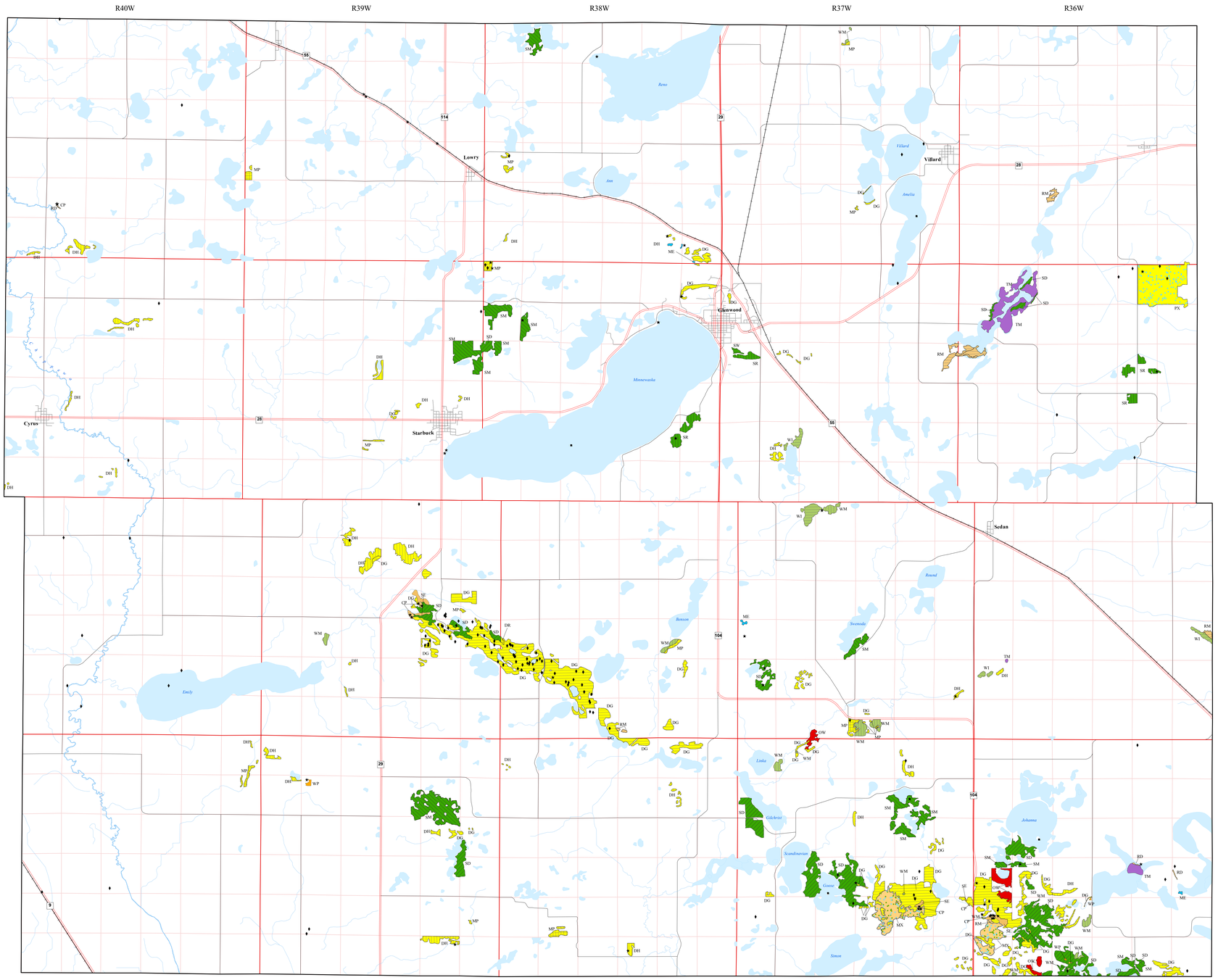
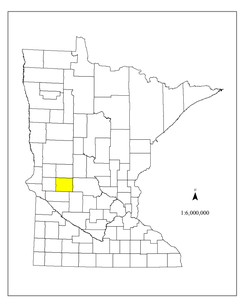
NATIVE PLANT COMMUNITIES AND RARE SPECIES IN POPE COUNTY, MINNESOTA

Minnesota County Biological Survey





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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 Pope County 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 or light-gray areas on the map represent land where modern human activites such as farming, overgrazing, wetland drainage, recent logging, and residential and commercial development have destroyed or greatly altered the natural vegetation.

UPLAND FORESTS

SD — **Bur Oak-(Pin Oak) Forest** - Forests on level uplands and south facing slopes on soils formed in glacial till or supraglacial deposits. Canopy typically dominated by bur oak *(Quercus macrocarpa)* and basswood *(Tilia americana)*, common associated or codominant canopy trees include green ash *(Fraxinus pennsylvanica)*, black cherry *(Prunus serotina)*, and northern pin oak *(Quercus ellipsoidalis)*. Subcanopy present, usually with ironwood *(Ostrya virginiana)*, basswood, and green ash. Shrub layer sparse and commonly includes prickly gooseberry *(Ribes cynosbati)*, Missouri gooseberry *(Ribes missouriense)*, and prickly ash *(Xanthoxylum americanum)*. Ground layer composed of shade-tolerant herbs such as wild sarsaparilla *(Aralia nudicaulis)*, common false Solomon's-seal *(Smilacina racemosa)*, sweet cicely *(Osmorhiza claytonii)*, pointed-leaved tick trefoil *(Desmodium glutinosum)*, rough-leaved rice-grass *(Oryzopsis asperifolia)*, Pennsylvania sedge *(Carex pensylvanica)*, lopseed *(Phryma leptostachya)*, zig-zag goldenrod *(Solidago flexicaulis)*, large-flowered bellwort *(Uvularia grandiflora)*, and Virginia waterleaf *(Hydrophyllum virginianum)*. Many of these stands have succeeded from oak woodland following fire suppression since European settlement. Approximate area: 2,094 acres

SM — **Basswood-Bur Oak-(Green Ash) Forest** - Mesic forests on moist soils formed in glacial till or supraglacial deposits, most often on north-facing slopes but occasionally on low lying flat areas. Canopy dominated mostly by red oak *(Quercus rubra)* and basswood, with lesser amounts of slippery elm *(Ulmus rubra)* and green ash. Sugar maple *(Acer saccharum)* is occasional but absent from most stands due to fires in the prairie region prior to European settlement. Well developed subcanopy composed of ironwood, basswood, green ash, slippery elm, American elm *(Ulmus americana)*, and occasionally sugar maple. Shrub layer sparse and typically contains prickly gooseberry, Missouri gooseberry, pagoda dogwood *(Cornus alternifolia)*, and common elder *(Sambucus pubens)*. Ground layer includes Dutchman's breeches *(Dicentra cucullaria)*, jack-in-the-pulpit *(Arisaema triphyllum)*, blue cohosh *(Caulophyllum thalictroides)*, nodding trillium *(Trillium cernuum)*, bloodroot *(Sanguinaria canadensis)*, Virginia waterleaf, large-flowered bellwort, and long-stalked sedge *(Carex pedunculata)*. In some sites, this community also contains inclusions of wet-mesic hardwood forest at the bottom of steep north facing slopes. These areas will have a similar canopy composition but the herbaceous layer will be heavily dominated by wood nettle *(Laportea canadensis)*. Approximate area: 1,360 acres

SR — **Sugar Maple-Basswood-(Bitternut Hickory) Forest** - Mesic to wet-mesic forests on loam soils formed in glacial till, on cool, north-facing slopes or in level areas of outwash. Historically, these stands occurred on sites protected from fire by steep terrain or water bodies. The canopy is dense and dominated by sugar maple and basswood with green ash and bur oak also common. Sugar maple, ironwood and American elm dominate the subcanopy. The shrub layer tends to be sparse but there may be scattered dense thickets of prickly gooseberry, sugar maple, prickly ash and pagoda dogwood. The ground layer is patchy and overall abundance of herbaceous species is low. The most common are Virginia waterleaf, large-flowered bellwort, Canada mayflower *(Maianthemum canadense)*, cleavers *(Galium aparine)*, zig-zag goldenrod *(Solidago flexicaulis)*, long-stalked sedge and wild sarsaparilla. Approximate area: 282 acres

UPLAND PRAIRIES

DH — **Dry Hill Prairie** - Dry to dry-mesic prairies on well drained soils formed in glacial till on slopes and hilltops. Dominant grasses are little bluestem *(Schizachyrium scoparium)*, side-oats grama *(Bouteloua curtipendula)*, porcupine grass *(Stipa spartea)*, and prairie dropseed *(Sporobolus heterolepis)*, with much Indian grass *(Sorghastrum nutans)* and big bluestem *(Andropogon gerardii)* in dry-mesic areas. Other typical graminoids include plains muhly *(Muhlenbergia cuspidata)*, June grass *(Koeleria pyramidata)*, sun-loving sedge *(Carex heliophila)*, and Scribner's panic grass *(Panicum oligosanthes)*. Scattered shrubs present, commonly lead-plant *(Amorpha canescens)*, wolfberry *(Symphoricarpos occidentalis)*, and prairie rose *(Rosa arkansana)*. Common forbs include rough blazing star *(Liatris aspera)*, dotted blazing star *(Liatris punctata)*, buffalo bean *(Astragalus crassicarpus)*, standing milk-vetch *(Astragalus adsurgens)*, purple prairie clover *(Petalostemon purpureum)*, hoary puccoon *(Lithospermum canescens)*, heath aster *(Aster ericoides)*, purple coneflower *(Echinacea angustifolia)*, prairie turnip *(Psoralea esculenta)*, prairie smoke *(Geum triflorum)*, northern bedstraw *(Galium boreale)*, silky aster *(Aster sericeus)*, tooth-leaved evening primrose *(Callophus serratus)*, sky blue aster *(Aster oolentangiensis)*, prairie thistle *(Cirsium flodmanii)*, prairie golden-aster *(Heterotheca villosa)*, stiff golden rod *(Solidago rigida)*, and pasque flower *(Pulsatilla nuttalliana)*. Approximate area: 697 acres

DG — **Dry Sand-Gravel Prairie** - Dry prairies on excessively-drained soils formed in sandy and gravelly glacial ice contact deposits, such as eskers, kames and crevasse fills, on gently to steeply sloping sites. Typically dominated by the grasses little bluestem, porcupine grass, and side-oats grama, often in association with Wilcox's panic grass *(Panicum wilcoxianum)* and blue grama *(Bouteloua gracilis)*. Sand reed-grass *(Calamovilfa longifolia)*, hairy grama *(Bouteloua hirsuta)*, and June grass are prevalent in the most xeric sandy areas. Eastern red cedar *(Juniperus virginiana)*, lead-plant and prairie rose are common shrubs. Common forbs include many species of dry hill prairie. Forbs more commonly seen in the dry sand-gravel prairie than in dry hill prairie include hoary frostweed *(Helianthemum bicknellii)*, plains paintbrush *(Castilleja sessiliflora)*, prairie sagewort *(Artemesia frigida)*, plantain-leaved pussytoes *(Antennaria plantaginifolia)*, and harebells *(Campanula rotundifolia)*. Approximate area: 3,655 acres

MP — **Mesic Prairie** - Wet-mesic to dry-mesic prairies on moderately well-drained to moist soils on level to undulating terrain (slopes generally less than 10%) on glacial till or outwash. Species composition varies greatly between sites differing in soil moisture but are generally dominated by some combination of the grasses big bluestem, prairie dropseed, Indian grass, little bluestem, and switch grass *(Panicum virgatum)*, and in the more wet-mesic areas, prairie cord-grass *(Spartina pectinata)*. Other typical graminoids include Leiberg's panic grass *(Panicum leibergii)*, porcupine grass, slender wheatgrass *(Agropyron trachycaulum)*, Kalm's brome *(Bromus kalmii)*, and Mead's sedge *(Carex meadii)*. Typical forbs include Maximilian's sunflower *(Helianthus maximiliani)*, golden alexanders *(Zizea aptera)*, heart-leaved Alexanders *(Z. aurea)*, northern plains blazing star *(Liatris ligulistylis)*, great blazing star *(Liatris pycnostachya)*, smooth aster *(Aster laevis)*, wood lily *(Lilium philadelphicum)*, purple prairie clover, northern bedstraw, black-eyed susan *(Rudbeckia hirta)*, Virginia mountain-mint *(Pycnanthemum virginianum)*, and white camass *(Zigadenus elegans)*. Approximate area: 274 acres

LOWLAND DECIDUOUS FOREST

SW — **Elm-Basswood-Black Ash-(Hackberry) Forest** - Wet-mesic forests on clay loam soils on level ground along creeks and on lake peninsulas. Canopy dominated by a combination of American elm, green ash, basswood and hackberry *(Celtis occidentalis)* with small pockets of black ash *(Fraxinus nigra)* in low wet spots. American elms dominate the canopy in some tracts but in others, they are present mostly as standing dead snags. Hackberries and American elms dominate the understory. The shrub layer is mostly sparse, with gooseberries *(Ribes* spp.) prickly ash and common elder being the most frequent species. Ground layer commonly includes Virginia waterleaf, cleavers, and Dutchman's breeches in the spring, and becomes dominated by wood nettle throughout the summer. Vines present in nearly all sites. Approximate area: 14 acres

DECIDUOUS WOODLAND

OW — **Bur Oak-(Pin Oak) Woodland** - Woodlands on well drained soils formed in glacial till or supraglacial deposits, often on south to west facing slopes. Tree canopy consists of open-grown bur oak, with lesser amounts of northern pin oak, paper birch *(Betula papyrifera)*, eastern red cedar, and quaking aspen *(Populus tremuloides)*. Shrub layer often dense, with American hazelnut *(Corylus americana)*, chokecherry *(Prunus virginiana)*, gray dogwood *(Cornus foemina* ssp. *racemosa)*, prickly ash, and downy arrow-wood *(Viburnum rufinesquianum)*. Ground layer consists of moderately shade-tolerant species including bog-peanut *(Amphicarpaea bracteata)*, pointed-leaved tick trefoil, and Pennsylvania sedge. Prairie species are present in occasional, small openings. Most stands have succeeded from oak savanna following fire suppression since European settlement. Approximate area: 207 acres

SAVANNA

DR — **Dry Sand-Gravel Oak Savanna** - Dry savanna on level to steeply sloping sites on excessively-drained soils formed in glacial river outwash on river terraces. Open canopy dominated by open-grown bur oak or northern pin oak. Eastern red cedar is often abundant in sites lacking recent fire. Low to high cover of shrubs, commonly including smooth sumac *(Rhus glabra)*, leadplant, prairie rose, and American plum *(Prunus americana)*. Groundlayer dominated by forbs and graminoids of dry sand-gravel prairie. Approximate area: 6 acres

OPEN WETLANDS

WP — **Wet Prairie** - Nearly level prairies on mineral soil formed in glacial till or glacial outwash deposits. Occurs in shallow depressions where drainage is impeded but flooding is temporary and water tables are below rooting zone for most of growing season. Dominated mostly by prairie cord-grass, big bluestem, switchgrass, northern reed-grass *(Calamagrostis inexpansa)*, Baltic rush *(Juncus balticus)*, and mat muhly *(Muhlenbergia richardsonis)*. Sedges are also important, especially Sartwell's sedge *(Carex sartwellii)*, Buxbaum's sedge *(Carex buxbaumii)*, and woolly sedge *(Carex lanuginosa)*. Typical forbs include great blazing star, grass-leaved goldenrod *(Euthamia graminifolia)*, closed gentian *(Gentiana andrewsii)*, swamp milkweed *(Asclepias incarnata)*, spotted water-hemlock *(Cicuta maculata)*, autumn sneezeweed *(Helenium autumnale)*, giant sunflower *(Helianthus giganteus)*, Riddell's goldenrod *(Solidago riddellii)*, prairie loosestrife *(Lysimachia quadriflora)*, New England aster *(Aster novae-angliae)*, and great lobelia *(Lobelia siphilitica)*. Shrubs are sometimes common but have less than 30% cover; typical species include pussy willow *(Salix discolor)*, Bebb's willow *(Salix bebbiana)*, slender willow *(Salix gracilis)*, and red osier dogwood *(Cornus stolonifera)*. Approximate area: 12 acres

WM — **Sedge Meadow** - Wet, sedge dominated communities in poorly drained, organic soils in shallow depressions on glacial till or outwash. Seasonally flooded with persistent high water table above the ground surface for much of the growing season. Dominants are one or a combination of the following graminoids: lake sedge *(Carex lacustris)*, aquatic sedge *(Carex aquatilis)*, beaked sedge *(Carex rostrata)*, bluejoint *(Calamagrostis canadensis)*, tussock sedge *(Carex stricta)*, Hayden's sedge *(Carex haydenii)*, and northern reed-grass. Characteristic forbs include spotted joe-pye weed, common boneset *(Eupatorium perfoliatum)*, water smartweed *(Polygonum amphibium)*, marsh cinquefoil *(Potentilla palustris)*, tufted loosestrife *(Lysimachia thyrsiflora)*, red-stemmed aster *(Aster puniceus)*, cut-leaved bugleweed *(Lycopus americana)*, common mint *(Mentha arvensis)*, marsh skullcap *(Scutellaria galericulata)*, swamp milkweed, woundwort *(Stachys palustris)*, labrador bedstraw *(Galium labradoricum)* and great water dock *(Rumex orbiculatus)*. Shrubs are mostly in small clumps (accounting for less than 30% cover) and commonly include slender willow, Bebb's willow, and pussy willow. Approximate area: 265 acres

WI — **Willow-Dogwood Shrub Swamp** - Shrub-dominated wetlands on saturated mineral or shallow organic soils in shallow wetland basins. Dense, often tall shrub layer dominated by a mix of pussy willow, Bebb's willow, slender willow and red-osier dogwood. Ground layer consists of common wetland species such as cattail *(Typha latifolia)*, lake sedge, prairie sedge *(Carex prairea)*, aquatic sedge *(Carex aquatilis)*, northern reed-grass, bluejoint, marsh bellflower *(Campanula aparinoides)*, tussock sedge, marsh cinquefoil, tufted loosestrife, great water dock, bulb-bearing water hemlock *(Cicuta bulbifera)*, and water smartweed. Approximate area: 201 acres

SE — **Seepage Meadow** - Wet, shrub dominated wetlands on saturated mineral or thin organic soils on gently sloping terrain. Upwelling groundwater maintains saturated conditions but flooding is uncommon. Dense shrub cover composed of a mix of pussy willow, slender willow, red-osier dogwood and bog birch. Ground cover is similar to the shrub swamp community with sedges being the most common species, particularly prairie sedge and tussock sedge. Often contains many plant species seen in calcareous fens. Approximate area: 92 acres

CP — **Calcareous Fen** - Open wetlands on peat that is continuously saturated by cold, calcium-rich, oxygen-poor, upwelling groundwater; typically on shallow toe slopes of hills formed in calcareous, sandy and gravelly ice contact deposits. Small, marly pools often occur where groundwater discharge is greatest. Dominated by graminoids including sterile sedge *(Carex sterilis)*, beaked-sedge *(Rhynchospora capillacea)*, whorled nut-rush *(Scleria verticillata)*, big bluestem, clustered muhly grass *(Muhlenbergia glomerata)*, mat muhly grass, northern reed-grass, wiregrass sedge *(Carex lasiocarpa)*, and aquatic sedge; patches of hardstem bulrush *(Scirpus acutus)* and three-square *(Scirpus pungens)* often present. Low to medium height shrubs often common, including sage-leaved willow *(Salix candida)* and bog birch *(Betula glandulifera)*. Typical forbs include American grass-of-Parnassus *(Parnassia glauca)*, seaside arrow-grass *(Triglochin maritima)*, marsh arrow-grass *(Triglochin palustris)*, Kalm's lobelia *(Lobelia kalmii)*, bog aster *(Aster borealis)*, and fringed gentians (both *Gentianopsis procera* and *G. crinita*). Approximate area: 25 acres

RM — **Rich Fen (Mineral Soil)** - Open wetlands located on saturated mucky soil over mineral soil in shallow basins in rolling terrain. Also, inclusions in large shallow wetlands with circumneutral surface water. Dominated by fine-bladed sedges, most commonly wiregrass sedge. Shrubs can be present and they are often abundant. Common species includ slender willow, pussy willow, Bebb's willow, red-osier dogwood, and bog birch. Associated graminoids include tussock sedge, clustered muhly grass, and northern reed-grass. Typical forbs include spotted Joe-Pye Weed, common boneset, cut-leaved bugleweed, Labrador bedstraw and swamp lousewort *(Pedicularis lanceolata)*. Marsh fern *(Thelypteris palustris)*, marsh cinquefoil and great water dock also common. In some cases, there can be a floating mat of sedges and non-sphagnum mosses. Approximate area: 194 acres

RD — **Rich Fen (Prairie Seepage)** - Associated with slopes, either at the base of the slope or on level 'terraces' following a contour midway up a slope. This community has a similar species composition to Rich Fen (Mineral Soil). Approximate area: 7 acres

ME — **Arrowhead Marsh** - Open, shallow-basin wetlands that have standing water present during most of the year. Typically associated with lakes or ponds. Found on mineral or shallow organic soils on glacial till, outwash, or alluvium. Dominated by persistent emergent vegetation often in a mosaic of single species patches. In some cases they are dominated almost exclusively by wild rice *(Zizania palustris)*. In other case, there is a mixture of species including bur-reed *(Sparganium eurycarpum)*, bluejoint grass, rice cut grass *(Leersia oryzoides)*, common arrow-head *(Sagittaria lanifolia)*, water plantain *(Alisma subcordatum)*, and water parsnip *(Sium suave)*. Approximate area: 17 acres

FORESTED WETLANDS

TM — **Tamarack Swamp** - Forested swamps on saturated peat or muck in shallow, often large basins on glacial till or outwash. Surface water circumneutral to mildly acidic. Canopy dominated by moderate to fairly dense stands of tamarack *(Larix laricina)*. Subcanopy a diverse mix including bog birch, gooseberry *(Ribes* sp.), bog willow *(Salix pedicularis)*, highbush cranberry *(Viburnum trilobum)*, pussy willow and red-osier dogwood. Diverse ground layer includes tall northern bog-orchid *(Platanthera hyperborea)*, prairie sedge and soft-leaved sedge *(Carex disperma)*. In some cases, there is a continuous mat of sphagnum mosses, but often sphagnum is only present in small acidic microhabitats, such as on decayed stumps. Approximate area: 460 acres

COMPLEXES

MX — **Meadow-Marsh-Fen-Swamp Complex** - A complex of sedge meadow, cattail marsh, rich fen and willow-dogwood shrub swamp. The individual elements of this complex occur as areas so intricately mixed or so small that to map them individually would not be practical. Approximate area: 551 acres

PX — **Prairie Wetland Complex** - A complex of mesic prairie, sedge meadow and cattail marsh. The individual elements of this complex occur as areas so intricately mixed or so small that to map them individually would not be practical. Approximate area: 753 acres

The classification of native plant communities in Minnesota has recently been refined and updated. Native plant communitie 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). Ecological Land Classification Program, Minnesota County Biological Survey, and Natural Heritage and Nongame Research Program, St. Paul, MN.
** Minnesota Natural Heritage Program, 1993. Minnesota's native vegetation: a key to natural communities, version 1.5. Minnesota Department of Natural Resources, Division of Fish and Wildlife, Biological Report No. 2.

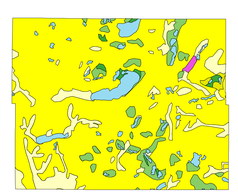
RARE SPECIES OF SPECIAL INTEREST

- Rare Animals
- Rare Plants
- Colonial Waterbird Nesting Site

OTHER MAPPED FEATURES

- Primary Roads
- Secondary Roads
- Railroads
- Rivers, Streams, and Ditches
- Lakes and Open Water

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



This map shows the vegetation of the Glacial Lakes and Moraines Landscape as interpreted by Francis J. Marschner using Public Land Survey records from 1854-1867. The legend descriptions are slightly modified from Marschner's original descriptions.

HARDWOOD FOREST
- Upland Deciduous Forest (includes Marschner's "Big Woods" and Aspen-Birch (Hardwoods))

BRUSHLAND
- Aspen-Oak Land
- Oak Openings and Barrens

GRASSLAND
- Prairie
- Wet Prairie

BOGS AND SWAMPS
- Conifer Bogs and Swamps
- Lakes (open water)