie Sunflower
Helianthus occidentalis - Naked-stem Sunflower
Heuchera richardsonii - Alumroot
Hypericum perforatum - (St. Johnswort - introduced)
Hypoxis hirsuta - Stargrass (abundant)
Juglans sp. (planted)

Kuhnia eupatorioides - False Boneset
Juniperus virginiana - Red Cedar (two)
Lespedeza capitata - Bushclover
Lactuca canadensis - Canada Lettuce
Lepidium campestre - Field peppergrass
Leptoloma cognatum - Fall Witchgrass
Lechea sp. - Pinweed
Liatris aspera - Blazing-star
Liatris cylindracea - Small Blazing-star (abundant)
Linum sulcatum - Yellow Prairie Flax
Lithospermum canescens - Orange Puccoon
Lithospermum incisum - Yellow Puccoon
Lobelia spicata - Pale-spike Lobelia
Lonicera tatarica - Honeysuckle
Melilotus officinalis - Sweet Clover
Melilotus alba - Sweet Clover
Monarda fistulosa - Beebalm
Oenothera biennis - Evening Primrose
Oxalis stricta - Yellow Sorrel
Oxalis violacea - Violet Sorrel
Panicum praecocius - Early Panic Grass
Panicum leibergii - Leiberg's Panic Grass
Parthenocissus inserta - Woodbine
Pastinaca sativa - Parsnip
Phleum pratense - Timothy

Petalostemum purpureum - Purple Prairie Clover

Phlox pilosa - Prairie Phlox

Physalis virginiana - Ground-cherry

Polygala polygama - Milkwort

Poa compressa - Canada Blue Grass

Poa pratensis - Kentucky Blue Grass

Prunus serotina - Black Cherry

Prunus pensylvanica - Pin Cherry

Polygonatum commutatum - Solomon's-seal

Populus tremuloides - Quaking Aspen

Potentilla arguta - Tall Cinquefoil

Quercus macrocarpa - Bur oak

Pyrus ioensis - Wild Crab

Ranunculus rhomboideus - Prairie Buttercup

Ratibida pinnata - Prairie Coneflower

Rhus glabra - Smooth Sumach

Rosa sp. - Prairie Rose

Rubus occidentalis - Black Raspberry

Rudbeckia hirta - Black-eyed Susan

Salix humilis - Prairie Willow

Sambucus canadensis - Black Elderberry

Setaria lutescens

Setaria viriolis

Sisyrinchium campestre - Blue-eyed Grass

Smilax herbacea - Carrion Flower

Solanum dulcamara - Nightshade

Solidago nemoralis - Old-Field Goldenrod

Solidago canadensis - Common Goldenrod

Solidago rigida - Stiff Goldenrod

Solidago speciosa - Showy Goldenrod (abundant)

Sorghastrum nutans - Indian Grass

Spiraea Vanhouttei (planted)

Sporobolus heterolepis - Northern Drop-seed Grass (abundant)

Stipa spartea - Needle Grass

Taraxacum officinale - Dandelion

Tragopogon dubius - Goatsbeard

Ulmus americana - Elm (planted)

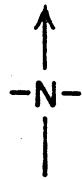
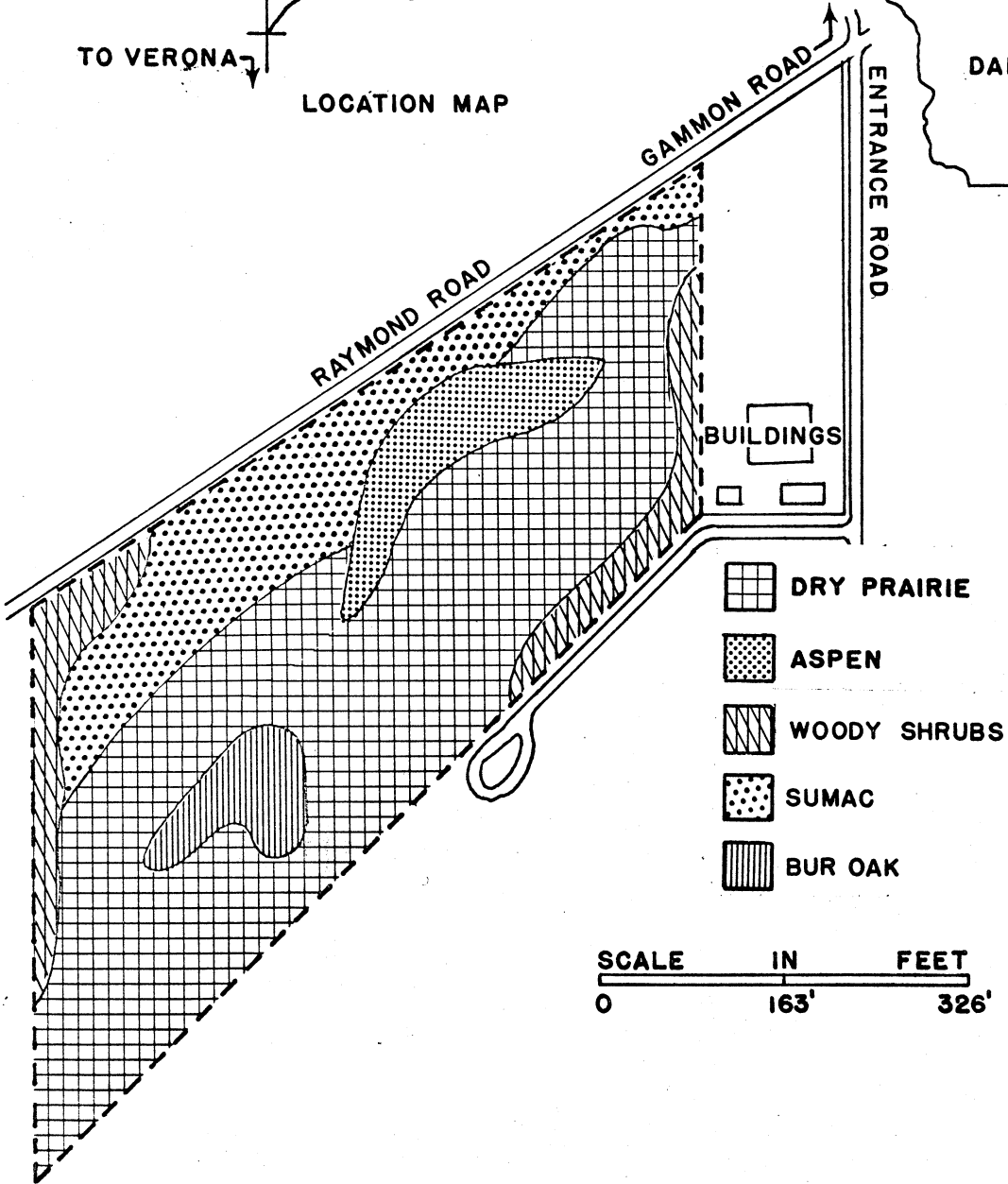
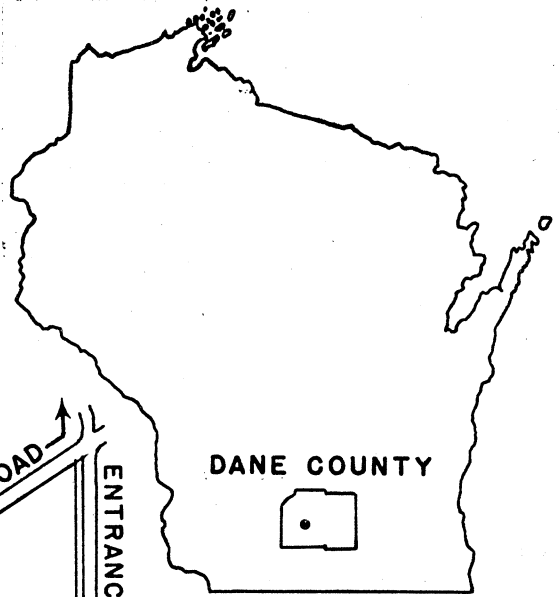
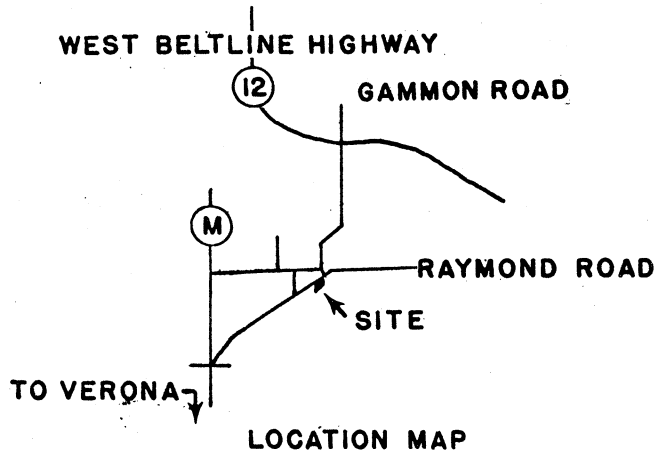
Viola pedata - Bird's-foot violet

Verbascum thapsus - Mullein

Vitis riparia - River-bank or Frost Grape

Zizia aurea - Golden Alexanders

PASQUE FLOWER HILL



FINNERUD FOREST

Finnerud Forest is a 300 acre tract of northern upland forest and sphagnum bog on Kawaguesaga Lake in Oneida County.

The major portion of the upland forest is an exceptionally fine stand of even-aged red pine (Pinus resinosa) estimated to be about 130 years old. It is one of the few stands of mature pine left in northern Wisconsin.

The remainder of the forest is mixed hardwood, mainly large-tooth aspen (Populus grandidentata), paper birch (Betula papyrifera), red maple (Acer rubrum), red oak (Quercus rubra), some white pine (Pinus strobus) and balsam fir (Abies balsamea).

Pine forest is the climax vegetation of the vast sandy areas around the Great Lakes. Though the pine forest can be dominated by either red or white pine, red pine tends to favor, as demonstrated here, the sandy elevated areas and ridges. White pine, by contrast, prefers moist sandy lowlands.

Both species of pine give way to northern hardwoods on the better loam soils.

Groundcover is never very heavy beneath a pine forest, but does fluctuate with the age of the trees. When the pine saplings are in a "thicket" stage of growth, most groundcover dies. But as the pines reach about 25 years of age and thin out, ground layer species re-invade.

On the steep south slope above the bog, there is very little vegetation beneath the pine. Wintergreen (Gaultheria procumbens), starflower (Trientalis borealis), Canada mayflower (Maianthemum canadense) and seedlings of white pine are the most common species.

Toward the northern end of the upland where red pine dominates almost entirely, there is a thin shrub layer of beaked hazel (Corylus cornuta). Again, the star flower and Canada mayflower are present, but wild sarsaparilla (Aralia nudicaulis) and bracken (Pteridium aquilinum) are also notable here.

Where the forest is mixed, maple leaf viburnum (Viburnum acerifolium) and large-leaf aster (Aster macrophyllus), sedge (Carex sp.), barren strawberry (Waldsteinia fragarioides) and seedling of red oak and red maple are abundant in the understory.

The presence of black spruce (Picea mariana) and a few tamarack (Larix laricina) makes the 35 acre bog a conifer bog. However, the spruce cover is very thin and discontinuous. A small lake within the bog lies just west of the property line.

The most conspicuous species in the bog are sedges (Carex sp.), Labrador tea (Ledum groenlandicum), leatherleaf (Chamaedaphne calyculata), bog laurel (Kalmia polifolia), small cranberry (Vaccinium oxycoccus) and three-leaved false Solomon's seal (Smilacina trifolia).

Past disturbance on the property has been slight. Some timber was cut at the southern end for a log house. The house burned in 1950, causing slight damage to nearby pines. There has also been underplanting of a few hemlock, white cedar and balsam fir.

FAUNA

Fifty-seven species of birds have been observed on the Finnerud property (see bird species list). Particularly notable are the bald eagle, hooded

merganser, olive-sided flycatcher, solitary vireo and Lincoln's sparrow. Mammals sighted include white-tailed deer, red squirrels and bats.

GEOLOGY

The bedrock of this heavily glaciated area is igneous, principally greenstone of the Huronian formation. In this Pre-cambrian age formation there may also be some sedimentary rocks.

Glacial drift is 100 feet or more in depth. Flat land areas represent sandy outwash plain while upland areas are frequently terminal moraine.

The region drains into the Tomahawk River and thence into the Wisconsin River.

SOIL

The greater portion of the upland forest consists of 1 to 2 feet of droughty sandy loam over acid sand and gravel of glacial origins. This gray loam is part of the Pence-Vilas series of podzols.

Found in the bog are acid peat soils of the Spalding group. This peat is a mixture of both moss and wood fiber.

The mixed forest of Jersey Point overlies Vilas sands, developed from deep sandy glacial outwash.

CLIMATE

The nearest weather station is at Big St. Germain Dam, approximately 12 miles to the northeast in Vilas County. Annual averages recorded there are as follows:

Total precipitation ---- 31.6 "

Total snowfall ----- 53.6 "

January mean temp. ----- 12.0 F

July mean temp. ----- 53.6 F

DIRECTIONS

From the bridge over Minocqua Lake, Minocqua, take state highway 51 south for 2.5 miles to Blue Lake Road. Go west 1.3 miles on Blue Lake Road, then north and west 0.8 miles on Agawak Road. At Streater Road, go north about 0.9 miles to the Finnerud's House (Follow "Agnes and George" signs).

SURVEY DESCRIPTION

Three hundred acres in government lots 2,3,4 except the east 950 feet of Lot 2, Section 21, Town 39 north, Range 6 East, Town of Minocqua, Oneida County, Wisconsin.

ACQUISITION HISTORY

Dr. Clark Finnerud of Chicago purchased the property in 1939 and began donating it in 1/9 parcels to the University of Wisconsin in 1957. Seven-ninths of the property is presently owned and managed by the U.W. Arboretum Committee. The Finneruds now reside in the home at the property entrance.

REFERENCES

- Anderson, R.C. 1965. Light and Precipitation in Relation to Pine Understory Development.
- Nee, Michael. Finnerud Forest Scientific Area, Oneida Co., Wisconsin. Unpublished report.

Potzger, J.E. 1946. Phytosociology of the Primeval Forest in Central-northern Wisconsin and Upper Michigan and a Brief Post-Glacial History of the Lake Forest Formation. Ecol. Mono. 16:211-250.

Swain, A.M. 1964. Relationships of Understory Plants to Age and Density of Conifer Forests, University of Wisconsin MS Thesis.

FINNERUD FOREST
BIRD SPECIES LIST (1971)¹

<u>Species</u>	<u>Totals</u>	<u>Location*</u>
Common Loon	2	L
Great Blue Heron	2	L
Hooded Merganser	8	L
Broad-winged Hawk	2	F
Bald Eagle	1	
Ruffed Grouse	1	F
Woodcock	2	L,C
Spotted Sandpiper	1	L
Black Tern	2	L
Ruby-throated Hummingbird	2	F,C
Belted Kingfisher	1	L
Yellow-shafted Flicker	4	F
Yellow-bellied Sapsucker	4	F
Hairy Woodpecker	1	F
Downy Woodpecker	3	F
Eastern Kingbird	3	
Great Crested Flycatcher	2	F
Eastern Phoebe	4	C,F
Least Flycatcher	7	F
Eastern Wood Pewee	8	F
Olive-sided Flycatcher	2	B
Barn Swallow	1	B
Purple Martin	1	
Blue Jay	2	F
Common Raven	1	
Common Crow	2	F
Black-capped Chickadee	7	F
White-breasted Nuthatch	8	F
Red-breasted Nuthatch	3	F
Brown Creeper	2	F
Robin	2	C,F
Hermit Thrush	12	F
Veery	4	F
Cedar Waxwing	5	F,B
Solitary Vireo	4	F
Red-eyed Vireo	22	F
Black-and-white Warbler	2	
Nashville Warbler	8	B
Parula Warbler	2	F
Myrtle Warbler	8	F,B
Black-throated Green Warbler	4	F
Blackburnian Warbler	2	F
Pine Warbler	15	F
Ovenbird	16	F

¹From Scientific Areas Bird Survey, 1971. Finnerud represented the northern pine forest community in this survey.

<u>Species</u>	<u>Totals</u>	<u>Location</u>
Yellowthroat	4	B
Red-winged Blackbird	1	L
Common Grackle	5	F
Brown-headed Cowbird	4	F
Rose-breasted Grosbeak	2	F
Evening Grosbeak	4	F
Purple Finch	13	F,B
American Goldfinch	2	F
Red Crossbill	2	B
Chipping Sparrow	9	F,B
White-throated Sparrow	10	B
Lincoln's Sparrow	7	B
Song Sparrow	17	F,C,B,L

*Locations

- C - Clearing
- B - Bog
- L - Lake
- F - Forest

FINNERUD FOREST PLANT SPECIES LIST

TREES

Abies balsamea - Balsam fir

Acer rubrum - Red maple

Acer saccharum - Sugar maple

Acer spicatum - Mountain maple

Betula lutea - Yellow birch

Betula papyrifera - Paper birch

Juglans cinerea - Butternut

Larix laricina - Tamarack

Picea mariana - Black spruce

Pinus banksiana - Jack pine

Pinus resinosa - Red pine

Pinus strobus - White pine

Populus grandidentata - Large-tooth aspen

Populus tremuloides - Quaking aspen

Quercus rubra - Red oak

Robinia pseudoacacia - Black locust

Thuja occidentalis - White cedar

Tsuga canadensis - Hemlock

SHRUBS AND HERBS

Achillea millefolium - Yarrow

Actaea pachypoda - White baneberry

Alnus rugosa - Speckled alder

- Amelanchier sp. - Serviceberry
- Anaphalis margaritacea - Pearly everlasting
- Andromeda glaucophylla - Bog rosemary
- Anemone quinquefolia - Wood anemone
- Antennaria sp. - Pussy-toes
- Apocynum androsaemifolium - Dogbane
- Aquilegia canadensis - Columbine
- Aralia nudicaulis - Wild sarsaparilla
- Arceuthobium pusillum - Dwarf Mistletoe
- Arctostaphylos uva-ursi - Bearberry
- Aster macrophyllus - Big-leaved aster
- Bromus purgans - Brome
- Calla palustris - Water arum
- Calopogon pulchellus - Grass pink
- Caltha palustris - Marsh marigold
- Cardamine pennsylvanica - Bittercress
- Carex spp. - Sedges (numerous species)
- Ceratophyllum demersum - Coontail
- Cetraria sp.
- Chamaedaphne calyculata - Leatherleaf
- Chimaphila umbellata - Pipsissewa
- Clintonia borealis - Bluebeard lily
- Comandra umbellata - Bastard toadflax
- Comptonia peregrina - Sweet fern
- Coptis trifolia - Gold thread

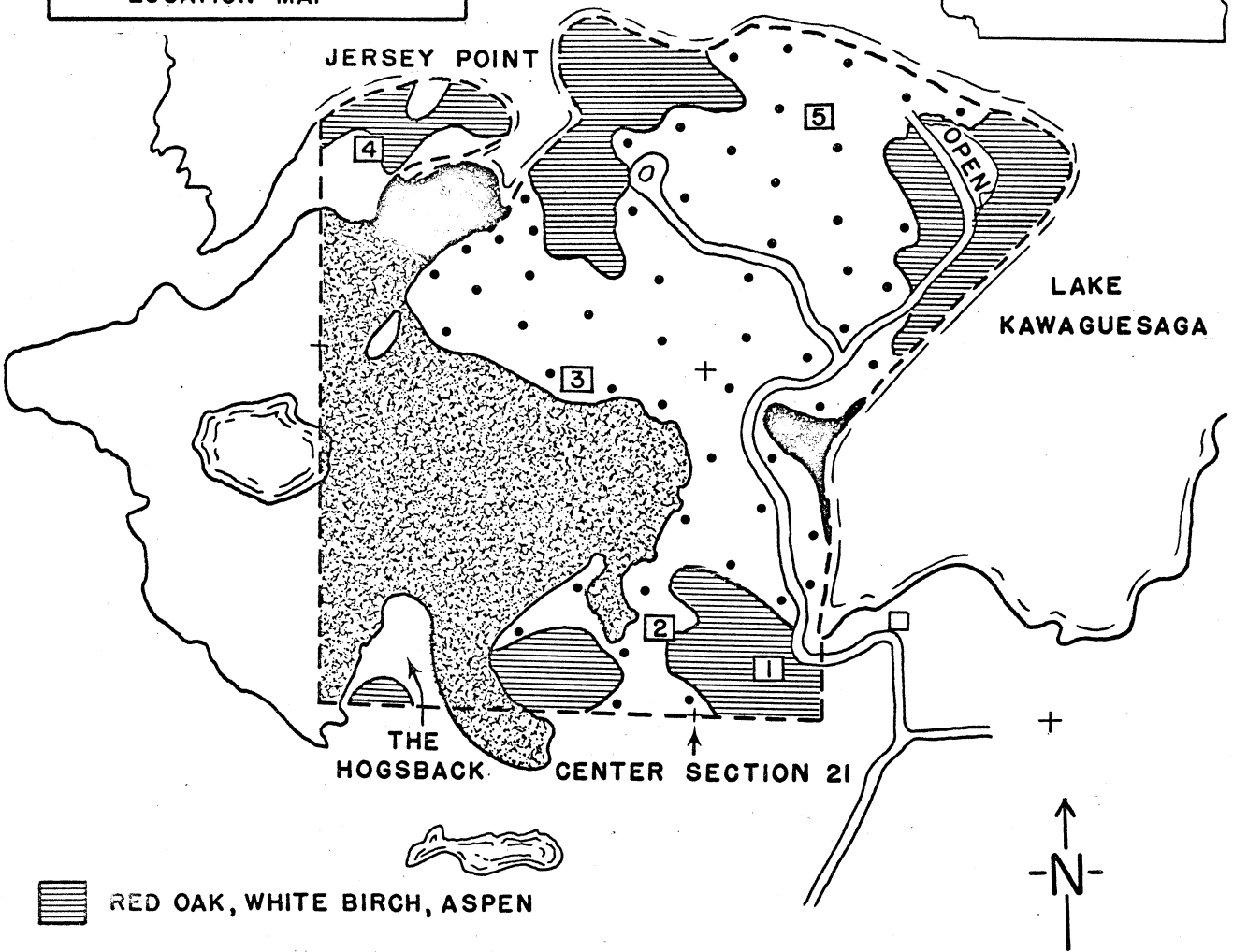
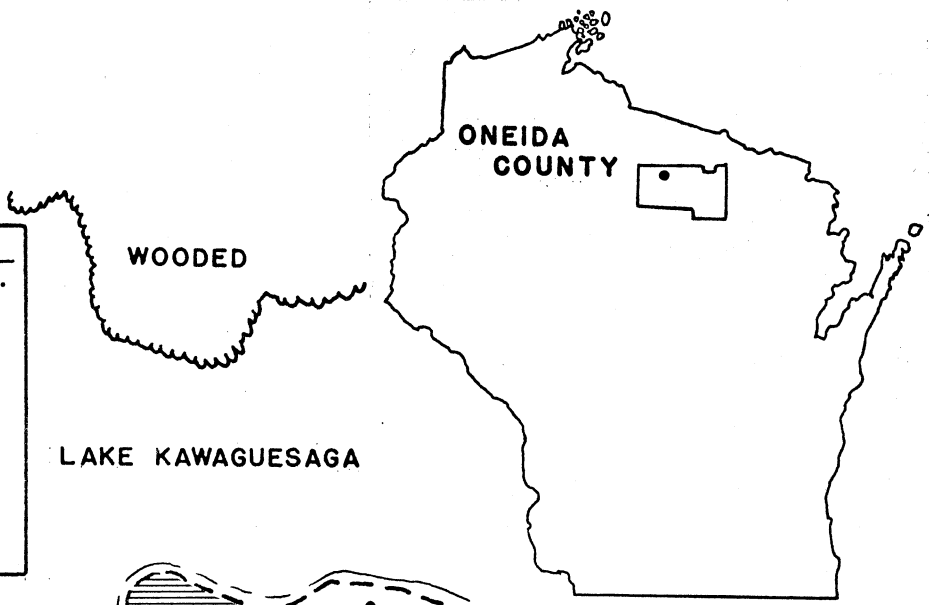
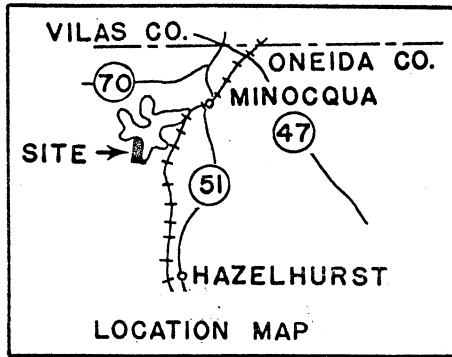
- Cornus canadensis - Bunchberry
- Cornus rugosa - Round-leaved dogwood
- Corallorhiza trifida - Early coralroot
- Corylus cornuta-Beaked hazelnut
- Diervilla lonicera - Bush honeysuckle
- Drosera rotundifolia - Sundew
- Dryopteris spinulosa - Florist's fern
- Dulichium arundinaceum
- Epigea repens - Trailing arbutus
- Eriophorum augustifolium - Narrow-leaved cotton grass
- Eriophorum spissum - Hare's tail grass
- Fragaria virginiana - Wild strawberry
- Gaultheria procumbens - Wintergreen
- Gnaphalium obtusifolium - Cudweed
- Goodyera repens - Rattlesnake plantain
- Habenaria hookeri - Hooker's orchis
- Hieracium floreninum - Yellow hawkweed
- Impatiens capensis - Touch-me-not
- Iris versicolor - Wild Iris
- Kalmia polifolia - Bog laurel
- Ledum groenlandicum - Labrador tea
- Lemma minor - Duckweed
- Linnaea borealis - Twinflower
- Lycopus uniflorus - Water horehound
- Maianthemum canadense - Canada mayflower





Menyanthes trifoliata - Buckbean
Monarda fistulosa - Wild bergamot
Monotropa hypopithys - Pinesap
Monotropa uniflora - Indian pipe
Myriophyllum sp. - Water milfoil
Nemopanthus mucronatus - Mountain Holly
Nuphar variegatum - Yellow waterlily
Onoclea sensibilis - Sensitive fern
Oryzopsis asperifolia - Mountain rice
Osmunda cinnamomea - Cinnamon fern
Osmunda claytoniana - Interrupted fern
Parthenocissus quinquefolia - Virginia creeper
Pedicularis canadensis - Lousewort
Phalaris arundinacea - Reed canary grass
Pogonia ophioglossoides - Rose pogonia
Polygala paucifolia - Fringed polygala
Polygonatum pubescens - Hairy Solomon's seal
Pontedaria cordata - Pickerelweed
Potentilla palustris - Marsh cinquefoil
Prunella vulgaris - Self-heal
Prunus virginiana - Chokecherry
Pteridium aquilinum - Bracken fern
Pyrola secunda - One-sided pyrola
Pyrus sp.
Ranunculus pennsylvanicus - Bristly buttercup

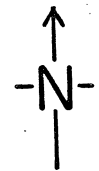
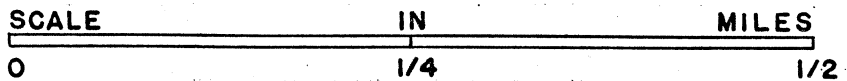
- Rhynchospora sp. - Beak-rush
- Robinia pseudoacacia - Black locust
- Rubus spp. - Blackberry, red raspberry, dewberry
- Rumex acetosella - Red sorrel
- Salix sp. - Willow
- Sarracenia purpurea - Pitcher plant
- Scheuchzeria palustris - Arrow grass
- Scirpus cyperinus - Wool grass
- Smilicina racemosa - False Solomon's seal
- Smilicina trifolia - Three-leaved false Solomon's seal
- Spirodela polyrrhiza - Duckweed
- Streptopus roseus - Twisted stalk
- Taraxacum officinale - Dandelion
- Thelypteris palustris - Marsh fern
- Trientalis borealis - Starflower
- Typha latifolia - Cattail
- Uvularia sessilifolia - Bellwort
- Vaccinium augustifolium - Blueberry
- Vaccinium myrtilloides - Blueberry
- Vaccinium macrocarpon - Cranberry
- Vaccinium oxycoccus - Small cranberry
- Viburnum acerifolium - Arrow-wood
- Viola adunca - Hooked-spur violet
- Viola pubescens - Downy yellow violet
- Waldsteinia fragarioides - Barren strawberry

MOSSES AND CLUBMOSESCalliergonella schreberiDicranum rugosumLycopodium clavatum - Running clubmossLycopodium complanatum - Ground cedarLycopodium lucidulum - Shining club mossLycopodium obscurum - Ground pineLycopodium tristachyumSphagnum spp. - Sphagnum mossesLICHENSCetraria sp.Cladonia alpestrisCladonia cristatellaCladonia verticillataCladonia rangiferina - Reindeer lichenEvernia mesomorphaHypogymnia physodesParmelia caperataParmelia olivaceaParmelia rupestrisParmelia sulcata

FINNERUD FOREST SCIENTIFIC AREA



-  RED OAK, WHITE BIRCH, ASPEN
-  RED PINE (12-24 INCH), WHITE PINE
-  OPEN MARSH
-  SPRUCE, TAMARACK, SPHAGNUM



SAMPLED AREA 1-2-3-4-5

ASHLAND FOREST¹

The Ashland Forest consists of 870 acres of second-growth northern hardwood forest, most of the shoreline of Beaver Dam Lake and a stretch of the Brunswelier River. The property is bordered by the Chequamegon National Forest.

Perhaps the most striking features of the forest are the massive outcrops of bedrock (particularly along the Brunswelier River) and the beaver activity around the lake and river edge.

Much of the vegetation is in various stages of recovery from previous logging disturbance. Like most of northern Wisconsin, this area was subjected to intensive cutting of pine and hemlock. By 1930, the forests were gone and repeated ground fires had slowed recovery of the vegetation. Over the last 40 years, the forest has reclaimed the area, but there are few large trees.

Most of the Ashland Forest has an overstory of mature quaking aspen (Populus tremuloides) and large-toothed aspen (Populus grandidentata) and an understory of young sugar maple (Acer saccharum), 20 to 30 feet tall. Herb species of drier, more open woods are common here: large-leaved aster (Aster macrophyllus), mountain rice (Oryzopsis asperifolia), sedge (Carex sp.), wild sarsaparilla (Ar[^]alia nudicaulis) and beaked hazel (Corylus cornuta). Root sprouts of aspen are also common.

The aspen occasionally occurs in pure stands on south facing slopes like that above Theory Lake. Here the brush layer is thin--mostly beaked hazel and young aspen--and the herb layer is a thick cover of wild sarsaparilla, large leaved aster and bracken (Pteridium aquilinum).

¹ From unpublished paper by Michael Nee

On north facing slopes, sugar maple is commonly found, though none very large and most with multiple stems due to fire damage. A stand that occurs north east of the Brunswailer River also has a compliment of basswood (Tilia americana) and American elm (Ulmus americana). The herb layer is rich in typical mesic forest herbs. Particularly abundant are spring beauty (Claytonia caroliniana), wood nettle (Laportea canadensis), sweet cicely (Osmorhiza claytoni), sugar maple seedlings, and smooth yellow violet (Viola pennsylvanica).

Sugar maple also occurs mixed with hemlock (Tsuga canadensis) and yellow birch (Betula lutea).

Where aspen and sugar maple mix with red maple (Acer rubrum), yellow birch, basswood and black ash (Fraxinus nigra), the canopy is fairly open and the understory brushy with beaked hazel. The ground cover is a mixture of both open and cool forest species: wintergreen (Gaultheria procumbens), bracken, large-leaved aster and dogbane (Apocynum sp.) in the clearings, and bunch berry (Cornus canadensis), Jack-in-the-Pulpit (Arisaema triphyllum), and goldthread (Coptis groenlandica) in the shade.

In the valley bottoms are narrow strips of black ash and white cedar swamp. But, there is very little sphagnum and the footing is rocky. Occasional black ash, red maple, speckled alder (Alnus rugosa), yellow birch and balsam fir (Abies balsamea) also grow here. The herb layer is primarily bluebeard lily (Clintonia borealis), Canada mayflower (Maianthemum canadense), goldthread and florist fern (Dryopteris spinulosa). In one swamp, two plants of white mandarin (Streptopus amplexifolius), a very rare species, have been found.

West of the property in the national forest is a large, true conifer bog with a pure stand of black spruce (Picea mariana) and an understory of sphagnum, Labrador tea (Ledum groenlandicum), blueberry (Vaccinium myrtilloides) and associated species.

Scattered around the edge of Beaver Dam Lake are marshy areas. The most extensive marsh is on the lake's south end. The marshes generally grade from alder thicket to sedge tussocks to shallow open water. Though cattail marsh is not common, the open waters do support waterlilies (Nymphaea and Nuphar spp.), water shield (Brassenia schreberi) and various submerged aquatics.

Large exposed rock outcrops are covered by Cladonia and Stereocaulon lichens. On the cliffs rising out of Beaver Dam Lake, the Umbrilicaria rock tripe lichens are particularly notable.

FAUNA

Beaver are the most conspicuous mammals in the Ashland Forest. There are at least six active beaver lodges and beaver-cut stumps are numerous around the shore of Beaver Dam Lake. On the small stream north of the gorge, the beavers have built a dam.

Many bears are in the area as well as fox, coyote, porcupine and squirrels. White-tailed deer are also present and have heavily grazed the seedlings of hemlock and white cedar. Birds observed include the following: great blue heron, kingfisher, ruffed grouse, whip-poor-will, chimney swift, ruby-throated hummingbird, veery, baltimore oriole, red-winged black bird, raven, blue jay, kingbird, phoebe, purple grackel, cat bird and black-capped chickadee. Muskellunge are reported to be in the lake.

GEOLOGY

The landscape is rugged with numerous kettlehole-like depressions. Dark basalts of Pre-Cambrian Huronian formation can be seen in outcrops on the Brunswailer River. (This formation also includes some slates, quartzites and dolomites.)

Where it does not outcrop, the bedrock is buried under glacial drift of sand, gravel and boulders.

The Brunswailer River has cut a channel through the bedrock in one place forming a gorge with 100 foot high walls. The lake itself was created through the industry of beavers. In the 1930's and 1940's, two concrete dams were built replacing the beaver dam that was probably the largest in the state.

The Brunswailer River is part of the Chippewa River drainage basin.

SOILS

The soils are primarily sandy loams and loamy sands of the Wakefield-Gogebic association, and Ahmeek loam, a shallow soil formed over basaltic rock. Cable peat also occurs in the boggy areas.

CLIMATE

The nearest weather station is at Mellen, 13 miles to the west. Annual averages recorded there are as follows:

Total precipitation----- 32.5 inches

Total snowfall----- 70.7 inches

January mean temperature----- 12.7 F

July mean temperature----- 67.4 F

Snowfall is particularly heavy since storms off Lake Superior must pass over the Penokee Iron Range south of the forest, dropping snow as they rise.

LOCATION

From Mellen, go west on County GG approximately 8 miles to National Forest Route 187. Take 187 north about .75 miles to Forest Route 188. Follow 188 about 1 mile north. Look for dirt road on the left at the point where 188 turns due east. Follow dirt road .5 miles to Beaver Dam Lake.

SURVEY DESCRIPTION

SE $\frac{1}{4}$ of Sect. 2, N $\frac{1}{2}$ of SW $\frac{1}{4}$ of Sect. 1, W 30 acres of SE $\frac{1}{4}$ of NW $\frac{1}{4}$, Sect. 1, NE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sect. 1, NW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Sect. 1, Town 44 North, Range 4 West; the W $\frac{1}{2}$ of Sect. 36, N $\frac{1}{2}$ of NE $\frac{1}{4}$ of Sect. 36, NW $\frac{1}{4}$ of SE $\frac{1}{4}$ of Sect. 36 except N $\frac{3}{4}$ of E 20 acres and except S $\frac{1}{2}$ of E 10 acres, SW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Sect. 36 except the E 20 acres, Town 45 North, Range 4 West; and the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Sect. 31, Town 45 North, Range 3 West, Ashland County, Wisconsin.

ACQUISITION HISTORY

The property was given to the University by the Martin Hanson family in 1969. Additional pieces of property will be deeded in the future. The forest is managed by the University of Wisconsin Arboretum.

REFERENCES

Nee, Michael. 1972. The Hanson Property of the University of Wisconsin, Ashland County. Unpublished report.

ASHLAND PROPERTY TREE BASAL AREA
in ft²/acre*

SPECIES	AREA					
	1	2	3	4	5	6
Abies balsamea Balsam Fir			2		4	
Acer rubrum Red Maple		2	38		4	
Acer saccharum Sugar Maple	96	30			26	6
Betula lutea Yellow birch		60	6		2	12
Fraxinus nigra Black Ash			22			2
Populus grandidentata Large-tooth Aspen				18		
Populus tremuloides Trembling Aspen			2	68	68	26
Thuja occidentalis White Cedar			4			
Tilia americana Basswood	16	22				
Tsuga canadensis Hemlock		12	4			
Ulmus americana Elm	18	8				
TOTAL	130	134	78	88	104	46

Note: In Area 5, Populus grandidentata and P. tremuloides were not differentiated.

* Sampled by Bitterlich method

ASHLAND FOREST PLANT SPECIES LIST

TREES

- Abies balsamea - Balsam fir; occasional in woods
- Acer rubrum - Red maple; common in woods
- Acer saccharum - Sugar maple; woods
- Acer spicatum - Mountain maple; occasional in woods
- Betula lutea - Yellow birch; woods
- Betula papyrifera - Paper birch; aspen woods
- Crataegus sp. - Hawthorn; rare, clearings
- Fraxinus nigra - Black ash; common, swamps
- Larix laricina - Tamarack; big swamp west of property
- Ostrya virginiana - Ironwood; rare, woods
- Picea glauca - White spruce; occasional in woods
- Picea mariana - Black spruce; big swamp west of property
- Pinus resinosa - Red pine; Beaverdam Lake
- Pinus strobus - White pine; river gorge
- Pinus sylvestris - Scotch pine; near buildings
- Populus balsamifera - Balsam poplar; rare, near concrete dam
- Populus grandidentata - Large-toothed aspen; upland woods
- Populus tremuloides - Quaking aspen; upland woods
- Prunus serotina - Black cherry; woods
- Quercus rubra - Red oak; rare in woods
- Thuja occidentalis - White cedar; occasional, cliffs and swamps
- Tilia americana - Basswood; maple woods
- Tsuga canadensis - Hemlock; cliffs, river gorge, woods

Ulmus americana - American elm; occasional, upland woods, common swamps

SHRUBS, HERBS AND FERNS

Achillea millefolium - Yarrow; open places

Actaea pachypoda - White baneberry; occasional, maple woods

Actaea rubra - Red baneberry; maple woods

Adiantum pedatum - Maidenhair fern; occasional, maple woods

Agrimonia sp. - Agrimony; woods

Allium tricoccum - Wild leek; rich maple woods

Alnus rugosa - Speckled alder; swamps, marshes, shores

Amelanchier sp. - Juneberry; aspen woods and rock outcrops

Amphicarpa bracteata - Hog peanut; rare, maple woods

Anaphalis margaritacea - Pearly everlasting; open places

Anemone quinquefolia - Wood anemone; occasional, maple woods

Antennaria neodioica - Pussy-toes; cliffs, rock outcrops, sandy areas

Apocynum sp. - Dogbane; occasional, open places

Aquilegia canadensis - Columbine; cliffs and rock outcrops

Aralia nudicaulis - Wild sarsaparilla; woods

Aralia racemosa - Spikenard; rare, maple woods

Asarum canadense - Wild ginger; occasional, rich maple woods

Asclepias incarnata - Swamp milkweed; marshes and riverbeds

Arctium minus - Burdock

Arisaema triphyllum - Jack-in-the-pulpit; woods

Aster macrophyllus - Large-leaved aster; abundant, woods

Athyrium filix-femina - Lady fern; rich maple woods and swamps

- Boehmeria cylindrica - False nettle; riverbed
- Botrychium lanceolatum - Grape fern; rich maple woods
- Botrychium virginianum - Rattlesnake fern; common in maple woods
- Botrychium simplex - Rare, rich maple woods
- Brassenia schreberi - Water shield; shallow water, Beaverdam Lake
- Caltha palustris - Marsh marigold; swamps
- Campanula uliginosa - Marsh bluebell; marshes
- Cardamine pennsylvanica - Bitter cress; stream bottoms
- Carex arctata - Sedge
- Carex deflexa - Sedge
- Carex leptalea - Sedge
- Carex leptonevia - Sedge
- Carex pennsylvanica - Sedge
- Carex stricta - Sedge
- Caulophyllum thalictroides - Blue cohosh; occasional, rich maple woods
- Cerastium vulgatum - Mouse-ear chickweed; weedy places
- Ceratophyllum demersum - Coontail; lakes
- Chrysanthemum leucanthemum - Ox-eye daisy; roadsides and open places
- Chrysosplenium americanum - Water mat; swamps and springy areas
- Cicuta bulbifera - Streams and marshes
- Cicuta maculata - Water hemlock; swamps
- Circaea sp. - Enchanter's nightshade; rich maple woods
- Cirsium arvense - Canada thistle; rare, open areas
- Cirsium muticum - Swamp thistle; open places, rock outcrops
- Claytonia caroliniana - Spring beauty; rich maple woods

- Clematis sp. - Occasional; thin woods, clearings
- Clintonia borealis - Bluebeard lily; abundant, maple woods
- Coptis groenlandica - Gold thread; rich woods, swamps
- Cornus alternifolia - Pagoda dogwood; woods
- Cornus canadensis - Bunchberry; woods
- Cornus rugosa - Round-leaved dogwood; woods
- Cornus stolonifera - Red-osier dogwood; marshes and shores
- Corydalis sempervirens - Pale corydalis; occasional, dry cliffs and rock outcrops
- Corylus americana - Hazel; rare, south end of lake
- Corylus cornuta - Beaked hazel; abundant, upland woods
- Cystopteris fragilis - Fragile fern; shaded cliffs of gorge
- Dactylis glomerata - Orchard grass; rare, open places
- Daucus carota - Wild carrot; rare, along paths
- Dentaria laciniata - Toothwort; rich maple woods
- Dicentra sp. - Dutchman's britches; rich maple woods
- Diervilla lonicera - Bush honeysuckle; abundant, aspen woods
- Dirca palustris - Leatherwood; rare, maple woods
- Dryopteris disjuncta - Oak fern; maple woods and shaded cliffs
- Dryopteris cristata - Crested wood fern; rare, swamps
- Dryopteris phegopteris - Long beech fern; maple wood and shaded cliffs
- Dryopteris spinulosa - Florist fern; rich maple woods and swamps
- Dulichium arundinaceum - Three-way sedge; shallow water, Beaverdam Lake
- Eleocharis acicularis - Spike rush; shallow water
- Epigea repens - Trailing arbutus; rare, aspen woods
- Equisetum arvense - Common horsetail; sandy area, concrete dam

- Equisetum hyemale - Scouring rush; maple woods, south end of Beaverdam Lake
- Equisetum sylvaticum - Wood horsetail; common swamps
- Erythronium americanum - Yellow trout lily; rich maple woods
- Eupatorium maculatum - Joe-pye-weed; riverbank
- Eupatorium perfoliatum - Thoroughwort; marshes
- Fragaria virginiana - Wild strawberry; common, open places
- Galium trifidum - On beaver dam
- Galium triflorum - Sweet-scented bedstraw; common, maple woods
- Gaultheria procumbens - Wintergreen; common, aspen woods and rock outcrops
- Hepatica americana - Hepatica; rare, maple woods
- Hieracium aurantiacum - Devil's paintbrush; open places, rock outcrops
- Hieracium florentinum - King devil; rock outcrops
- Humulus lupulus - Hops; rare, rock outcrops
- Ilex verticillata - Winterberry holly; swamps and shores
- Impatiens capensis - Jewelweed; marshes, swamps, rich woods
- Iris versicolor - Blue flag; occasional, marshes
- Laportea canadensis - Wood nettle; swamps, damp maple woods
- Lemna minor - Duckweed; quiet water
- Lepidium densiflorum - Peppergrass; open sandy area
- Linnae borealis - Twin flower; rare, woods
- Lonicera canadensis - Fly honeysuckle; occasional, maple woods
- Luzula acuminata - Woodrush; aspen woods
- Luzula multiflora - Rare; along paths
- Lycopus americanus - Water horehound; marshes and streambanks

- Maianthemum canadensis - Canada mayflower; abundant, woods
- Mentha arvensis - Mint, marshes
- Millium effusum - Millet grass; woods
- Mimulus ringens - Monkeyflower; riverbank
- Mitella diphylla - Miterwort; maple woods
- Mitella nuda - Maple woods
- Mitchella repens - Partridge berry; occasional, maple woods
- Monarda fistulosa - Wild bergamot; rare, opening in woods
- Myrica gale - Sweet gale; common, lakeshore
- Nemopanthus mucronata - Mountain holly; shores and swamps
- Nuphar variegatum - Yellow pond lily; shallow water, Beaverdam Lake
- Nymphaea sp. - White water lily; shallow water, Beaverdam Lake
- Oenothera biennis - Evening primrose; sandy areas
- Onoclea sensibilis - Sensitive fern; swamps and marshes
- Polypodium virginianum - Rock polypody; shaded rock outcrops and cliffs
- Oryzopsis asperifolia - Mountain rice; upland woods
- Osmorhiza claytoni - Sweet cicely; common, maple woods
- Osmunda cinnamomea - Cinnamon fern; swamps
- Osmunda claytoniana - Interrupted fern; swamps and woods
- Osmunda regalis - Royal fern; rare, shores and swamps
- Oxalis montana - Wood shamrock; swamps
- Panax trifolius - Dwarf ginseng; occasional, damp woods
- Panicum depauperatum - Panic grass; rare, sandy area at concrete dam
- Parthenocissus quinquefolia - Virginia creeper; woods
- Petasites palmatus - Sweet coltsfoot; rare, maple woods

- Plantago rugellii - Plantain; paths, roadsides
- Poa alsodes - swamps
- Poa pratensis - Kentucky bluegrass; open places
- Polygala paucifolia - Fringed polygala; woods
- Polygonatum pubescens - Solomon's seal; common, woods
- Polygonum coccinium - Water smartweed; shallow water, Beaverdam Lake
- Polygonum scandens - Climbing buckwheat; common, rock outcrops
- Polystichum braunii - Braun's holly fern; maple woods, rare in Wisconsin
- Pontederia cordata - Pickerel weed; shallow water, Beaverdam Lake
- Potamogeton spp. - Pondweeds; lakes
- Potentilla palustris - Marsh cinquefoil; marshes
- Prunella vulgaris - Heal-all; paths and open places
- Prunus pennsylvanica - Bird cherry; thin woods and openings
- Prunus virginiana - Choke cherry; thin woods and openings
- Pteretis pennsylvanica - Ostrich fern; common, swamps
- Pteridium aquilinum - Bracken; aspen woods
- Pyrola sp. - Shinleaf; woods
- Ranunculus acris - Common buttercup; roadsides
- Ranunculus abortivus - Kidneyleaf buttercup; maple woods and swamps
- Ranunculus recurvatus - Hooked buttercup; occasional, maple woods
- Ranunculus septentrionalis - Swamp buttercup; swamps
- Rhus radicans - Poison ivy; river gorge
- Rhus typhina - Staghorn sumac; rock outcrops
- Ribes cynosbati - Prickly gooseberry; rare, woods
- Ribes glandulosum - Skunk currant; rocky shores

- Trifolium pratense - Red clover; weedy places
- Trifolium repens - White clover; weedy places
- Trientalis borealis - Starflower; woods
- Trillium cernuum - Nodding trillium; common, maple woods
- Trillium grandiflorum - Trillium; maple woods
- Typha latifolia - Cattail; occasional, marshes
- Urtica procera - Nettle; rare, riverbed
- Utricularia sp. - Bladderwort; lakes
- Uvularia grandiflora - Bellwort; rich maple woods
- Uvularia sessilifolia - Wild oats; common woods
- Vaccinium myrtilloides - Blueberry; open woods
- Verbascum thapsus - Mullein; occasional, cliffs and rock outcrops
- Verbena hastata - Blue vervain; marshes and streams
- Veronica serpyllifolia - Speedwell; rare, around buildings
- Viburnum lentago - Nannyberry; occasional; rock outcrops
- Viburnum trilobum - Highbush cranberry; woods
- Viola canadensis - Tall white violet; maple woods
- Viola pallens - White violet; swamps
- Viola pennsylvanica - Smooth yellow violet; maple woods
- Viola sororia - Blue violet; swamps
- Woodsia ilvensis - Rusty woodsia; exposed rock outcrops and cliffs
- MOSSES
- Lycopodium clavatum - Running clubmoss; common, woods
- Lycopodium complanatum - Ground cedar; woods
- Lycopodium flavelliforme - Woods

- Rosa sp. - Wild rose. Rare, rock outcrops
- Rubus parviflorus - Thimbleberry. Clearings
- Rubus sp. - Blackberries, raspberries. Openings in woods
- Rumex acetosella - Sheep sorrel. Weedy places and cliffs
- Rumex crispus - Sourdock. Weedy areas
- Sagittaria sp. - Arrowhead. Lake
- Salix discolor - Pussy willow. Marshes and shores
- Salix lucida - Shining willow. Rocky riverbed
- Sambucus pubens - Red-berried elder. Woods
- Sanguinaria canadensis - Bloodroot. Rich maple woods
- Sanicula marilandica - Black snakeroot. Rare, swamps
- Saxifraga pennsylvanica - Swamp saxifrage. Rare, swamps
- Schizachne purpurascens - Woods and rock outcrops
- Senecio aureus - Golden ragwort. Occasional, swamps
- Smilax hispida - Greenbrier. Rare, woods
- Smilicina racemosa - False spienard. Rich maple woods
- Sorbus decora - Mountain ash. Rare, rock outcrops
- Sparganium sp. - Bur-reed. Edge of Beaverdam Lake
- Spiraea alba - Meadow sweet. Marshes
- Spirodela polyrrhiza - Water flaxseed. Quiet water
- Stellaria longifolia - Stitchwort. Rare, weedy places
- Streptopus amplexifolius var. denticulatus - White mandarin. Rare, black ash swamp
- Streptopus roseus - Twisted stalk. Common, maple woods
- Taraxacum officinale - Dandelion. Occasional, woods and paths
- Thalictrum dasycarpum - Meadow rue. Marshes and swamps

Lycopodium lucidulum - Shining clubmoss; occasional, rich maple woods

Lycopodium obscurum - Ground pine; common, woods

LICHENS

Cladonia mitis - Open rock outcrops

Cladonia rangiferina - Reindeer moss; open rock outcrops

Cladonia uncialis - Rare, rock outcrops

Dermatocarpon fluviatile - Common, rocks, just above flowing water

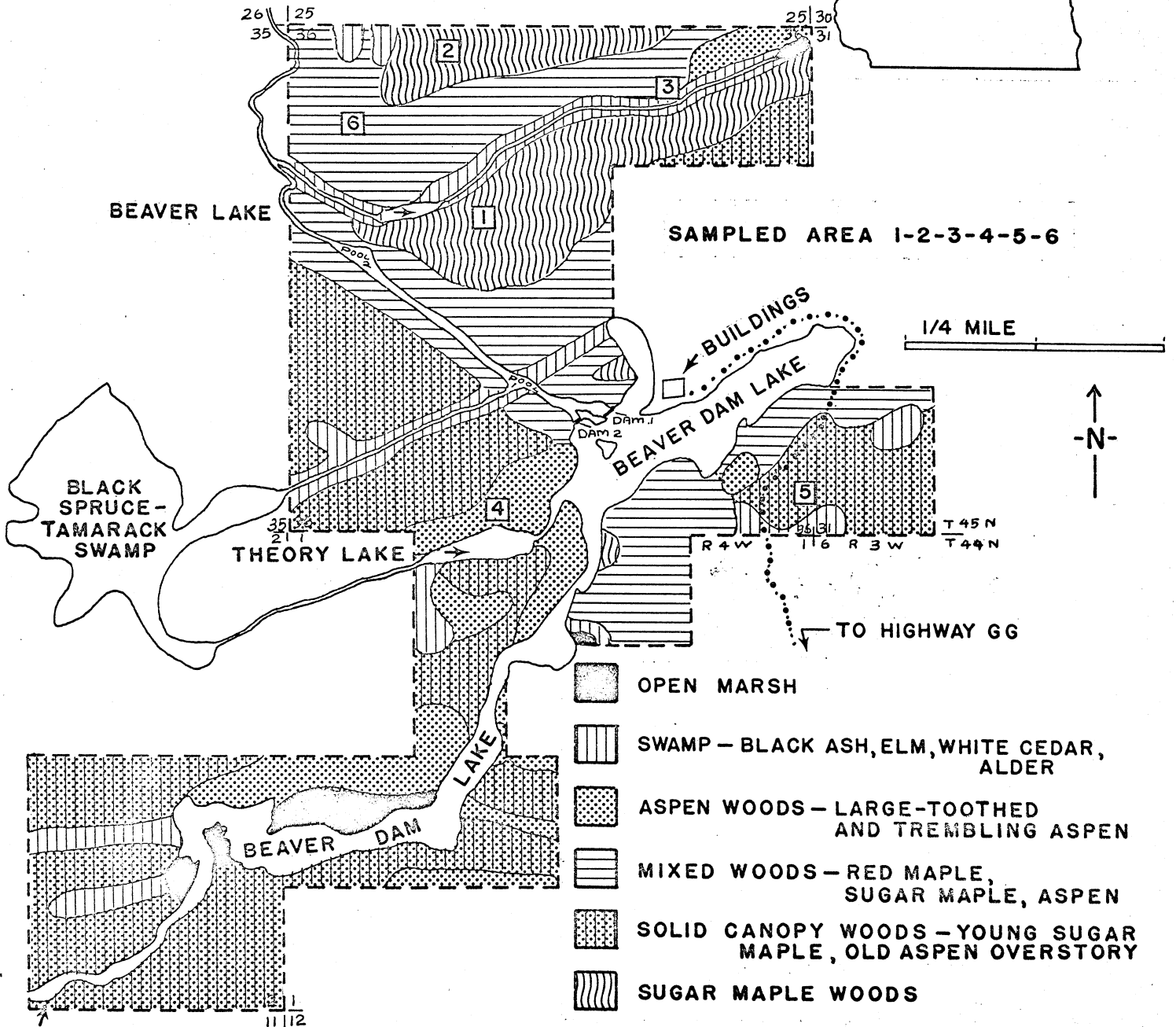
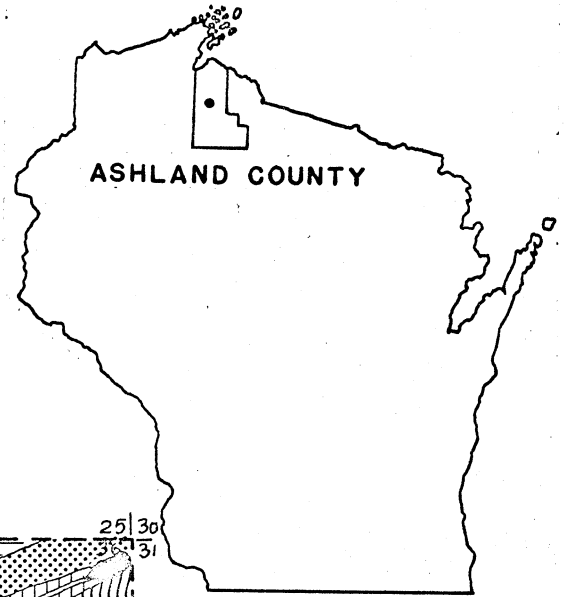
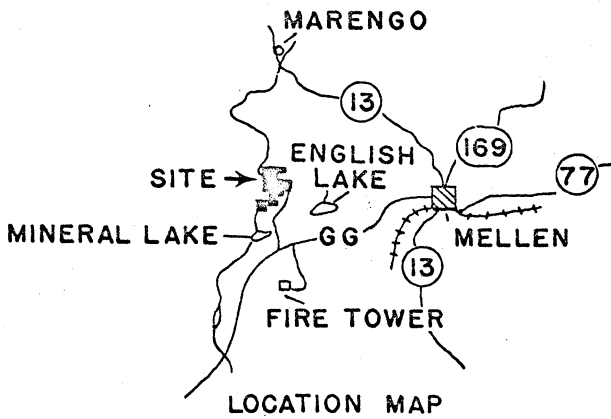
Lobaria pulmonaria - Lungwort; rare, on trees

Stereocaulon sp. - Open rock outcrops

Umbillicaria sp. - Cliffs along Beaverdam Lake

- Rosa sp. - Wild rose; rare, rock outcrops
- Rubus parviflorus - Thimbleberry; clearings
- Rubus sp. - Blackberries, raspberries; openings in woods
- Rumex acetosella - Sheep sorrel; weedy places and cliffs
- Rumex crispus - Sourdock; weedy areas
- Sagittaria sp. - Arrowhead; lake
- Salix discolor - Pussy willow; marshes and shores
- Salix lucida - Shining willow; rocky riverbed
- Sambucus pubens - Red-berried elder; woods
- Sanguinaria canadensis - Bloodroot; rich maple woods
- Sanicula marilandica - Black snakeroot; rare, swamps
- Saxifraga pennsylvanica - Swamp saxifrage; rare, swamps
- Schizachne purpurascens - Woods and rock outcrops
- Senecio aureus - Golden ragwort; occasional, swamps
- Smilax hispida - Greengrifer; rare, woods
- Smilicina racemosa - False spikenard; rich maple woods
- Sorbus decora - Mountain ash; rare, rock outcrops
- Sparganium sp. - Bur-reed; edge of Beaverdam Lake
- Spiraea alba - Meadow sweet; marshes
- Spirodela polyrrhiza - Water flaxseed; quiet water
- Stellaria longifolia - Stitchwort; rare, weedy places
- Streptopus amplexifolius var. denticulatus - White mandarin; rare, black ash swamp
- Streptopus roseus - Twisted stalk; common, maple woods
- Taraxacum officinale - Dandelion; occasional, woods and paths
- Thalictrum dasycarpum - Meadow rue; marshes and swamps

ASHLAND FOREST



HUB CITY BOG

Hub City Bog is a 55 acre tract of tamarack bog, cattail marsh, shrub carr and sandstone cliff located at the junction of the Pine River and Soules Creek in Southwestern Wisconsin.

While bogs are generally associated with the undrained, water-filled depressions of glaciated regions, there are a few bogs in the unglaciated Driftless Area. The 8 acre tamarack bog at Hub City is one of these and is probably the southern-most bog in the state.

Formed in post-glacial times by the meandering Pine River, the crescent-shaped bog is actually a small oxbow lake. The bog has accumulated about 10 feet of peat even though growth of sphagnum mosses is no longer heavy. The peat is covered in some places by a layer of silty sand and mesophytic vegetation is gradually invading the area.

Sharing the bog with the tamarack (Larix laricina) are swamp birch (Betula pumila), paper birch (Betula papyrifera), poison sumac (Rhus vernix), and sweet blueberry (Vaccinium angustifolium). Other species (pitcher plant, sundew and leatherleaf), commonly occurring in northern bogs, are absent here. There is no significant reproduction of the tamarack.

Like a small island, the bog is surrounded by extensive cattail marsh, alder thicket and shrub carr. Important species in this wet-meadow area are cattail (Typha latifolia), bulrush (Scirpus microcarpus), reed meadow grass (Glyceria grandis), fowl meadow grass (Glyceria striata), millet-grass (Millium effusum), muhly grass (Muhlenbergia mexicana), speckled alder (Alder rugosa), red osier dogwood (Cornus stolonifera) and several species of willow (Salix sp.).

Within the bog and marsh areas, several species of fern can be found: marsh fern (Dryopteris thelypteris), sensitive fern (Onoclea sensibilis), cinnamon fern (Osmunda cinnamomea) and royal fern (Osmunda regalis).

The 75 foot sandstone cliffs which rise above Soules Creek are notable for the northern forest communities which they support. On the cliffs' steep north face grow low shrubs and cliff-dwelling herbs such as beech fern (Dryopteris Phegopteris), interrupted fern (Osmunda Claytoniana), maidenhair fern (Adiantum pedatum), columbine (Aquilegia sp.), sullivantia (Sullivantia renifolia), trailing arbutus (Epigaea repens), bearberry (Arctostaphylos uva-ursi).

On the ridgetop is a forest of white pine (Pinus strobus), hemlock (Tsuga canadensis), yellow birch (Betula lutea). Also found here are occasional individuals of redpine (Pinus resinosa), red oak (Quercus rubra), black oak (Quercus velutina), shagbark hickory (Carya ovata), yellowbud hickory (Carya cordiformis), black cherry (Prunus serotina), red maple (Acer rubrum), basswood (Tilia americana) and ironwood (Ostrya virginiana).

The understory of cliff-top community is also composed of many species normally found in rich woods of the north: blueberry (Vaccinium myrtilloides), Labrador tea (Ledum groenlandicum), bunchberry (Cornus canadensis), blue-beard lily (Clintonia borealis), spring beauty (Claytonia virginica), Canadian may-flower (Maianthemum canadense), partridge berry (Mitchella repens), huckleberry (Gaylussacia sp.) and trillium (Trillium gleasonii).

It has been suggested that the northern species found in the bog and on the sandstone cliffs may be relict vegetation that has existed in the area since before the last glaciation. Another theory is that the plants migrated into the area from the glaciated regions following the last glaciation.

Regardless of origins, the bog itself contains a pollen record in its peat layers that has been extremely valuable in interpreting the vegetation and climate of pre-glacial and glacial times.

Due to de-forestation and cultivation throughout the Pine River Valley, the bog has filled with mineral sediments as well as peat over the last century and is probably moving toward extinction.

At the time of purchase, the bog was being used as a town dump. Sometime prior to that, part of the grass marsh had been cultivated and a sawmill had operated on the upland adjacent to the tamarack. Sawdust and lumber is still conspicuous there. A small area on top of the sandstone ridge has also been grazed or farmed at some past time.

FAUNA

There are no recorded observations of animal life for the bog.

GEOLOGY

The bedrock of Hub City Bog is Upper Cambrian sandstone, a formation that includes some beds of dolomite and shale. The bog formed in post-glacial times when the Pine River cut through locally derived sandy sediments of the river plain and left an oxbow lake. The Pine River is part of the Wisconsin River drainage basin.

There are several small springs within the bog and the water table apparently is well above the bottom of the bog.

SOILS

A thin mantle of loess blown from the Mississippi River bottoms after the last glacial period covers all the uplands, valley slopes and terraces

in this area. The Norden and Fayette silt loams of the sandstone bluffs have all developed from loess rather than from the underlying bedrock.

In the valley bottom, particularly under the shrub carr and alder thickets, the soils are probably Arenzville and Orion silt loams with good to imperfect drainage. The tamarack bog overlies Carlisle muck, a peaty soil more commonly found in southeastern Wisconsin.

CLIMATE

The nearest weather station is at Richland Center, approximately 8 miles to the south. Annual averages recorded there are as follows:

Total precipitation ----- 32.2 "

Total snowfall ----- 36.2 "

January mean temperature --- 19.4 F

July mean temperature ----- 73.1 F

DIRECTIONS

From Hub City, take State Highway 80 north .25 miles to Soules Creek Road. Go east on Soules Creek Road .25 miles to the parking lot (at the intersection with Old Pine Road).

SURVEY DESCRIPTION

SW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Section 34 east of Highway 80, SE $\frac{1}{4}$ of NE $\frac{1}{4}$ of Section 34 west of the Pine River Road and south of Soules Creek Road, and the NW diagonal $\frac{1}{2}$ of N $\frac{1}{4}$ of NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 34, Town 12 North, Range 1 East, Town of Henrietta, Richland County, Wisconsin.

ACQUISITION HISTORY

The property was purchased in 1969 from Lon and Minnie Spencer by the Nature Conservancy. (The Spencers had been leasing the bog to the town of Henrietta for a dump). The Conservancy subsequently gave the land to the University of Wisconsin in 1972. It is now managed by the UW Arboretum Committee and is a State Scientific Area.

REFERENCES

- Hansen, H.P. 1933. The Tamarack Bogs of the Driftless Area of Wisconsin. Bull. Mil. Pub. Mus. 7: 231-304.
- Hartley, T.G. 1962. Flora of the Driftless Area. Univ. of Iowa Phd. Thesis.
- Née, Michael. 1970. Preliminary checklist of the Flora of the Hub City Bog. Unpublished.

CHECKLIST FOR HUB CITY BOG

TREES

Acer negundo - Boxelder

Acer rubrum - Red maple

Acer saccharum - Sugar maple

Betula papyrifera - Paper birch

Betula lutea - Yellow birch

Betula pumila - Bog birch

Carya cordiformis - Yellow bud hickory

Carya ovata - Shagbark hickory

Fraxinus nigra - Black ash

Larix laricina - Tamarack

Ostrya virginiana - Ironwood

Pinus resinosa - Red pine

Pinus strobus - White pine

Populus grandidentata - Large-tooth aspen

Populus tremuloides - Quaking aspen

Prunus serotina - Black cherry

Quercus macrocarpa - Bur oak

Quercus rubra - Red oak

Quercus velutina - Black oak

Tilia americana - Basswood

Tsuga canadensis - Hemlock

Ulmus americana - American Elm

HERBS AND SHRUBS

Actea pachypoda (alba) - White baneberry

Adiantum pedatum - Maidenhair fern

Alnus rugosa - Speckled alder

Ambrosia artemissifolia - Ragweed

Ambrosia trifida - Giant Ragweed

Amelanchier interior - Juneberry

Amphicarpa bracteata - Hog-peanut

Andropogon gerardii - Big bluestem

Antennaria neglecta - Pussy toes

Antennaria plantaginifolia - Pussy toes

Apocynum androsaemifolium - Spreading dogbane

Aquilegia canadensis - Columbine

Aralia nudicaulis - Wild sarsaparilla

Aralia racemosa - Spikenard

Arctostophylos uva-ursi - Bearberry

Arisaema atrorubens - Jack-in-the-Pulpit

Asarum canadense - Wild ginger

Asclepias syriaca - Common milkweed

Asclepias verticillata - Whorled milkweed

Aster lucidulus - Aster

Aster macrophyllus - Large-leaved aster

Aster novae-angliae - New England aster

Aster sagittifolius - Arrow-leaved aster

Aster umbellatus - Flat-topped white aster

- Athyrium filix-femina - Lady-fern
Bidens frondosa - Spanish needles
Bidens pinnata -
Botrychium obliquum - Grape fern
Brachylectrum erectum
Bromus sp. - Brome grass
Caltha palustris - Marsh marigold
Campanula aparinoides - Bedstraw bellflower
Cardamine pennsylvanica - Pennsylvania bittercress
Carex brunnescens - Sedge
Carex canescens - Sedge
Carex comosa - Sedge
Carex disperma - Sedge
Carex hystericina - Sedge
Carex interior - Sedge
Carex lacustris - Sedge
Carex leptalea - Sedge
Carex stricta - Sedge
Carex tonsa - Sedge
Carex vulpinoidea - Sedge
Caulophyllum thalictroides - Blue cohosh
Chelone glabra - Turtlehead
Circaea alpina - Enchanter's nightshade
Circaea quadrisulcata
Cirsium muticum - Swamp thistle

- Claytonia virginica - Spring beauty
- Clintonia borealis - Bluebeard-lily
- Cornus alternifolia - Alternative leaf dogwood
- Cornus canadensis - Bunchberry
- Cornus stolonifera - Red osier dogwood
- Corylus cornuta - Beaked hazel
- Cuscuta gronovii - Dodder
- Cypripedium acaule - Stemless lady's slipper
- Cypripedium reginae - Showy lady's slipper
- Danthonia spicata - Poverty grass
- Daucus carota - Wild carrot
- Diervilla lonicera - Bush honeysuckle
- Dryopteris cristata - Crested wood fern
- Dryopteris phegopteris - Beech fern
- Dryopteris thelypteris - Marsh fern
- Epigaea repens - Trailing arbutus
- Epilobium agustifolium - Fireweed
- Epilobium coloratum - Fireweed
- Eupatorium maculatum - Spotted joe-pye-weed
- Eupatorium perfoliatum - Purple boneset
- Eupatorium rugosum - White snakeroot
- Festuca pratensis - Meadow fescue
- Fragaria virginiana - Strawberry
- Galium obtusum
- Gaultheria procumbens - Wintergreen

Gaylussacia baccata - Huckleberry
Geranium bicknellii
Geranium maculatum - Wild geranium
Geum aleppicum - Yellow avens
Geum appendiculatum - Avens
Glyceria grandis - Reed meadow grass
Glyceria striata - Fowl meadow grass
Hedeoma hispida - Creeping charlie
Helianthemum canadense - Frostweed
Helianthus sp. - Sunflower
Hepatica acutiloba - Hepatica
Hieracium canadense - Canada hawkweed
Hydrocotyle americana - Water penny-wort
Hydrophyllum virginianum - Waterleaf
Ilex verticillata - Deciduous holly
Impatiens biflora - Touch-me-not
Juncus bufonius - Rush
Krigia biflora - Two-flowered cynthia
Lactuca canadensis - Wild lettuce
Lechea sp. - Pinweed
Ledum groenlandicum - Labrador tea
Lemna minor - Duckweed
Lespedeza capitata - Bushclover
Lilium michiganense - Turk's cap lily
Lonicera sp. - Honeysuckle

- Lycopodium selago - Mountain club moss
- Lycopus unifloris - Water horehound
- Lysimachia quadrifolia - Whorled loosestrife
- Lysimachia thrysiflora
- Maianthemum canadense - Canada may-flower
- Melilotus alba - White sweet clover
- Menispermum canadense - Canada moonseed
- Milium effusum - Millet-grass
- Mitchella repens - Partridgekerry
- Mitella nuda - Naked miterwort
- Muhlenbergia mexicana - Muhly grass
- Nium
- Oenothera biennis - Evening primrose
- Onoclea sensibilis - Sensitive fern
- Osmorhiza claytonia - Sweet cicely
- Osmunda cinnamomea - Cinnamon fern
- Osmunda claytoniana - Interrupted fern
- Osmunda regalis - Royal fern
- Oxalis stricta - Yellowwood sorrel
- Panicum virgatum - Prairie switchgrass
- Parthenocissus quinquefolia - Virginia creeper
- Perasites sp. - Sweet coltsfoot
- Pilea fontana - Clearweed
- Plantago major - Plantain
- Poa compressa - Canadian bluegrass

Poa paludigena - Bluegrass
Polemonium reptans - Jacob's ladder
Polygonatum pubescens - Solomon's seal
Polygonum punctatum - Smartweed
Polygonatum scandans - Solomon's seal
Polygonum avicular - Knotweed
Polygonum hydropiper - Knotweed
Polypodium virginanum
Polytrichum commune
Polytrichum juniperum - Pigeon moss
Potentilla simplex - Common cinquefoil
Prenanthes alba - Lion's paw
Prunella vulgaris - Selfheal
Prunus americana
Prunus virginiana - Chokecherry
Pteridium aquilinum - Gracken fern
Rhamnus alnifolia - Buckthorn
Rhus radicans - Poison ivy
Rhus typhina - Staghorn sumac
Rhus vernix - Poison sumac
Ribes americanum - Wild black currant
Ribes hirtellum - Smooth gooseberry
Rorippa islandica - Yellow cress
Rubus allegheniensis - Blackberry
Rubus pubescens

Rudbeckia laciniata - Green-headed coneflower

Salix bebbiana - Bebb willow

Salix discolor - Pussy willow

Salix petiolaris

Sambucus canadensis - Elderberry

Sambucus pubens - Elderberry

Sanguinaria canadensis - Bloodroot

Sanicula marilandica - Black snakeroot

Saxifraga pennsylvanica - Swamp saxifrage

Scirpus microcarpus - Bulrush

Setaria lutescens - Foxtail

Smilacina racemosa - False Solomon's seal

Smilax herbacea

Smilax hispida - China-root

Solanum dulcamara - Black nightshade

Solidago altissima - Goldenrod

Solidago flexicaulis - Goldenrod

Solidago nemoralis - Goldenrod

Solidago patula - Rough-leaved goldenrod

Sphagnum sp. - Sphagnum moss

Spirea alba - Narrow-leaved meadowsweet

Spirea tomentosa - Steeplebush

Stellaria graminea - Lesser stichwort

Stellaria longifolia - Long-leaved chickweed

Streptopus roseus - Twisted stalk

Sullivantia renifolia

Symphoricarpos occidentalis

Symplocarpus foetidus - Skunk cabbage

Thalictrum dasycarpum - Meadow rue

Trientalis borealis - Starflower

Trifolium hybridum - Aliske clover

Trillium gleasonii - Trillium

Typha latifolia - Cattail

Urtica dioica - Nettle

Uvularia perfoliata - Perfoliate bellwort

Vaccinium angustifolium - Sweet blueberry

Vaccinium myrtilloides - Blueberry

Verbascum thapsus - Mullen

Veronica peregrina - Speedwell

Viburnum acerifolium - Mapleleaf viburnum

Viburnum lentago - Nannyberry

Viburnum rafinesquianum - Arrowwood

Viola incognita - Large-leaved violet

Viola sagittata - Arrow-leaved violet

Vitis riparia - River-bank grape

Woodsia sp. - Swordfern

Zanthoxylum americanum - Prickly ash

LICHENS

Arthonia caesia

Buellia stillingiana

Candelaria concolor

Cladonia chlorophaea

Cladonia coniocraea

Cladonia fimbriata

Cladonia mitis

Cladonia subcariosa

Cladonia squamosa

Cladonia uncialis

Endocarpon pussillum

Lecanora conizaea

Parmelia caperata

Parmelia rudecta

Peltigera canina

Peltigera evansiana

Physcia elaeina

Physcia grisea

Physcia millegrana

Physcia orbicularis

Physcia tribacoides

Ramalina fastigiata

Ramalina intermedia

FERNS

Athyrium thelipteroides

Cystopteris fragilis

Dryopteris Boottii spinulosa

Thelypteris palustris

ADDITIONAL FLOWERING PLANTS

Argostis perennans

Argostis stolonifera

Asclepias incarnata

Aster puniceus

Aster simplex

Bromus ciliatus

Cacalia suaveolens

Cornus Amomum

Galium asprellum

Lonicera dioica

Muhlenbergia cuspidata

Muhlenbergia sylvatica

Phalris arundinacea

Solidago uliginosa

Spiranthes cernva

HUB CITY BOG SCIENTIFIC AREA

