

Preliminary Flora of Red Banks Alvar, Brown County, Wisconsin

(State Natural Area No. 332)

Report to the Wisconsin Department of Natural Resources
Bureau of Endangered Resources

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Summary

Nine members of the Botanical Club of Wisconsin inventoried vegetation at the Red Banks Alvar State Natural Area in Brown County, Wisconsin on June 9, 2007. Compiling information from vouchered specimens and sight records from several lists resulted in 170 vascular plant taxa and 44 lichen taxa. These numbers are not considered complete because time did not allow a thorough exploration of all parts of both east and west units, and because ephemeral or later-blooming vascular plant taxa may have been missed. No rare vascular plants were observed, but three rare lichen species were discovered.

Introduction

The Red Banks Alvar State Natural Area (SNA) covers 96 acres and consists of two units that lie on the east and west sides of State Hwy. 57 at a point ca. 9 miles northeast of the east edge of Green Bay and 8 miles southwest of the Brown-Door county line. The East Unit is 77 acres and the West Unit 19 acres. The geographic coordinates for the parking lot at the East Unit are N44° 36.25827' W87° 51.23124'.

The SNA is located in the Eastern Ridges and Lowlands geographical province (Martin 1932). Like the eastern shore of Lake Winnebago, Green Bay, and the Door Peninsula, the highway and the property lie along the relatively high and broad Niagara cuesta, one of the major topographic features of the province, and therefore trend northeast-southwest.

(including Canada), but they comprise only 0.2% of the land area there. The use of the word "alvar" for this type of environment originated in Scandinavia, where it was applied to a similar landform near the Baltic Sea.

In 2007 the Botanical Club of Wisconsin (BCW) initiated a project to conduct botany blitzes of state natural areas that were in need of plant inventories. After several months of screening State Natural Areas with the WI Department of Natural Resources SNA program, Red Banks Alvar State Natural Area was selected for a botany blitz. Current plans include up to three trips to selected SNAs to inventory plants flowering at different times of the year. This report is therefore considered preliminary until the surveys are completed.

Unit descriptions

The entire property is wooded except under the power line right-of-way that traverses the length of the East Unit and the far southeast corner of that same unit. The East Unit is dry and well-drained, being developed on the extensive flat limestone bedrock, which is evident at the land surface in the form of pavement, scaly stones, and cliffs. The soil is reddish silty clayey loam and is very thin. Numerous small openings are more or less filled-in by encroaching brush of both native and introduced species. Specimens representing prairie, glade, and pine barrens species are sparse. The West Unit is developed on the west-facing escarpment of the Niagara upland overlooking Green Bay. It contains a mesic woods dominated by white cedar in all size classes. The two important associated tree species are white paper birch and American basswood. These and the other plants are normally found in dry-mesic, mesic-, and wet mesic, usually northern forests.

Methods

The checklists that follow, compiled by nine members of the Botanical Club of Wisconsin on June 9, 2007, are evidence of the level of floristic diversity present. Starting at 9:30 a.m., the nine members present divided into three teams and walked through the East Unit, recording their observations. The three morning teams consisted of Ted Cochrane, Barbara Cochrane, Dave White, Laurie Yahr, and Rich Kahl; Jim Bennett and Lynn White; and Tom Eddy and Neil Harriman. The Cochrane team did not make it to the power line or to the east or north boundary. Everyone reassembled at the cars right at noon, and after lunch, departed for the West Unit, driving north to Co. Hwy. A, then following it south to the parking spot at the

Many entries lack frequency estimations (A-abundant, C-common, O-occasional, R-rare, based on the WI DNR Plant Species List Legend) because we did not pay enough attention to these species to make such judgments. Specimen citations include the collectors' last names, collection number, and herbarium of deposition. The following abbreviations apply to collectors: B – Bennett, BCW – Botanical Club of Wisconsin, C – Cochrane, E – Eddy, H – Harriman, W – White; these abbreviations are used for herbaria: OSH = University of Wisconsin-Oshkosh, WIS = University of Wisconsin-Madison.

Nomenclature for the vascular plants is based on Wetter et al., 2001. Nomenclature for the lichens is based on Esslinger, 2007. Although voucher specimens of some species were collected (Cochrane's set is in WIS, the Eddy and Harriman sets are in OSH), most vascular plant listings are sight reports. The separate vascular plant lists from the two teams are included in appendices, and a merged list is provided in the report.

Results

Vascular Plants

Species	East unit	West unit	Botanists
<i>Acer spicatum</i>		X	TLE & NAH
<i>Achillea millefolium</i>	X		TLE & NAH
<i>Actaea rubra</i> – O		X	Cochrane, TLE & NAH
<i>Adiantum pedatum</i> – R		X	Cochrane
<i>Agrimonia</i> sp. – R		X	Cochrane
<i>Amphicarpaea bracteata</i> – R		X	Cochrane
<i>Anemone quinquefolia</i> – A	X		Cochrane
<i>Anemone virginiana</i> – O	X	X	Cochrane
<i>Antennaria neglecta</i>	X		Cochrane
<i>Apocynum androsaemifolium</i> – R	X	X	Cochrane
<i>Aquilegia canadensis</i> – O		X	Cochrane, TLE & NAH
<i>Arabis divaricarpa</i> – R	X	X	Cochrane
<i>Arabis glabra</i>	X		TLE & NAH
<i>Aralia nudicaulis</i> – A	X	X	Cochrane, TLE & NAH
<i>Arctium minus</i>		X	TLE & NAH
<i>Arctostaphylos uva-ursi</i> – R	X		Cochrane
<i>Arisaema triphyllum</i> – A		X	Cochrane, TLE & NAH
<i>Asarum canadense</i> – C		X	Cochrane, TLE & NAH
<i>Asplenium rhizophyllum</i> – R		X	Cochrane, TLE & NAH
<i>Athyrium filix-femina</i> – O	X	X	Cochrane
<i>Barbarea vulgaris</i>	X		TLE & NAH
<i>Berberis thunbergii</i>	X		TLE & NAH
<i>Betula papyrifera</i> – O	X	X	Cochrane, TLE & NAH
<i>Botrychium dissectum</i> – R	X		Cochrane
<i>Campanula rotundifolia</i> – C	X		Cochrane, TLE & NAH
<i>Carex alopecoidea</i>	X		TLE & NAH
<i>Carex blanda</i> – O	X	X	Cochrane
<i>Carex cephalophora</i> – R	X		Cochrane
<i>Carex cristatella</i> – R		X	Cochrane

<i>Carex radiate</i>	X	X	Cochrane
<i>Carex rosea</i> – O	X		Cochrane
<i>Carex sparganioides</i> – R	X	X	Cochrane
<i>Carex tetanica</i>	X		TLE & NAH
<i>Carya ovate</i>	X		Cochrane, TLE & NAH
<i>Caulophyllum thalictroides</i>		X	TLE & NAH
<i>Ceanothus herbaceus</i> – R	X		Cochrane
<i>Cerastium fontanum</i> – O	X	X	Cochrane
<i>Chenopodium simplex</i> – R		X	Cochrane
<i>Circaea</i> sp.	X	X	Cochrane, TLE & NAH
<i>Cirsium vulgare</i> – R	X	X	Cochrane
<i>Comandra umbellata</i> – A	X		Cochrane
<i>Cornus racemosa</i> – A	X	X	Cochrane, TLE & NAH
<i>Cornus rugosa</i>	X	X	Cochrane
<i>Cynoglossum officinale</i> – R	X		Cochrane
<i>Cypripedium</i> sp. – R	X		Cochrane
<i>Cystopteris bulbifera</i> – A		X	Cochrane, TLE & NAH
<i>Cystopteris tenuis</i> – O	X	X	Cochrane
<i>Dicentra canadensis</i> – R	X		Cochrane
<i>Diervilla lonicera</i> – A		X	Cochrane, TLE & NAH
<i>Dioscorea villosa</i> – R		X	Cochrane
<i>Dodecatheon meadia</i>	X		TLE & NAH
<i>Dryopteris carthusiana</i> – R	X	X	Cochrane
<i>Epipactis helleborine</i> – R	X		Cochrane
<i>Erigeron philadelphicus</i> – O	X	X	Cochrane
<i>Erigeron pulchellus</i> – C	X		Cochrane, TLE & NAH
<i>Erigeron strigosus</i>	X		TLE & NAH
<i>Festuca subverticillata</i> – R		X	Cochrane
<i>Fragaria virginiana</i> – C		X	Cochrane, TLE & NAH
<i>Fraxinus americana</i> – R	X	X	Cochrane, TLE & NAH
<i>Fraxinus pennsylvanica</i>	X	X	Cochrane
<i>Galium aparine</i> – R	X	X	Cochrane, TLE & NAH
<i>Galium boreale</i> – C	X	X	Cochrane, TLE & NAH

<i>Helianthus hirsutus</i>	X		Cochrane
<i>Helianthus strumosus</i>	X		Cochrane
<i>Hepatica americana</i> – R		X	Cochrane, TLE & NAH
<i>Hesperis matronalis</i> – R	X	X	Cochrane, TLE & NAH
<i>Heuchera richardsonii</i> – R	X		Cochrane
<i>Hieracium aurantiacum</i> – O	X		Cochrane, TLE & NAH
<i>Hieracium caespitosum</i>	X		TLE & NAH
<i>Hieracium piloselloides</i> – O	X		Cochrane
<i>Houstonia (Hedyotis) longifolia</i>	X		TLE & NAH
<i>Hypericum perforatum</i> – O	X		Cochrane
<i>Hypoxis hirsuta</i> – R	X		Cochrane, TLE & NAH
<i>Impatiens capensis</i>	X	X	Cochrane
<i>Juniperus virginiana</i>	X		TLE & NAH
<i>Juniperus communis</i> – A	X		Cochrane, TLE & NAH
<i>Leonurus cardiaca</i> – O	X	X	Cochrane, TLE & NAH
<i>Leucanthemum vulgare</i> – R	X		Cochrane
<i>Lithospermum officinale</i>	X	X	TLE & NAH
<i>Lobelia spicata</i> – R	X		Cochrane
<i>Lonicera dioica</i> – R	X		Cochrane
<i>Lonicera hirsuta</i> – R	X		Cochrane
<i>Lonicera tatarica</i>	X		TLE & NAH
<i>Lonicera X bella</i> – R	X		Cochrane
<i>Luzula multiflora</i>	X		Cochrane, TLE & NAH
<i>Lycopus americanus</i>		X	Cochrane
<i>Maianthemum canadense</i> – A	X	X	Cochrane, TLE & NAH
<i>Monarda fistulosa</i> – R		X	Cochrane
<i>Nepeta cataria</i>	X		TLE & NAH
<i>Osmorhiza claytonii</i> – O		X	Cochrane, TLE & NAH
<i>Oxalis stricta (O. europaea)</i> – R		X	Cochrane, TLE & NAH
<i>Parietaria pensylvanica</i> – A		X	Cochrane
<i>Parthenocissus quinquefolia</i>	X	X	Cochrane
<i>Parthenocissus vitacea</i>		X	TLE & NAH
<i>Pedicularis canadensis</i> – O	X		Cochrane, TLE & NAH

<i>Polygala senega</i>	X		Cochrane, TLE & NAH
<i>Polygonatum pubescens</i> – C		X	Cochrane
<i>Polygonum virginianum</i>	X	X	Cochrane
<i>Populus tremuloides</i> – O	X		Cochrane
<i>Potentilla recta</i>	X		TLE & NAH
<i>Potentilla simplex</i> – O	X		Cochrane, TLE & NAH
<i>Prenanthes alba</i> – O	X		Cochrane
<i>Prunella vulgaris</i> – O	X		Cochrane, TLE & NAH
<i>Prunus serotina</i>	X		Cochrane
<i>Prunus virginiana</i> – A	X	X	Cochrane
<i>Quercus alba</i>	X		Cochrane, TLE & NAH
<i>Quercus ellipsoidalis</i>	X		Cochrane
<i>Quercus macrocarpa</i>	X	X	Cochrane, TLE & NAH
<i>Quercus rubra</i>	X		TLE & NAH
<i>Ranunculus fascicularis</i>		X	TLE & NAH
<i>Rhamnus cathartica</i> – C	X	X	Cochrane, TLE & NAH
<i>Ribes cynosbati</i> – R	X	X	Cochrane, TLE & NAH
<i>Rosa blanda</i>	X		TLE & NAH
<i>Rosa sp.</i> – O	X		Cochrane
<i>Rubus idaeus</i> - C		X	Cochrane, TLE & NAH
<i>Rubus occidentalis</i> – R		X	Cochrane
<i>Sambucus pubens</i> – C		X	Cochrane, TLE & NAH
<i>Sanguinaria canadensis</i> – O		X	Cochrane, TLE & NAH
<i>Sanicula cf. gregaria</i> – R	X	X	Cochrane, TLE & NAH
<i>Senecio pauperculus</i>	X		TLE & NAH
<i>Shepherdia canadensis</i> – A	X		Cochrane, TLE & NAH
<i>Smilacina racemosa</i> – C		X	Cochrane, TLE & NAH
<i>Smilacina stellata</i> – A	X	X	Cochrane
<i>Smilax ecirrhata</i> – R		X	Cochrane, TLE & NAH
<i>Solanum dulcamara</i>	X	X	Cochrane, TLE & NAH
<i>Symphyotrichum lateriflorum</i>	X	X	Cochrane
<i>Symphyotrichum sp.</i>	X		Cochrane
<i>Symphoricarpos albus</i> – R	X	X	Cochrane, TLE & NAH

<i>Tragopogon dubius</i>	X		TLE & NAH
<i>Trillium</i> sp.	X	X	Cochrane
<i>Triosteum</i> sp. – R	X		Cochrane
<i>Triosteum perfoliatum</i>		X	TLE & NAH
<i>Ulmus americana</i>		X	TLE & NAH
<i>Urtica dioica</i>		X	Cochrane, TLE & NAH
<i>Uvularia sessilifolia</i> – R	X	X	Cochrane
<i>Vaccinium angustifolium</i> – R	X		Cochrane
<i>Verbascum Thapsus</i>	X		Cochrane
<i>Veronica officinalis</i>	X		Cochrane, TLE & NAH
<i>Veronica peregrina</i> var. <i>xalapensis</i>	X		TLE & NAH
<i>Viburnum lentago</i> – R	X	X	Cochrane
<i>Viburnum rafinesquianum</i>	X		Cochrane, TLE & NAH
<i>Vicia sativa</i>	X		TLE & NAH
<i>Viola pubescens</i>	X	X	Cochrane
<i>Viola sororia</i>		X	Cochrane, TLE & NAH
<i>Vitis riparia</i>		X	Cochrane, TLE & NAH
<i>Zizia aurea</i>	X		TLE & NAH
Total	126	95	

Vascular plant discussion

In the East Unit trees and shrubs are abundant, but those of some deciduous species like bur oak and shagbark hickory are stunted. The dominant tree is red cedar (*Juniperus virginiana*), followed by trembling aspen (*Populus tremuloides*) and bur oak (*Quercus macrocarpa*). Other trees include black cherry (*Prunus serotina*), white oak (*Q. alba*), Hill's oak (*Q. ellipsoidalis*), basswood (*Tilia americana*), and white birch (*Betula papyrifera*). There is an unusually high content of shrubs: gray dogwood (*Cornus racemosa*), common juniper (*Juniperus communis*), chokecherry (*Prunus virginiana*), buffalo-berry (*Shepherdia canadensis*), snowberry (*Symphoricarpos albus*), and arrow-wood (*Viburnum rafinesquianum*) are all abundant; round-leaved dogwood (*C. rugosa*) and common buckthorn (*Rhamnus cathartica*) are common; and ninebark (*Physocarpus opulifolius*) and Rydberg's poison-ivy (*Toxicodendron rydbergii*) are occasional. Two vines and one low trailing shrub of rare occurrence are bearberry (*Arctostaphylos uva-ursi*), wild honeysuckle (*Lonicera dioica*), and hairy honeysuckle (*L.*

canadensis); and calciphiles that also occur in fens, e.g., northern bedstraw (*Galium boreale*) and Seneca snakeroot (*Polygala senega*). No rare plants were noted.

The West Unit is more mesic. White-cedar (*Thuja occidentalis*) is dominant over the whole face of the escarpment, and white birch (*Betula papyrifera*) and basswood (*Tilia americana*) are much more common than they are in the East Unit. There are fewer species of shrubs and woody vines than are found in the East Unit, and they are low in density by comparison. The most common shrubs are gray dogwood (*Cornus racemosa*), chokecherry (*Prunus virginiana*), red raspberry (*Rubus idaeus* ssp. *strigosus*), and red elderberry (*Sambucus racemosa* ssp. *pubens*). The fern frequency is much higher than that found in the East Unit; bladder fern (*Cystopteris bulbifera*) is very abundant, but the majority of the seven species listed are occasional or rare. The extremely distinct walking fern (*Asplenium rhizophyllum*), which reproduces via stolon-like leaf tips, forms patches on a few large dolomite boulders. One group of plants usually particularly noticeable in northern mesic forests is the spring ephemerals. Several, including jack-in-the-pulpit (*Arisaema triphyllum*), wild ginger (*Asarum canadense*), round-lobed hepatica (*Hepatica americana*), and bloodroot (*Sanguinaria canadensis*) occur here, but there does not seem to be a large representation of these interesting plants, perhaps due to season of sampling. No saprophytic or parasitic plants were found although such are characteristically found in this habitat. Neither was any rare plants noted.

The six species mentioned by the WI DNR as rare for the natural area, *Diplazium pycnocarpon*, *Gentiana alba*, *Carex crawei*, *C. richardsonii*, *Euonymus atropurpurea*, and *Staphylea trifolia*, were not observed, but parts of each unit were not explored, and the rare species may have been missed.

Lichens

Species	Substrate	Unit	Relative frequency	Record occurrence
<i>Amandinea punctata</i>	bark	E	C	county
<i>Arthonia caesia</i>	bark	E	A	county
<i>Arthonia radiata</i>	bark	E & W	C	county
<i>Biatora vernalis</i>	moss	E	R	county
<i>Caloplaca flavorubescens</i>	bark	E	O	county
<i>Caloplaca holocarpa</i>	bark	E	O	county
<i>Caloplaca subsoluta</i>	limestone	E	C	county
<i>Candelaria concolor</i>	bark	E	C	county
<i>Candelariella efflorescens</i>	bark	E	A	county
<i>Catillaria nigroclavata</i>	bark	E	R	state
<i>Cladonia coniocraea</i>	moss	E	O	county
<i>Cladonia cylindrica</i>	old wood	E	R	county
<i>Cladonia fimbriata</i>	moss	E	O	county
<i>Cladonia rei</i>	old wood	E	R	county
<i>Cladonia symphycarpia</i>	moss	E	R	county
<i>Dermatocarpon miniatum</i>	limestone	E	O	county
<i>Flavoparmelia caperata</i>	bark	E	A	county
<i>Graphis scripta</i>	bark	W	O	county
<i>Hypocenomyce scalaris</i>	old wood	E	R	county
<i>Imshaugia placorodia</i>	bark	E	R	county
<i>Julella sericea</i>	bark	E	R	county
<i>Lecanora dispersa</i>	limestone	E	O	county
<i>Lecanora hybocarpa</i>	bark	E	O	county
<i>Lecanora symmicta</i>	bark	E	C	county
<i>Lecanora thysanophora</i>	bark	E	O	county
<i>Lepraria lobificans</i>	bark	E	O	county
<i>Melanelia fuliginosa</i>	bark	E	O	state
<i>Mycocalicium subtile</i>	old wood	E	R	county
<i>Mycomicrothelia</i> sp.	bark	E	R	state
<i>Parmelia sulcata</i>	bark	E	A	county
<i>Parmeliopsis hyperopta</i>	bark	E	C	county
<i>Peltigera rufescens</i>	moss	E	O	county
<i>Physcia aipolia</i>	bark	E	A	none
<i>Physcia millegrana</i>	bark	E	A	none
<i>Physconia leucoleiptes</i>	bark	E	O	county
<i>Placynthium nigrum</i>	limestone	E	C	county
<i>Protoblastenia rupestris</i>	limestone	E	O	county

Lichen discussion

All but two of the species are either county or Wisconsin records, Brown County being extremely under collected. There are at least two, possibly three state records. *Catillaria nigroclavata* is definitely new to the state list, but has probably been overlooked previously. The *Mycomicrothelia* specimen cannot be identified to species yet. It is not *M. wallrothii*, which is found in Minnesota, and might be a European species. *Melanelia fuliginosa* (two collections in the East Unit) was recently reported as being present in Wisconsin based on Thomson's *American Arctic Lichens* (1984), but no specimen was found in several herbaria (Bennett 2006). These collections represent the only vouchered ones for this species in the state. The *Pseudevernia consocians* specimen is highly unusual and very atypical and may be a new species. There are other species present that were infrequent, but are found elsewhere in the state. The remaining species are common and frequent both at the SNA and elsewhere in the state.

Most of the species listed above are vouchered, and collection numbers will be forthcoming later. The specimens will be deposited in the private herbarium of J. P. Bennett. Some of the very common, weedy species were not vouchered, and were noted present in a field notebook.

Recommendations

Both units are definitely worthy of preservation owing to the uniqueness of the habitats they support and the special snails they contain. It would be desirable to extend the project area on the west side of the highway northward by about 1000 feet to within 100 yards of the Nicolet statue as the habitat there is continuous. The East Unit is suffering from severe in-filling by brush and increasing tree density. The BCW recommends the WI DNR invest in continued buckthorn/honeysuckle removal and treatment, selective thinning of tree density and use of prescribed burns to restore the alvar community. The BCW is willing to partner with the WDNR in this endeavor.

The two unknown rare lichen species found in the East Unit will be identified to species by species experts who will be sent the specimens. The results will be assembled for entry into the WI DNR endangered species list. These species depend on their vascular plant hosts for survival. Therefore areas to be burned or have removal treatments should be examined for the rare lichen species in advance.

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Appendix 1. Vascular plants identified by the Cochrane teams
(East Unit: T. Cochrane, B. Cochrane, D. White, L. Yahr, and R. Kahl
West Unit: T. and B. Cochrane)

East Unit list

TREES

Carya ovata
Fraxinus pennsylvanica
Juniperus virginiana – dominant in large areas
Populus tremuloides – subdominant
Prunus serotina
Quercus alba
Q. ellipsoidalis
Q. macrocarpa – subdominant
Tilia americana
Betula papyrifera

SHRUBS

Arctostaphylos uva-ursi – R
Cornus racemosa
C. rugosa
Juniperus communis – A
Lonicera X bella – R
L. dioica – R (*C & BCW 14653*, WIS)
L. hirsuta – R (*C & BCW 14648*, WIS)
Physocarpus opulifolius – O
Prunus virginiana – A
Rhamnus cathartica – C
Ribes cynosbati – R
Rosa sp. – O
Shepherdia canadensis – A
Symphoricarpos albus – A (*C & BCW 14657*, WIS)
Toxicodendron rydbergii – O
Viburnum rafinesquianum – A (*C & BCW 14656*, WIS)

FERNS

Apocynum androsaemifolium – R
Arabis divaricarpa (C & BCW 14649, WIS)
Campanula rotundifolia – C
Carex cephalophora – R (C & BCW 14652, WIS)
C. grisea – R (C & BCW 14655, WIS)
C. pennsylvanica – A
C. rosea – O
Ceanothus herbaceus – R (3 very small plants, close together)
Cerastium fontanum – O
Circaea sp [C. lutetiana?]
Comandra umbellata – A
Cynoglossum officinale – R (1 plant)
Cypripedium sp. – R (2 small plants)
Dicentra canadensis – very rare? (only 1 leaf seen, but ephemerals in this very dry habitat may simply have disappeared by now)
Epipactis helleborine – R (2 plants, both pulled)
Erigeron pulchellus – C
Fragaria virginiana – C
Galium aparine – O
G. boreale – C
Geum canadense – O
Geranium maculatum – O
Helianthus hirsutus
H. strumosus
Heuchera richardsonii – R (1 plant)
Hieracium aurantiacum – one patch
Hieracium piloselloides – occasional patches in openings (C & BCW 14651)
Hypericum perforatum – O
Hypoxis hirsuta – very rare? (1 plant in flower; others may be present)
Leucanthemum vulgare – R (two very small areas; plants were pulled)
Lobelia spicata – R (2 plants)
Luzula multiflora – R
Maianthemum canadense – A
Nepeta cataria
Monarda fistulosa
Pedicularis canadensis – O
Poa compressa – A
P. pratensis
Polygala senega – A

Taenidia integerrima – R (two very small areas, mostly seedlings) (*C & BCW 14654*, WIS)
Taraxacum officinale – R
Triosteum – R (1 plant)
Vaccinium angustifolium – R (1 plant)
Verbascum ?
Veronica officinale – two patches
Viola sp.

West Unit list

TREES

Betula papyrifera – O (large specimens)
Fraxinus americana – R (1 small sapling)
Fraxinus pennsylvanica
Quercus macrocarpa
Thuja occidentalis – A (dominant over the whole area)
Tilia americana

SHRUBS AND WOODY VINES

Cornus racemosa – A
C. rugosa
Diervilla lonicera – A
Parthenocissus quinquefolia
Prunus virginiana – C
Ribes cynosbati – R
Rubus idaeus subsp. strigosus – C
R. occidentalis – R
Sambucus pubens – C
Symphoricarpos albus – R (*C & C 14661*, WIS)
Toxicodendron rydbergii – abundant on top, nearly absent in the good habitat
Viburnum lentago – 5 very low, severely browsed shrubs in one spot
Vitis riparia

FERNS

Adiantum pedatum – one patch
Asplenium rhizophyllum – local; 2 small patches
Athyrium filix-femina – O
Cystopteris bulbifera – very abundant (*C & C 14660*, WIS)

HERBS

Actaea rubra – O
Agrimonia sp. – R
Amphicarpaea bracteata – R
Anemone virginiana – O
Apocynum androsaemifolium – R
Aquilegia canadensis – O
Aralia nudicaulis – A
Arabis divaricarpa – R
Arisaema triphyllum – A
Asarum canadense – C
Carex blanda – O
C. deweyana – O
C. eburnea – forming mats, 2 little areas
C. peckii – (C & C 14663, WIS)
C. pennsylvanica – A
C. sparganioides – R
Cerastium fontanum – (C & C 14662, OSH, WIS)
Chenopodium simplex – R (2 small plants)
Circaea alpina
[C. lutetiana? – both spp. might well be present]
Cirsium vulgare – R (1 plant)
Dioscorea villosa – R
Festuca subverticillata – R
Fragaria virginiana – O
Galium aparine – R
G. boreale
G. triflorum – O
Geum canadense – O
Hackelia deflexa – O
Hepatica americana – R
Hesperis matronalis – R
Leonurus cardiaca – O
Maianthemum canadense
Monarda fistulosa – R
Osmorhiza claytonii – O
Oxalis stricta (O. europaea) – R
Parietaria pennsylvanica – A
Phryma leptostachya – R

S. stellata
Smilax ecirrhata – R
Thalictrum dioicum – O
Trillium sp.
Urtica dioica
Uvularia sessilifolia – 1 area at base of cliff
Viola pubescens – (C & C 14664, WIS)

Linear depression mimicking intermittent stream along bottom of cliffs

Carex cristatella – R (C & C 14665, WIS)
C. radiata
Erigeron philadelphicus – O (C & C 14666, WIS)
Fragaria virginiana
Geranium maculatum
Glyceria striata
Impatiens capensis
Lycopus americanus
Solanum dulcamara
Symphiotrichum lateriflorum

Appendix 2. Vascular plants identified by Eddy and Harriman

Red Banks SNA, Door County, WI
Plant Species List for 9 June 2007
Submitted by T. L. Eddy & N. A. Harriman

East side of Highway 57

<i>Achillea millefolium</i>	C	
<i>Arabis glabra</i>	O	
<i>Barbarea vulgaris</i>	O	
<i>Berberis thunbergii</i>	R	
<i>Campanula rotundifolia</i>	C	
<i>Carex alopecoidea</i>	O	
<i>Carex deweyana</i>		
<i>Carex granularis</i>	OSH	O
<i>Carex pensylvanica</i>	A	
<i>Carex tetanica</i>	O	
<i>Carya ovata</i>	C	
<i>Cornus racemosa</i>	C	
<i>Dodecatheon meadia</i>	C	
<i>Erigeron pulchellus</i>	A	
<i>Erigeron strigosus</i>	A	
<i>Fragaria virginiana</i>	C	
<i>Galium boreale</i>	OSH	C
<i>Galium aparine</i>	OSH	
<i>Geranium maculatum</i>		
<i>Hieracium aurantiacum</i>	C	
<i>Hieracium caespitosum</i>	OSH	C
<i>Houstonia longifolia</i>	OSH	C
<i>Hypoxis hirsuta</i>	O	
<i>Juniperus communis</i>	C	
<i>Juniperus virginiana</i>	A	
<i>Lithospermum officinale</i>	OSH	C
<i>Lonicera tatarica</i>	C	
<i>Luzula multiflora</i>	OSH	C
<i>Maianthemum canadense</i>	C	
<i>Nepeta cataria</i>	O	

<i>Quercus alba</i>	O
<i>Quercus macrocarpa</i>	C
<i>Quercus rubra</i>	C
<i>Rhamnus cathartica</i>	C
<i>Rosa blanda</i>	OSH
<i>Senecio pauperculus</i>	OSH C
<i>Shepherdia canadensis</i>	OSH C
<i>Smilacina racemosa</i>	
<i>Solanum dulcamara</i>	
<i>Symphoricarpos albus</i>	C
<i>Taenidia integerrima</i>	OSH O
<i>Thalictrum dioicum</i>	C
<i>Tragopogon dubius</i>	O
<i>Veronica officinalis</i>	A
<i>Veronica peregrina var. xalapensis</i>	
<i>Viburnum rafinesquianum</i>	C
<i>Vicia sativa</i>	C
<i>Zizia aurea</i>	

West side of Highway 57

<i>Acer spicatum</i>	R
<i>Actaea rubra</i>	O
<i>Aquilegia canadensis</i>	O
<i>Aralia nudicaulis</i>	OSH C
<i>Arctium minus</i>	
<i>Arisaema triphyllum</i>	C
<i>Asarum canadense</i>	C
<i>Asplenium rhizophyllum</i>	R
<i>Betula papyrifera</i>	C
<i>Carex eburnean</i>	OSH
<i>Caulophyllum thalictroides</i>	O
<i>Circaea lutetiana</i>	C
<i>Cystopteris bulbifera</i>	C
<i>Diervilla lonicera</i>	C
<i>Fraxinus americana</i>	O
<i>Galium triflorum</i>	
<i>Hepatica americana</i>	O
<i>Hesperis matronalis</i>	

<i>Rubus idaeus</i>	C	
<i>Sambucus pubens</i>	C	
<i>Sanguinaria canadensis</i>		
<i>Sanicula gregaria</i>		
<i>Smilacina racemosa</i>	C	
<i>Smilax ecirrhata</i>		
<i>Symphoricarpos albus</i>	C	
<i>Thalictrum dioicum</i>	C	
<i>Tilia americana</i>	A	
<i>Thuja occidentalis</i>	A	
<i>Triosteum perfoliatum</i>	OSH	R
<i>Ulmus americana</i>		
<i>Urtica dioica</i>	C	
<i>Viola sororia</i>	C	
<i>Vitis riparia</i>	C	