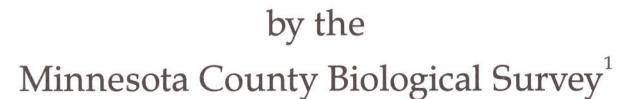
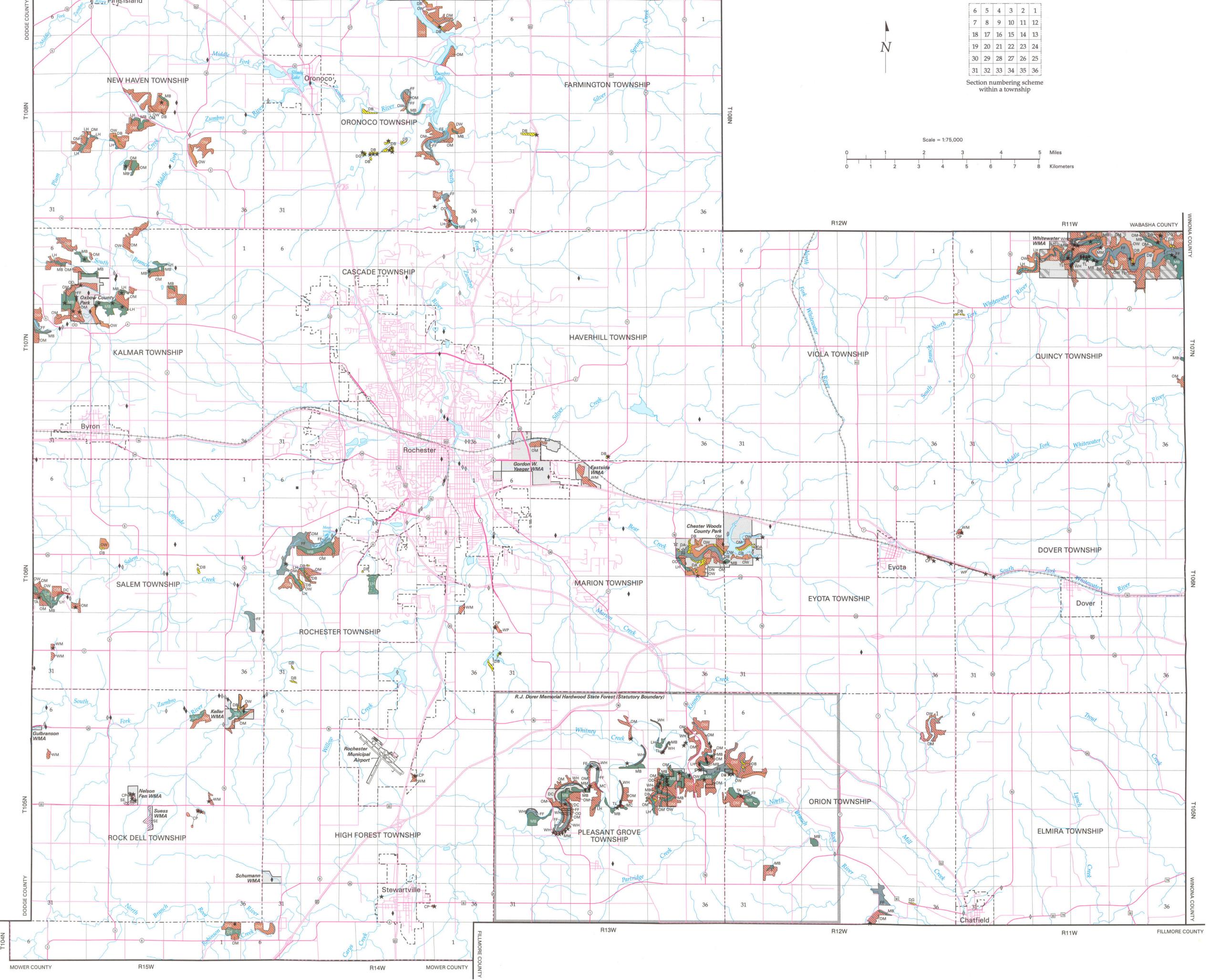
GOODHUE COUNTY

WABASHA COUNTY

NATURAL COMMUNITIES AND RARE SPECIES

OF OLMSTED COUNTY, MINNESOTA





NATURAL COMMUNITIES

Tatural communities are groups of native plants and animals that interact with each other and their abiotic environment in ways not greatly altered by modern human activity or by introduced organisms. These groups I of native species form recognizable units, such as an oak forest, a prairie, or a marsh, that tend to repeat over space and time. Natural communities are generally classified and described by considering vegetation, hydrology, landforms, soils, and natural disturbance regimes. The natural community types and subtypes on this map are classified primarily by vegetation and major habitat features. The Minnesota County Biological Survey located areas of natural communities in Olmsted County from 1993 to 1995 using aerial photo interpretation followed by field survey of selected sites. The description and approximate acreage of each natural community type and subtype given below are based on the results of the Survey. White or light-gray areas on the map represent land where modern human activities such as farming, overgrazing, nonsustainable logging, draining, and residential and commercial development have destroyed or greatly altered the natural vegetation. Natural communities covered approximately 9,040 acres, or 2.2% of the land area of Olmsted County at the

Oak Forest - mesic subtype - dry-mesic to mesic forests on loess, colluvium, or outwash, often on north- to east-facing slopes and broad ridge crests; canopy dominated by one or more oak species, most commonly red oak (Quercus rubra); other important oak species are white oak (Quercus alba), northern pin oak (Quercus ellipsoidalis), and bur oak (Quercus macrocarpa); common associated or codominant canopy species include basswood (Tilia americana), black cherry (Prunus serotina), green ash (Fraxinus oennsylvanica), sugar maple (Acer saccharum), and big-toothed aspen (Populus grandidentata); common subcanopy and shrub-layer species include ironwood (Ostrya virginiana), bitternut hickory (Carya cordiformis), and sugar maple; scattered shrubs include gooseberries (Ribes spp.) and chokecherry (Prunus virginiana); common ground-layer species are pointed-leaved tick-trefoil (Desmodium glutinosum), wild geranium (*Geranium maculatum*), honewort (*Cryptotaenia canadensis*), sweet cicely (*Osmorhiza claytonii*),

and white snakeroot (Eupatorium rugosum). Approximate total area: 4,210 acres. Oak Forest - dry subtype - dry forests on outwash, colluvium, or loess, often on south- to west-facing slopes, or uncommonly on shallow soil over bedrock bench terraces along rivers; canopy dominated by a combination of northern pin oak, white oak, and bur oak, often as open-grown trees; common canopy associates include black cherry, black walnut (Juglans nigra), quaking aspen (Populus tremuloides), and red oak; low to high shrub cover, which often includes gray dogwood (Cornus foemina ssp. racemosa) and American hazel (Corylus americana); ground layer dominated by summer-blooming species such as elmleaved goldenrod (Solidago ulmifolia), hog-peanut (Amphicarpaea bracteata), shining bedstraw (Galium concinnum), elliptic shinleaf (Pyrola elliptica), and Pennsylvania sedge (Carex pensylvanica). Approximate

MB Maple-Basswood Forest - mesic to wet-mesic forests on colluvium, loess, or alluvium, most often on steep north- to east-facing slopes; dense canopy dominated by sugar maple, basswood, and red oak; common canopy associates are slippery elm (*Ulmus rubra*), green ash, and black ash (*Fraxinus nigra*); patchy subcanopy and shrub layer, usually dominated by sugar maple and often contain ironwood, bitternut hickory, bladder-nut (*Staphylea trifolia*), and pagoda dogwood (*Cornus alternifolia*); ground layer contains a diverse assemblage of spring-blooming species including wild ginger (*Asarum canadense*), Dutchman's breeches (*Dicentra cucullaria*), false rue-anemone (*Isopyrum biternatum*), toothwort (*Dentaria laciniata*), white trout-lily (*Erythronium albidum*), and white-bear sedge (*Carex albursina*); maple-basswood forests in western Olmsted county may contain small seepage zones on slopes where impervious rock strata reach the ground surface. Approximate total area: 1,240 acres.

Lowland Hardwood Forest - wet-mesic bottomland forests on seasonally saturated alluvial soil above formal flood levels in small valleys; canopy and subcanopy dominated by any combination of basswood, black ash, American elm (Ulmus americana), rock elm (Ulmus thomasii), hackberry (Celtis occidentalis), bur oak, and sugar maple; variable cover of mesic forest shrubs; ground layer often dominated by cleavers (Galium aparine), Virginia waterleaf (Hydrophyllum virginianum), wood nettle (Laportea canadensis), false rue-anemone, Virginia bluebells (Mertensia virginica), and eastern narrowleaf sedge (Carex amphibola var. turgida); includes many herbaceous plants seen in maple-basswood forests. Approximate total area: 570

MIXED CONIFEROUS - DECIDUOUS FOREST

WH White Pine-Hardwood Forest - dry to mesic forests on steep slopes, often associated with cliffs and bedrock outcrops; canopy dominated by white pine (*Pinus strobus*); common canopy associates on dry to dry-mesic sites are northern pin oak, white oak, and bur oak, and on mesic sites, sugar maple, basswood, and red oak; white pine is frequent in subcanopy and shrub layer; white pine is often the only species that distinguishes this type from oak and maple-basswood forests; the shrub, Canada yew (*Taxus canadensis*) is often abundant on steep, cool, north-facing slopes, in association with ground pine (*Lycopodium lucidulum*), bunchberry (*Cornus canadensis*), and plants typical of mesic deciduous forests. Approximate total area: 160

MISCELLANEOUS FEATURES

(WMA = State Wildlife Management Area)

Disturbed land in public ownership within statutory boundaries

Disturbed land in private ownership within statutory boundaries

Lakes and Rivers - open water, sometimes with beds of emergent

THE VEGETATION OF OLMSTED COUNTY

AT THE TIME OF THE PUBLIC LAND SURVEY

This map shows the vegetation of Olmsted County as interpreted by Francis J. Marschner using

HARDWOOD FOREST

Open Water

Upland Deciduous Forest - bur oak, white oak, red oak,

aspen, birch (Oak Forest, Maple-Basswood Forest,

River Bottom Forest - elm, ash, cottonwood, boxelder, silver

Brush Prairie - grass and brush of oak and aspen

(Oak Woodland-Brushland, Dry Oak Savanna).

o Oak Woodland-Brushland or Óak Forest)

basswood (Oak Forest, early successional stage).

Wet Prairies, Marshes and Sloughs - marsh-grasses, flags,

Wet Meadow, Calcareous Seepage Fen, Wet Prairie).

Prairie - (Dry Prairie, Mesic Prairie).

maple, willow, aspen, hackberry (Floodplain Forest).

Oak Openings and Barrens - scattered trees and groves

Aspen-Oak Land - aspen, generally dense, and small in

most places, with scattered oaks and few elms, ash and

f oaks of scrubby form with some brush and thickets (Dry

Dak Savanna; also includes many areas that have succeeded

rushes, wild rice, with willow in some places (Shrub Swamp,

northern pin oak, elm, basswood, ash, maple, hornbeam,

owland Hardwood Forest, White Pine-Hardwood Forest)

Public Land Survey records from 1853-1854°. The legend descriptions are slightly modified from Marschner's as appropriate for southeastern Minnesota. Extant natural community types

corresponding to Marschner's categories are listed in parentheses.

vegetation. Approximate total area: 1,190 acres.

DECIDUOUS WOODLANDS / SAVANNAS

— Section lines

---- City and township lines

of managed areas

Primary roads

Secondary roads

Other roads

HILL Railroads

— Managed area statutory boundaries

Rivers, streams, and ditches

DECIDUOUS WOODLAND

UPLAND FORESTS

DECIDUOUS FOREST

Ow Oak Woodland-Brushland - dry woodlands on loess, colluvium, and outwash on south- to west-facing slopes; canopy cover 50-70%, dominated by open-grown northern pin oak, bur oak, or white oak; common canopy associates are paper birch (Betula papyrifera), eastern red cedar (Juniperus virginiana), and quaking aspen; shrub layer often dense; common shrubs include American hazelnut, chokecherry, prickly ash Zanthoxylum americanum), and gray dogwood; ground-layer species are similar to those of oak forest - dry subtype; scattered small prairie openings often present. Approximate total area: 960 acres.

DECIDUOUS SAVANNA WET MEADOW / FEN Dry Oak Savanna - barrens subtype - dry savannas on deposits of >90% sand on sides and terraces of stream valleys; canopy cover 10-70%, dominated by open-grown bur oak and northern pin oak; shrub layer patchy to dense; ground layer dominated by a mix of woodland and dry prairie forbs and graminoids; prairie species include those of dry prairie - barrens subtype. Approximate total area: 10 acres. UPLAND PRAIRIE Dry Prairie - barrens subtype - dry prairies on deposits of >90% sand on sides and terraces of stream valleys; common graminoids include little bluestem (Schizachyrium scoparium), June grass (Koeleria macrantha), porcupine grass (Stipa spartea), and Schweinitz's nut-sedge (Cyperus schweinitzii); common

forbs include wormwood (Artemisia campestris ssp. caudata), horsemint (Monarda punctata), plains puccoon (Lithospermum caroliniense), prairie smoke (Geum triflorum), and rock spikemoss (Selaginella rupestris). Approximate total area: 30 acres. Dry Prairie - bedrock bluff subtype - dry prairies on thin soil over sedimentary bedrock on steep south- to west-facing bluffs; rock outcrops frequent; common graminoids include little bluestem, plains muhly (Muhlenbergia cuspidata), Indian grass (Sorghastrum nutans), side-oats grama (Bouteloua curtipendula), and prairie dropseed (Sporobolis heterolepis); common forbs include gray goldenrod (Solidago nemoralis), cylindric blazing star (Liatris cylindracea), bastard toad-flax (Comandra umbellata), silky aster (Aster sericeus). purple prairie-clover (Petalostemon purpureum), and prairie bird-foot violet (Viola pedatifida); lead-plant (Amorpha canescens) and prairie willow (Salix humilis) are common shrubs. Approximate total

Dry Prairie - sand-gravel subtype - dry prairies on outwash deposits (with gravel fraction > 10%) such as gravelly kames; common graminoids include little bluestem, Indian grass, side-oats grama, and big bluestem Andropogon gerardii); typical forbs include pasque flower (Pulsatilla nuttalliana), white sage (Artemisia ludoviciana), stiff tickseed (Coreopsis palmata), bluets (Hedyotis longifolia), and Hill's thistle (Cirsium hillii). Approximate total area: 10 acres. FORESTED WETLANDS

FLOODPLAIN FOREST

Floodplain Forest - lowland forests on alluvium on river bottoms along larger rivers, usually flooded for only a few days at a time during seasonal high water; canopy dominated by any combination of silver maple (Acer saccharinum), cottonwood (Populus deltoides), and basswood, often with hackberry, American elm, rock elm, black willow (Salix nigra), and green ash; shrub layer poorly developed; common ground-layer species include wood nettle, tall coneflower (Rudbeckia laciniata), honewort, blue phlox (Phlox divaricata), Virginia bluebells, cow parsnip (Heracleum lanatum), and eastern narrowleaf sedge. Approximate total

SHRUB WETLANDS SHRUB SWAMP

Shrub Swamp - seepage subtype - wet, shrub-dominated communities on gentle slopes on organic soil saturated by upwelling calcareous groundwater; shrub layer dominated by some combination of bog birch (Betula glandulifera), red-osier dogwood (Cornus stolonifera), and willows (mainly slender willow (Salix gracilis), pussy willow (S. discolor), and Bebb's willow (S. bebbiana)); tussock sedge (Carex stricta) is often a dominant graminoid; contains many species seen in calcareous seepage fens, shrub swamps, and wet meadows, including spike rushes (Eleocharis palustre group), western heart-leaved groundsel (Senecio pseudaureus), marsh marigold (Caltha palustris), and bulbiferous water-hemlock (Cicuta bulbifera). Approximate total area: 70 acres.

OPEN WETLANDS

Calcareous Seepage Fen - prairie subtype - open wetlands on gentle slopes on organic soil saturated by upwelling calcareous groundwater; areas of greatest groundwater flow often form shallow domes of organic deposits; present in Olmsted county mostly where old calcareous drift surfaces on shallow hillsides; dominated by sedges and grasses, especially prairie sedge (Carex prairea), sterile sedge (Carex sterilis), tussock sedge, hardstem bulrush (Scirpus acutus), and marsh muhly grass (Muhlenbergia glomerata); low shrubs are often common and typically include sage-leaved willow (Salix candida) and bog birch; contains plant species adapted to cold, mineral-rich groundwater, including several forb species rarely seen in other habitats in southeastern Minnesota, such as grass-of-parnassus (*Parnassia glauca*), lesser fringed gentian (*Gentianopsis procera*), Kalm's lobelia (*Lobelia kalmii*), and Riddell's goldenrod (*Solidago riddellii*).

Approximate total area: 30 acres. Wet Meadow - open wetlands on mineral or shallow organic soil; dominated primarily by lake sedge (Carex lacustris), tussock sedge, and blue-joint grass (Calamagrostis canadensis); clumps of shrubs are common and typically include red-osier dogwood, slender willow, and pussy willow; common forbs are tufted loosestrife (Lysimachia thyrsiflora), spotted joe-pye weed (Eupatorium maculatum), northern marsh fern (Thelypteris palustris), American water-horehound (Lycopus americanus), and Labrador bedstraw (Galium labradoricum); areas of groundwater seepage in wet meadows contain seepage wetland plants such as bulbiferous water hemlock, valerian (Valeriana edulis), and spike rushes. Approximate total area: 140

Wet Prairie - wet prairies on poorly drained, mineral or shallow organic soil in shallow depressions; dominated by grasses and sedges, particularly prairie cord grass (*Spartina pectinata*), blue-joint grass, Buxbaum's sedge (*Carex buxbaumii*), and tussock sedge; scattered clumps of slender willow and pussy willow; prairie forbs include gayfeather (Liatris pycnostachya), sneezeweed (Helenium autumnale), mountain mint (Pycnanthemum virginianum), New England aster (Aster novae-angliae), and great lobelia (Lobelia siphilitica). Approximate total area: 40 acres.

PRIMARY COMMUNITIES Dry Cliff - dry communities generally on south- to west-facing dolomite, limestone, or sandstone cliffs; ichens often common; vascular plants sparse, but include smooth cliff-brake (Pellaea glabella), harebell

(Campanula rotundifolia), cliff goldenrod (Solidago sciaphila), slender lip-fern (Cheilanthes feei), columbine (Aquilegia canadensis), and species typical of adjacent dry prairies such as plains muhly. Moist Cliff - moist to wet communities on north- to east-facing dolomite, limestone, or sandstone cliffs, occasionally in the form of a series of ledges; mosses, liverworts, and lichens common; vascular plants

include bulblet fern (Cystopteris bulbifera), whitlow grass (Draba arabisans), slender cliff-brake (Cryptogramma stelleri), columbine, jeweled shooting star (Dodecatheon amethystinum), and species typical of adjacent mesic forests, such as miterwort (Mitella diphylla). Approximate total area: 10 acres. Moist Cliff - maderate subtype - moist to wet communities on north-facing dolomite or limestone cliffs, present in Olmsted County only on river bends along the Whitewater and Root rivers; restricted to areas where cliff face is continuously cooled by air and water draining through ice-filled caves and fissures behind the rock face; often heavily moss-covered, with liverworts and lichens common; vascular plants include those typically seen on moist cliffs; cool microhabitat supports relict populations of rare land snail and plant species (such as Leedy's roseroot (Sedum integrifolium ssp. leedyi)) that were more widespread in the region during the Pleistocene epoch when the climate was cooler. Approximate total area: 20 acres. Talus slope - dry to wet-mesic communities associated with accumulations of dolomite or limestone rock

ferns, and pale touch-me-not (Impatiens pallida); common associates include Canada yew, common elder Sambucus canadensis), and mountain maple (Acer spicatum). Approximate total area: 10 acres. Talus Slope - algific subtype - wet-mesic communities on steep north-facing slopes with thin soil over imestone talus; present in Olmsted County only along the Whitewater and Roof rivers; restricted to areas continuously cooled by air draining through ice-filled caves and fissures beneath the talus; often heavily moss-covered; vascular plants include species uncommon in southeastern Minnesota, such as mountain maple, yellow birch (Betula alleghaniensis), moschatel (Adoxa moschatellina), and swamp saxifrage (Saxifraga pennsylvanica); cool microhabitat supports relict populations of rare land snail and plant species that were more widespread in the region during the Pleistocene epoch when the climate was cooler

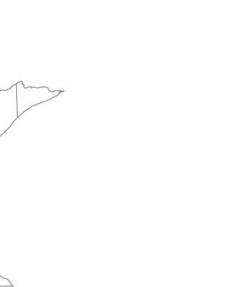
fragments and soil at bases of cliffs and on very steep slopes; sparsely vegetated or covered with mosses,

RARE SPECIES AND ANIMAL AGGREGATIONS

Approximate total area: 20 acres.

ocations of rare plants, rare animals, and selected animal aggregations are maintained in the Natural Heritage Information System⁶.

The following rare species and animal aggregations have been found in Olmsted County. Mapped locations include both historical records and Minnesota County Biological Survey field results. Most Minnesota County Biological Survey plant and animal surveys were done from 1993 to 1996. Most rare species are protected under the provisions of the Federal Endangered Species Act or the Minnesota Endangered Species Statute and associated Rules'. An asterisk (*) indicates that no recent observation (1970-1996) of that species has been confirmed. A dagger (†) indicates that the species has been documented in the county but its exact location is





★ Plants, federally- or state-listed

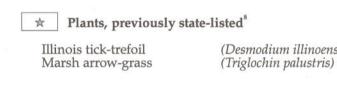
(Allium cernuum)

(Baptisia alba)

(Arnoglossum plantagineum

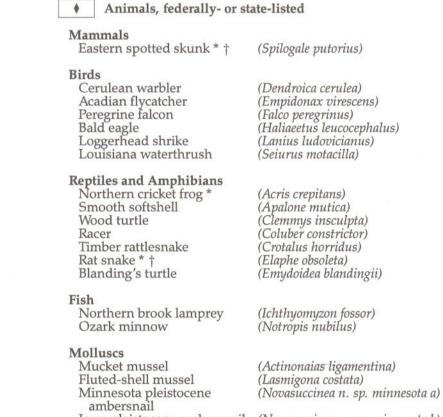
Nodding wild onion

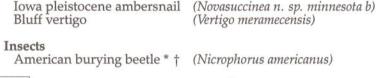
White wild indigo

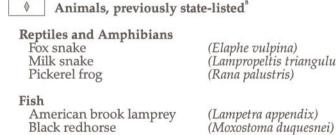


Animal Aggregations

Colonial waterbird nesting site







(Vertigo hubrichti)

1. The Minnesota County Biological Survey is a systematic survey of rare biological features. The goal of the Survey is to identify significant natural areas and to collect and interpret data on the distribution and ecology of rare plants, rare animals, and natural communities.

- 2. Minnesota Natural Heritage Program. 1993. Minnesota's native vegetation: A key to natural communities, version 1.5. Minnesota Department of Natural Resources, St. Paul, Minnesota. 111 pp. 3. Natural communities were interpreted from 1:40,000 color infrared photograph
- taken in April and May, 1991 (National Aerial Photography Program, U.S.G.S., U.S Department of the Interior), and from 1:15.840 color infrared photography taken n October, 1993 (Minnesota Department of Natural Resources, Division of Forestry, Resource Assessment Unit, Grand Rapids, Minnesota). Natural community boundaries were digitized at a scale of 1:24,000 by St. Mary's College in contract with 4. Acreage figures are approximate to the nearest ten acres.
- obtained from the Department of Natural Resources, St. Paul, Minnesota, the Olmsted County Public Works Department, Rochester, Minnesota, and the Rochester-Olmsted Planning Department, Rochester, Minnesota, Every effort was made to obtain current versions of these data, however, errors may exist on this map. Land ownership within managed areas is sometimes obscured by natural community map units. Data are available from the Minnesota Natural Heritage Information System, Department of Natural Resources, St. Paul, Minnesota. Phone (612) 296-2835.
- 7. Endangered Species Act of 1973 (16 USCA 1531 et seq.); Minnesota Statutes, section 84.0895. and Minnesota Rules, Parts 6212, 1800 to 6212, 2300. Additional information on rare species is available in Minnesota's Endangered Flora and Fauna, edited by B. Coffin and L. Pfannmuller, University of Minnesota Press, Minneapolis, 1988. 8. These species were listed under the provisions of the Minnesota Endangered Species Statute when the Minnesota County Biological Survey was conducted in the county. New

5. Civil division, transportation, water features, and managed area boundaries data were

information on their distribution and abundance has since resulted in their removal 9. Marschner, F. J. 1974. The original vegetation of Minnesota (map, scale 1:500,000). USDA Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota

(redraft of the original 1930 edition).



Carol D. Hall, Herpetologist Carol Schumacher

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