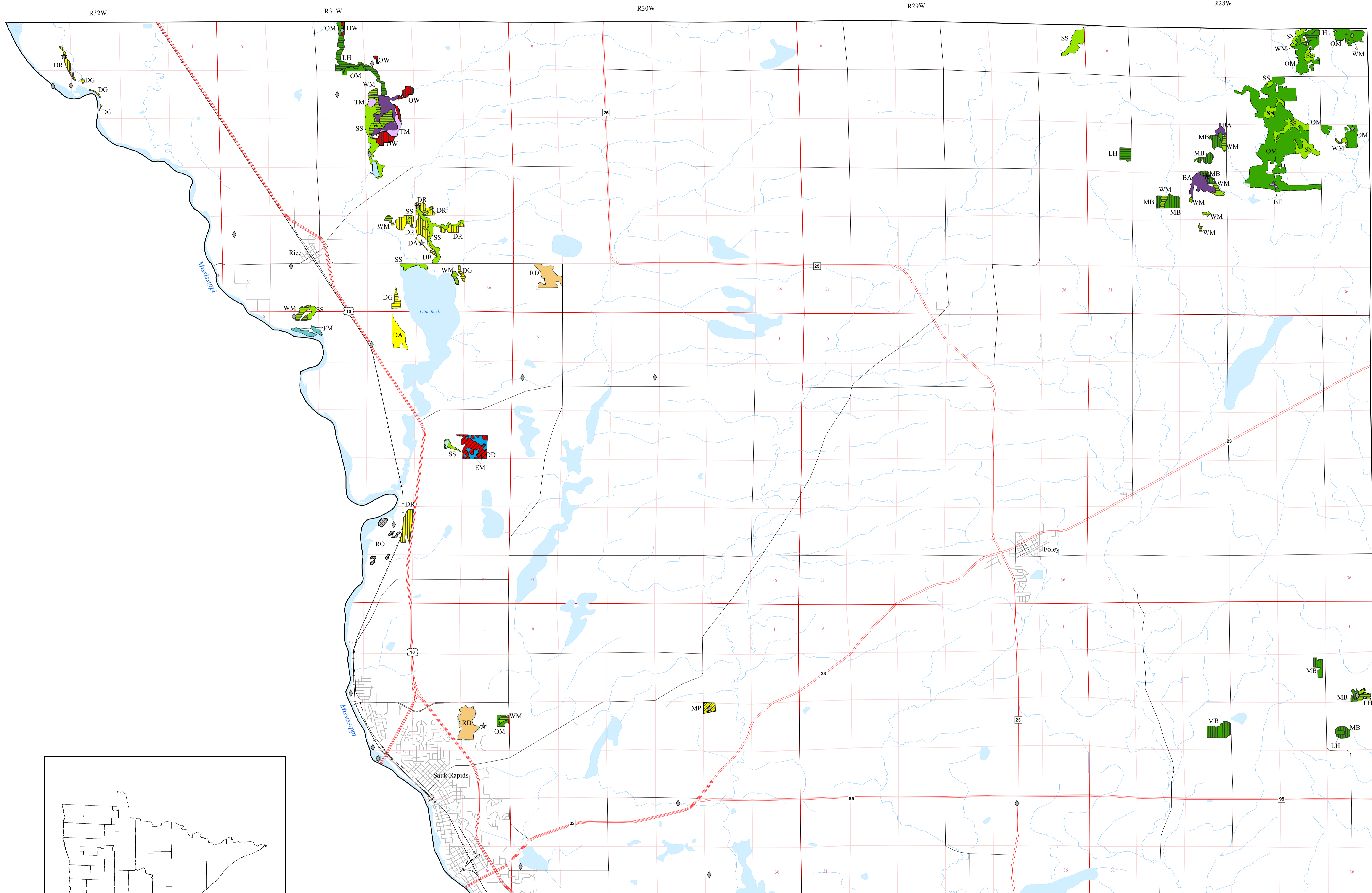


NATIVE PLANT COMMUNITIES AND RARE SPECIES IN BENTON COUNTY, MINNESOTA

Minnesota County Biological Survey February 2004



Native plant communities are groups of native plants that interact with each other and with their environment in ways not greatly altered by modern human activity or by introduced organisms. These groups of native species form recognizable units, such as oak forest, prairie, or marsh, that tend to repeat over space and time. Native plant communities are generally classified and described by considering vegetation, hydrology, landforms, soils, and natural disturbance regimes. The native plant community types on this map are classified primarily by vegetation and major habitat features. The Minnesota County Biological Survey located areas of native plant communities in Benton County in 1995 using aerial photo interpretation followed by field surveys of selected sites. The description and approximate acreage of each native plant community type given below are based on the results of the Survey. White areas on the map represent land where modern human activities such as farming, overgrazing, wetland drainage, recent logging, and residential and commercial development have destroyed or greatly altered the natural vegetation. Native plant communities covered approximately 4,129 acres, or 1.5% of the county at the time of the Survey.

UPLAND FORESTS AND WOODLANDS

Fire Dependent Forest/Woodland System

Oak - (Red Maple) Forest
Dry deciduous forests on level, very well-drained outwash sand, or on south to west-facing slopes on gravelly glacial till. Interrupted canopy of northern oak (*Quercus ellipsoidata*), bur oak (*Quercus macrocarpa*), or white oak (*Quercus alba*), with occasional paper birch (*Betula papyrifera*) or black cherry (*Prunus serotina*). Quaking aspen (*Populus tremuloides*) sometimes present at margins. Older oaks often open-grown or semi-open grown, becoming overtopped by younger trees. Subcanopy either absent or with scattered red maple (*Acer rubrum*). Well-developed, diverse shrub layer with American hazelnut (*Corylus americana*), gray dogwood (*Cornus racemosa*), prickly ash (*Zanthoxylum americanum*), and chokecherry (*Prunus virginiana*) common. Ground layer of dry forest and woodland herbs such as hog peanut (*Ampelopsis brevipedunculata*), pointed-leaved tick trefoil (*Desmodium glutinosum*), wild saraparilla (*Aralia racemosa*), mountain rice grass (*Oryzopsis asperifolia*), and Pennsylvania sedge (*Carex pensylvanica*).
Approximate area: 109 acres

Bur Oak - (Pin Oak) Woodland
Dry woodlands on hilltops and steep slopes with sandy soils. Canopy dominated by stunted bur oak with some quaking aspen. Shrub layer dense and dominated by American hazelnut. Herbaceous species include Indian grass (*Sorghastrum nutans*), procaine grass (*Stipa spartea*), big blue stem (*Andropogon gerardii*), bird's foot trefoil (*Coronilla varia*), and white sage (*Artemisia ludoviciana*).
Approximate area: 102 acres

UPLAND GRASSLANDS, SHRUBLANDS AND SPARSE VEGETATION

Rock Outcrop System

Crystalline Bedrock Outcrop (Southern)
Dry sparsely-vegetated communities on exposed granite bedrock. Typically occur as a complex of vegetation types on bare rock surfaces, on shallow soil in crevices and around exposed rock, and in pools in shallow depressions on rock surfaces. Bare rock often covered by mosses and lichens, with *Polytrichum piliferum* and *Cladonia* sp. common. Drought-tolerant grasses and forbs present in crevices and on small patches of soil. Characteristic species include poverty grass (*Danthonia spicata*), small-flowered faneflower (*Fallopia parviflora*), rusty woodrat (*Hesperis matronalis*), prairie wild onion (*Allium triquetrum*), harebell (*Campanula rotundifolia*), bluet (*Hebeota longifolia*), and rock spikegrass (*Setaginea repens*). Historically, dry prairie and dry oak savanna vegetation occurred on shallow soils surrounding rock exposures. More recently, wildfire suppression and disturbance from livestock grazing and rock quarrying have resulted in displacement of prairie species by dense brush or trees, especially eastern red cedar (*Juniperus virginiana*) and bur oak and by disturbance grasses such as Kentucky bluestem (*Poa pratensis*) and smooth brome (*Bromus inermis*).
Approximate area: 38 acres

Mesic Hardwood Forest System

Red Oak - Basswood Forest (Calcareous Till)
Dry-mesic to mesic deciduous forests on level to rolling glacial till. Variable canopy, dominated by a mix of northern red oak (*Quercus rubra*), bur oak, basswood (*Liquidambar styraciflua*), quaking aspen, or green ash (*Fraxinus pennsylvanica*), with occasional red maple or sugar maple (*Acer saccharum*). Subcanopy often with ironwood (*Ostrya virginiana*), red maple, or sugar maple. American hazelnut, beaked hazelnut (*Corylus cornuta*), pagoda dogwood (*Cornus alternifolia*), nannyberry (*Hibiscus lentiginosus*), basswood, and chokecherry common in shrub layer. Ground layer of mesic forest herbs such as large-flowered trillium (*Trillium grandiflorum*), wood anemone (*Anemone quinquefolia*), interrupted fern (*Onoclea claytoniana*), zigzag goldenrod (*Solidago heterophylla*), round-lobed hepatica (*Anemone americana*), early wood-pimpernel (*Thalictrum dioicum*), wild saraparilla, rattlesnake fern (*Botrychium virginicum*), pointed-leaved tick trefoil, spotted *Phytolacca* (*Phytolacca sp.*), and wild geranium (*Geranium maculatum*). Often with small inclusion of deciduous forest.
Approximate area: 1,340 acres

Upland Prairie System

Dry Barren Prairie (Southern)
Dry prairie on gently rolling to strongly rolling sites where terraces or outwash sand deposits have been reworked by wind into dunes. Usually sparsely vegetated with patches of bare sand interspersed with scattered grasses and forbs. Typical species include procaine grass, sand reed grass (*Calamagrostis longifolia*), little bluestem (*Schizachyrium scoparium*), sand dropseed (*Sporobolus cryptandrus*), linear-leaved panic grass (*Panicum linearifolium*), and Schwenz's nut sedge (*Cyperus schweinitzii*), along with forbs including silky prairie clover (*Dalea villosa* var. *villosa*), western spiderwort (*Tradescantia occidentalis*), hairy puccoon (*Lithospermum carolinense*), green-flowered poppygrass (*Leptandrium dimorphum*), and large-flowered beard tongue (*Pentstemon grandiflorus*). Bare sand in wind-eroded areas colonized by distinctive species such as seaside three-awn (*Eriaria tuberosula*), beach heather (*Hudsonia tomentosa*), beakberry (*Acanthopeltis incana*), long-leaved panic grass (*Panicum perfoliatum*), and rock spikegrass.
Approximate area: 87 acres

Wet-mesic Hardwood Forest System

Basswood - Black Ash Forest
Wet-mesic deciduous forests on level stream terraces or on low, level terrain adjacent to wetlands. Soils are typically poorly-drained silty or clayey loams, sandy alluviums with high water tables or occasionally rich cobbly silt over granite bedrock. Canopy a mix of black ash (*Fraxinus nigra*), green ash and bur oak with occasional red maple. Occurrence on bedrock often with a supercanopy of white pine (*Pinus strobus*). In the richer sites, northern red oak, basswood and sugar maple are also common canopy associates. Sugar maple, blue beech (*Carpinus caroliniana*), and ironwood are common in the subcanopy. The shrub layer is often diverse and varies from patchy to continuous. Common species include American hazelnut, downy arrowwood (*Ilex verticillata*), hairy puccoon (*Lithospermum carolinense*), black hawthorn (*Ilex verticillata*), and deciduous tree saplings. Rich and often very diverse ground layer with stary sedge (*Carex rosea*), charming sedge (*Carex blanda*), bromo-like sedge (*Carex bromoides*), and bladder sedge (*Carex muscicola*) along with a mix of mesic and wet-mesic forest herbs such as lady fern (*Athyrium angustum*), jack-in-the-pulpit (*Arisaema tripartitum*), common enchanter's nightshade (*Circaea latifolia*), spotted tooth-meadow (*Sparganium angustifolium*), early meadow-rue, wild ginger (*Asarum canadense*), wood anemone, large-leaved aster (*Aster macrophyllus*), round-lobed hepatica, wild geranium and large-flowered trillium. Dense patches of wood nettle (*Laportea canadensis*) and stich fern (*Matteuccia struthiopteris*) also common. Small ephepheral pools present in depressions.
Approximate area: 203 acres

Dry Sand-Gravel Prairie (Southern)

Dry Sand-Gravel Prairie (Southern)
Dry to dry-mesic savannas on level sandy river terraces or steep, sandy south to west-facing slopes along the Mississippi River. Tree canopy of scattered or clumped open-grown bur oak, often stunted or fire-scarred. Open understory with ground layer of species typical of dry-mesic prairie. Common grasses include little bluestem, procaine grass, and prairie dropseed (*Sporobolus heterodermis*) with occasional big bluestem or other tall grasses. Typical forbs include Virginia ground cherry (*Physalis virginiana*), long-headed thimbleweed (*Anemone cylindrica*), prairie smoke (*Geum triflorum*), hoary puccoon (*Lithospermum carolinense*), slender beard tongue (*Pentstemon gracilis*), beach aster, and northern bedstraw (*Galium boreale*); stary false Solomon's seal (*Solidago serotina*) is often abundant below oak trees. Ground layer also with scattered low shrubs, especially leadplant (*Ampelisca canadensis*), prairie rose (*Rosa arkansana*), and prairie willow (*Salix humilis*). In the absence of fire, mesic savannas are succeeding to woodland brushland, with prairie understory displaced by bur oak saplings, American hazelnut, smooth sumac, and other woody plants. Grazed or disturbed areas have abundant Kentucky bluestem.
Approximate area: 52 acres

Wet Forest System

Black Ash - Yellow Birch - Red Maple - Basswood Swamp (East central)
Forested swamps on saturated mineral or organic soils in depressions or shallow basins. Standing water typical, especially in spring or early summer. Patchy to interrupted canopy dominated by black ash with occasional American elm (*Ulmus americana*), blackberry (*Rubus occidentalis*), and huckleberry (*Celastrus occidentalis*). Sparse to patchy shrub layer. Ground layer with singing nettle (*Urtica dioica*), cleaved *Platanus* (*Platanus sp.*), Virginia wild rice (*Zizania virgata*), and sedges (*Carex* spp.). Trees often covered with vines, especially in areas adjacent to canopy gaps. Small depressions and ephemeral pools common.
Approximate area: 41 acres

Dry Sand-Gravel Oak Savanna (Southern)

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Approximate area: 277 acres

Wetland Forests

Floodplain Forest System

Silver Maple - (Virginia Creeper) Floodplain Forest
Deciduous forests on annually flooded sandy or silty alluvial soils on floodplains of the Mississippi and smaller rivers. Interrupted canopy dominated by silver maple (*Acer saccharinum*) and green ash with occasional red elm (*Ulmus rubra*), box elder (*Acer negundo*), and huckleberry (*Celastrus occidentalis*). Sparse to patchy shrub layer. Ground layer with singing nettle (*Urtica dioica*), cleaved *Platanus* (*Platanus sp.*), Virginia wild rice (*Zizania virgata*), and sedges (*Carex* spp.). Trees often covered with vines, especially in areas adjacent to canopy gaps. Small depressions and ephemeral pools common.
Approximate area: 41 acres

Wet Meadow/Carr System

Willow Dogwood Shrub Swamp
Shrub-dominated wetlands on saturated mineral or organic soils in shallow wetland basins (*Cornus sericea*), with scattered deciduous trees, including green ash, paper birch, and elms. Herbaceous layer of common open wetland species such as lake sedge (*Carex lasiocarpa*), tussock sedge (*Carex stricta*), silvery sedge (*Carex canescens*), giant bur reed (*Sagittaria arifolia*), bluejoint (*Phragmites communis*), spotted joe pye weed (*Eupatorium maculatum*), common honeysuckle (*Lonicera periclymenum*), tufted loosestrife (*Lysimachia thysiflora*), cleaved, willow-herb, three-lobed bellwort (*Galium triflorum*), marsh skullcap (*Scutellaria perfoliata*), northern white violet (*Viola mucronata*), and common marsh marigold.
Approximate area: 645 acres

Forested Rich Peatland System

Black Ash - (Red Maple) Seepage Swamp
Forested swamps in shallow drainage-ways on soils saturated by groundwater seepage. Canopy dominated by black ash with occasional green ash and sugar maple. Sparse shrub layer with scattered black ash, red maple and other tree saplings. Winterberry, gray dogwood, wild black currant (*Ribes americanum*) and other shrubs are typical. Diverse ground layer with sedges (*Carex* spp.) and mesic to wet forest herbs such as common enchanter's nightshade, Michigan lily (*Lilium michiganense*), fringed loosestrife (*Lysimachia ciliata*), and ragwort (*Senecio* sp.). Meadow-like openings present in areas of highest groundwater seepage.
Approximate area: 7 acres

Wet Meadow

Sedge Meadow
Open wetlands on seasonally flooded mineral or organic soils in shallow basins or local drainage areas; often associated with shrub swamps. Dominated by broad-leaved sedge such as lake sedge, Hayden's sedge (*Carex haydenii*), and tussock sedge, and also by bluejoint. Common forbs include marsh bellflower (*Campanula sp. sp.*), dwarf raspberry (*Rubus pubescens*), marsh yarrow (*Lachnophora pulchra*), spotted joe pye weed, common beech, bog aster (*Aster borealis*), and great water dock. Scattered clumps of willows or red-osier dogwood and patches of meadowweet are typical.
Approximate area: 308 acres

Marsh System

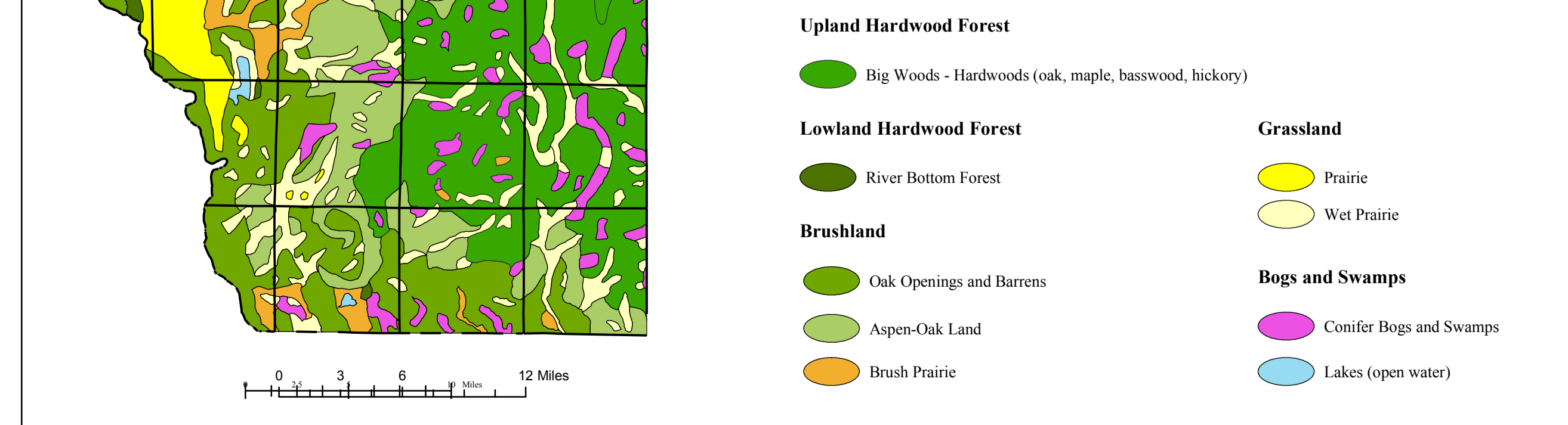
Cattail Sedge Marsh (Northern)
Open wetlands on mineral or organic soils in shallow basins in rolling terrain. Standing water present through most of the growing season. Dominant species vary, but often include zones of cattails (*Typha* spp.), lake sedge, rice cut grass (*Cyperus arizonicus*), watergrass (*Cyperus cyperinus*), soft stem bulrush (*Scirpus validus*), and broad-leaved arrowhead (*Sagittaria latifolia*). Associated plants include willows, speckled alder, water parsnip (*Sium maritimum*), and water plantain (*Alisma* spp.).
Approximate area: 53 acres

Open Rich Peatland System

Graminoid Rich Fen (Basin)
Open wetlands on saturated organic soils in large wetland complexes. Dominated by narrow-leaved sedges such as wiregrass sedge (*Carex lasiocarpa*) and woolly sedge, with scattered wetland grasses, especially fowl bluegrass, fowl matra grass (*Glyceria striata*), and bluejoint (*Calamagrostis canadensis*). Common forbs include willow-herb (*Epilobium* spp.), bugleweed (*Lycopus* spp.), buckbean (*Menyanthes trifoliata*), and great water dock (*Rumex crispus*). Scattered low shrubs are common, especially meadowweet (*Spiraea alba*), bog birch (*Betula glandulifera*), and willows (*Salix* spp.).
Approximate area: 244 acres

THE VEGETATION OF BENTON COUNTY AT THE TIME OF THE PUBLIC LAND SURVEY

This map shows the vegetation of Benton County as interpreted by Francis J. Marschner using Public Land Survey records from 1850-1855. The legend descriptions are slightly modified from Marschner's original descriptions.



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The classification of native plant communities in Minnesota has recently been refined and updated. Native plant communities shown on this map are in this new version of the classification, Minnesota's Native Plant Community Classification (version 2.0)*. The electronic data for this county, currently available on the DNR's Data Deli (<http://deli.dnr.state.mn.us/>), are in version 1.5** of the classification.

* Minnesota Department of Natural Resources, 2003. Minnesota's Native Plant Community Classification (version 2.0).
** Minnesota Department of Natural Resources, 2003. Minnesota's Native Plant Community Classification (version 1.5).
Minnesota Department of Natural Resources, Division of Fish and Wildlife, Biological Report No. 2.

