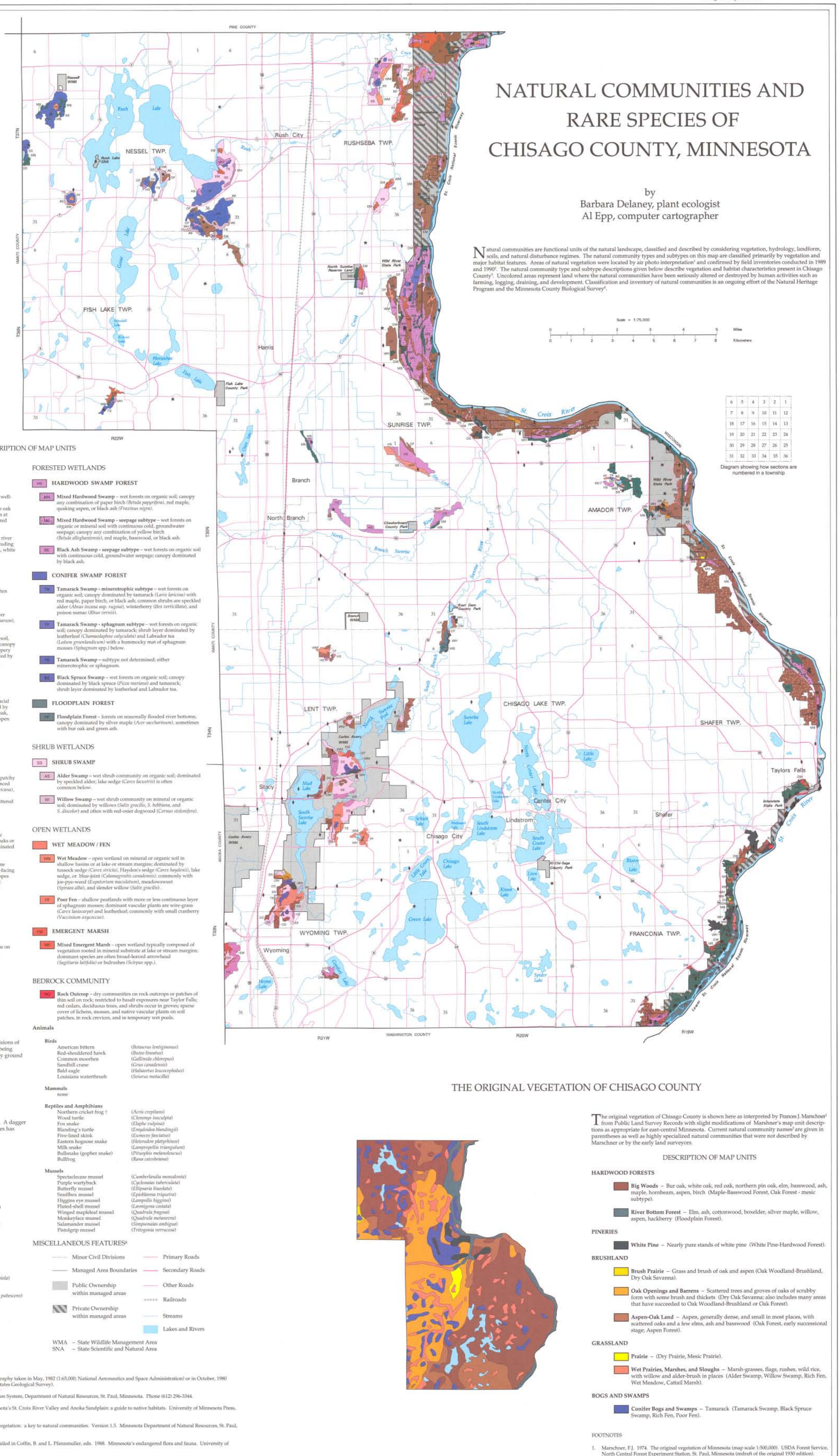
MINNESOTA COUNTY BIOLOGICAL SURVEY
Department of Natural Resources
Section of Wildlife
Natural Heritage and Nongame Wildlife Programs
500 Lafayette Road - Box 7, St. Paul, MN 55155
Phone (651) 259-5100

Minnesota County Biological Survey Map Series: No. 5 (1993)
Chisago County, Minnesota

# NATURAL COMMUNITIES AND RARE SPECIES OF CHISAGO COUNTY, MINNESOTA

by
Barbara Delaney, plant ecologist
Al Epp, computer cartographer

Natural communities are functional units of the natural landscape, classified and described by considering vegetation, hydrology, landform, soils, and natural disturbance regimes. The natural community types and subtypes on this map are classified primarily by vegetation and major habitat features. Areas of natural vegetation were located by air photo interpretation[1] and confirmed by field inventories conducted in 1989 and 1990[2]. The natural community type and subtype descriptions given below describe vegetation and habitat characteristics present in Chisago County[3]. Uncolored areas represent land where the natural communities have been seriously altered or destroyed by human activities such as farming, logging, draining, and development. Classification and inventory of natural communities is an ongoing effort of the Natural Heritage Program and the Minnesota County Biological Survey[4].




| | | | | | |
|---|---|---|---|---|---|
| 6 | 5 | 4 | 3 | 2 | 1 |
| 7 | 8 | 9 | 10 | 11 | 12 |
| 18 | 17 | 16 | 15 | 14 | 13 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 30 | 29 | 28 | 27 | 26 | 25 |
| 31 | 32 | 33 | 34 | 35 | 36 |

Diagram showing how sections are numbered in a township

## DESCRIPTION OF MAP UNITS

### UPLAND FORESTS

**DECIDUOUS FOREST**

OD **Oak Forest - dry subtype** – dry forests on outwash sand or well-drained slopes; canopy dominated by northern pin oak (*Quercus ellipsoidalis*), bur oak (*Quercus macrocarpa*), or white oak (*Quercus alba*); quaking aspen (*Populus tremuloides*) common at wetland margins; subcanopy either absent or composed of red maple (*Acer rubrum*).

OM **Oak Forest - mesic subtype** – mesic forests on glacial till or river bottomlands; canopy dominated by a variety of species including red oak (*Quercus rubra*), basswood (*Tilia americana*), bur oak, white oak, and northern pin oak; ironwood (*Ostrya virginiana*) in subcanopy.

OF **Oak Forest** – subtype not determined; either dry or mesic.

AS **Aspen Forest** – mesic to wet-mesic forests on level areas, often poorly drained; canopy dominated by quaking aspen with occasional northern pin oak or bur oak.

MB **Maple-Basswood Forest** – mesic forests on glacial till or river bottomlands; canopy dominated by sugar maple (*Acer saccharum*), basswood, red oak, and green ash (*Fraxinus pennsylvanica*).

LH **Lowland Hardwood Forest** – wet-mesic forests on mineral soil, often on river bottomlands but above normal flood levels; canopy dominated by black ash, green ash, basswood, bur oak, slippery elm (*Ulmus rubra*), or quaking aspen; ground layer dominated by upland forest herbs such as lady fern (*Athyrium angustum*), wild sarsaparilla (*Aralia nudicaulis*), or bloodroot (*Sanguinaria canadensis*).

**MIXED CONIFEROUS - DECIDUOUS FOREST**

WP **White Pine - Hardwood Forest** – dry to mesic forests on glacial till, sandy outwash, or on river terraces; canopy dominated by white pine (*Pinus strobus*) and deciduous trees such as red oak, northern pin oak, white oak, sugar maple, or big-toothed aspen (*Populus grandidentata*); understory composition is similar to that of adjacent deciduous forests.

### DECIDUOUS WOODLAND / SAVANNA

**DECIDUOUS WOODLAND**

OW **Oak Woodland-Brushland** – dry to dry-mesic woodlands; patchy canopy dominated by bur oak or northern pin oak; pronounced shrub layer dominated by American hazelnut (*Corylus americana*), red raspberry (*Rubus strigosus*), common blackberry (*Rubus allegheniensis*), or red cedar (*Juniperus virginiana*); scattered openings with prairie species.

**DECIDUOUS SAVANNA**

OH **Dry Oak Savanna - sand-gravel subtype** – dry to dry-mesic savannas on outwash sand or on sandy river terraces; bur oaks or northern pin oaks scattered or in groves; ground layer dominated by grasses and forbs typical of dry sand-gravel prairies.

ON **Dry Oak Savanna - barrens subtype** – dry savannas on dune formations; bur oaks and northern pin oaks occur on north-facing slopes; dune crests and south- or southwest-facing dune slopes have a sparse cover of dry prairie vegetation; characteristic species include sand reedgrass (*Calamovilfa longifolia*), silky prairie-clover (*Petalostemon villosum*), and false heather (*Hudsonia tomentosa*).

### PRAIRIE

**UPLAND PRAIRIE**

DG **Dry Prairie - sand-gravel subtype** – dry to dry-mesic prairie on sandy outwash or alluvium; common species include little bluestem (*Schizachyrium scoparium*), porcupine grass (*Stipa spartea*), rough blazing-star (*Liatris aspera*), prairie violet (*Viola pedatifida*), and large-flowered beard-tongue (*Penstemon grandiflorus*).

### FORESTED WETLANDS

**HARDWOOD SWAMP FOREST**

MH **Mixed Hardwood Swamp** – wet forests on organic soil; canopy any combination of paper birch (*Betula papyrifera*), red maple, quaking aspen, or black ash (*Fraxinus nigra*).

MHs **Mixed Hardwood Swamp - seepage subtype** – wet forests on organic or mineral soil with continuous cold, groundwater seepage; canopy any combination of yellow birch (*Betula alleghaniensis*), red maple, basswood, or black ash.

BS **Black Ash Swamp - seepage subtype** – wet forests on organic soil with continuous cold, groundwater seepage; canopy dominated by black ash.

**CONIFER SWAMP FOREST**

TM **Tamarack Swamp - minerotrophic subtype** – wet forests on organic soil; canopy dominated by tamarack (*Larix laricina*) with red maple, paper birch, or black ash; common shrubs are speckled alder (*Alnus incana* ssp. *rugosa*), winterberry (*Ilex verticillata*), and poison sumac (*Rhus vernix*).

TP **Tamarack Swamp - sphagnum subtype** – wet forests on organic soil; canopy dominated by tamarack; shrub layer dominated by leatherleaf (*Chamaedaphne calyculata*) and Labrador tea (*Ledum groenlandicum*) with a hummocky mat of sphagnum mosses (*Sphagnum* spp.) below.

TS **Tamarack Swamp** – subtype not determined; either minerotrophic or sphagnum.

BS **Black Spruce Swamp** – wet forests on organic soil; canopy dominated by black spruce (*Picea mariana*) and tamarack; shrub layer dominated by leatherleaf and Labrador tea.

**FLOODPLAIN FOREST**

FF **Floodplain Forest** – forests on seasonally flooded river bottoms; canopy dominated by silver maple (*Acer saccharinum*), sometimes with bur oak and green ash.

### SHRUB WETLANDS

**SHRUB SWAMP**

AS **Alder Swamp** – wet shrub community on organic soil; dominated by speckled alder; lake sedge (*Carex lacustris*) is often common below.

WS **Willow Swamp** – wet shrub community on mineral or organic soil; dominated by willows (*Salix gracilis*, *S. bebbiana*, and *S. discolor*) and often with red-osier dogwood (*Cornus stolonifera*).

### OPEN WETLANDS

**WET MEADOW / FEN**

WM **Wet Meadow** – open wetland on mineral or organic soil in shallow basins or at lake or stream margins; dominated by tussock sedge (*Carex stricta*), Hayden's sedge (*Carex haydenii*), lake sedge, or blue-joint (*Calamagrostis canadensis*); commonly with joe-pye-weed (*Eupatorium maculatum*), meadowsweet (*Spiraea alba*), and slender willow (*Salix gracilis*) .

PF **Poor Fen** – shallow peatlands with more or less continuous layer of sphagnum mosses; dominant vascular plants are wire-grass (*Carex lasiocarpa*) and leatherleaf; commonly with small cranberry (*Vaccinium oxycoccus*).

**EMERGENT MARSH**

ME **Mixed Emergent Marsh** – open wetland typically composed of vegetation rooted in mineral substrate at lake or stream margins; dominant species are often broad-leaved arrowhead (*Sagittaria latifolia*) or bulrushes (*Scirpus* spp.).

### BEDROCK COMMUNITY

RO **Rock Outcrop** – dry communities on rock outcrops or patches of thin soil on rock; restricted to basalt exposures near Taylor Falls; red cedars, deciduous trees, and shrubs occur in groves; sparse cover of lichens, mosses, and native vascular plants on soil patches, in rock crevices, and in temporary wet pools.

### RARE SPECIES

Rare plants and animals are either protected under the provisions of the Federal or Minnesota Endangered Species Acts[5] or are being considered for protection[2]. Mapped locations are determined by ground inventory and historical records.

★ **Plants**

♦ **Animals**

### RARE SPECIES OF CHISAGO COUNTY

The following rare species have been found in Chisago County. A dagger (†) indicates that no recent observation (post-1970) of that species has been confirmed.

**Plants**

| | |
|---|---|
| White baneberry | (*Actaea pachypoda*) |
| Dragon's-mouth † | (*Arethusa bulbosa*) |
| Sea-beach needlegrass | (*Aristida tuberculosa*) |
| Kitten-tails | (*Besseya bullii*) |
| A species of sedge | (*Carex bromoides*) |
| Field sedge | (*Carex conoidea*) |
| A species of sedge † | (*Carex muskingumensis*) |
| Cattail sedge | (*Carex typhina*) |
| Buttonbush | (*Cephalanthus occidentalis*) |
| Stemless tick-trefoil † | (*Desmodium nudiflorum*) |
| Walter's barnyard grass | (*Echinochloa walteri*) |
| False mermaid | (*Floerkea proserpinacoides*) |
| Long-bearded hawkweed | (*Hieracium longipilum*) |
| American water-pennywort | (*Hydrocotyle americana*) |
| Old field toadflax | (*Linaria canadensis*) |
| Virginia water horehound | (*Lycopus virginicus*) |
| Rhombic-petaled evening primrose | (*Oenothera rhombipetala*) |
| Ginseng | (*Panax quinquefolium*) |
| Club-spur orchid † | (*Platanthera clavellata*) |
| Tubercled rein-orchid † | (*Platanthera flava* var. *herbiola*) |
| Bog bluegrass | (*Poa paludigena*) |
| Cross milkwort † | (*Polygala cruciata*) |
| Halberd-leaved tearthumb | (*Polygonum arifolium* var. *pubescens*) |
| Vasey's pondweed † | (*Potamogeton vaseyi*) |
| Tooth-cup † | (*Rotala ramosior*) |
| Georgia bulrush | (*Scirpus georgianus*) |
| Cliff goldenrod † | (*Solidago sciaphila*) |
| Rough-seeded fameflower | (*Talinum rugospermum*) |
| New England violet † | (*Viola novae-angliae*) |

**Animals**

**Birds**

| | |
|---|---|
| American bittern | (*Botaurus lentiginosus*) |
| Red-shouldered hawk | (*Buteo lineatus*) |
| Common moorhen | (*Gallinula chloropus*) |
| Sandhill crane | (*Grus canadensis*) |
| Bald eagle | (*Haliaeetus leucocephalus*) |
| Louisiana waterthrush | (*Seiurus motacilla*) |

**Mammals**

none

**Reptiles and Amphibians**

| | |
|---|---|
| Northern cricket frog † | (*Acris crepitans*) |
| Wood turtle | (*Clemmys insculpta*) |
| Fox snake | (*Elaphe vulpina*) |
| Blanding's turtle | (*Emydoidea blandingii*) |
| Five-lined skink | (*Eumeces fasciatus*) |
| Eastern hognose snake | (*Heterodon platyrhinos*) |
| Milk snake | (*Lampropeltis triangulum*) |
| Bullsnake (gopher snake) | (*Pituophis melanoleucus*) |
| Bullfrog | (*Rana catesbeiana*) |

**Mussels**

| | |
|---|---|
| Spectaclecase mussel | (*Cumberlandia monodonta*) |
| Purple wartyback | (*Cyclonaias tuberculata*) |
| Butterfly mussel | (*Ellipsaria lineolata*) |
| Snuffbox mussel | (*Epioblasma triquetra*) |
| Higgins eye mussel | (*Lampsilis higginsi*) |
| Fluted-shell mussel | (*Lasmigona costata*) |
| Winged mapleleaf mussel | (*Quadrula fragosa*) |
| Monkeyface mussel | (*Quadrula metanevra*) |
| Salamander mussel | (*Simpsonaias ambigua*) |
| Pistolgrip mussel | (*Tritogonia verrucosa*) |

### MISCELLANEOUS FEATURES[6]

Minor Civil Divisions
Managed Area Boundaries
Public Ownership within managed areas
Private Ownership within managed areas
Primary Roads
Secondary Roads
Other Roads
Railroads
Streams
Lakes and Rivers

WMA – State Wildlife Management Area
SNA – State Scientific and Natural Area

## THE ORIGINAL VEGETATION OF CHISAGO COUNTY

The original vegetation of Chisago County is shown here as interpreted by Frances J. Marschner[1] from Public Land Survey Records with slight modifications of Marshner's map unit descriptions as appropriate for east-central Minnesota. Current natural community names[2] are given in parentheses as well as highly specialized natural communities that were not described by Marschner or by the early land surveyors.



### DESCRIPTION OF MAP UNITS

**HARDWOOD FORESTS**

**Big Woods** – Bur oak, white oak, red oak, northern pin oak, elm, basswood, ash, maple, hornbeam, aspen, birch (Maple-Basswood Forest, Oak Forest - mesic subtype).

**River Bottom Forest** – Elm, ash, cottonwood, boxelder, silver maple, willow, aspen, hackberry (Floodplain Forest).

**PINERIES**

**White Pine** – Nearly pure stands of white pine (White Pine-Hardwood Forest).

**BRUSHLAND**

**Brush Prairie** – Grass and brush of oak and aspen (Oak Woodland-Brushland, Dry Oak Savanna).

**Oak Openings and Barrens** – Scattered trees and groves of oaks of scrubby form with some brush and thickets (Dry Oak Savanna; also includes many areas that have succeeded to Oak Woodland-Brushland or Oak Forest).

**Aspen-Oak Land** – Aspen, generally dense, and small in most places, with scattered oaks and a few elms, ash and basswood (Oak Forest, early successional stage; Aspen Forest).

**GRASSLAND**

**Prairie** – (Dry Prairie, Mesic Prairie).

**Wet Prairies, Marshes, and Sloughs** – Marsh-grasses, flags, rushes, wild rice, with willow and alder-brush in places (Alder Swamp, Willow Swamp, Rich Fen, Wet Meadow, Cattail Marsh).

**BOGS AND SWAMPS**

**Conifer Bogs and Swamps** – Tamarack (Tamarack Swamp, Black Spruce Swamp, Rich Fen, Poor Fen).

FOOTNOTES

1. 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).
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.

FOOTNOTES

1. Natural communities were interpreted from color infrared photography taken in May, 1982 (1:65,000; National Aeronautics and Space Administration) or in October, 1980 (1:58,000; National High Altitude Photography Program, United States Geological Survey).
2. Data are available from the Minnesota Natural Heritage Information System, Department of Natural Resources, St. Paul, Minnesota. Phone (612) 296-3344.
3. Wovcha, D.S., B.C. Delaney, and G.E. Nordquist. In press. Minnesota's St. Croix River Valley and Anoka Sandplain: a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota.
4. 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.
5. Federal and state legislation concerning endangered species is detailed in Coffin, B. and L. Pfannmuller, eds. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
6. Civil division, transportation, and water features data were obtained from the Department of Natural Resources, St. Paul, Minnesota. Managed area boundaries were obtained from the Bureau of Engineering and other sources at the Department of Natural Resouces. Natural community boundaries and certain miscellaneous features were digitized from 1:24,000 U.S. Geological Survey topographic base maps. Land ownership within managed areas may not be clear where natural community map units are shown. Every effort was made to obtain current versions of these data, however, errors may exist on this map.

Layout by Kelly Randall, Bureau of Engineering Mapping Unit
Department of Natural Resources, St. Paul, Minnesota

Funding for this project approved by the Minnesota Legislature with partial funding (ML 1991, Chapter 254, Art. 1, Sec. 14, subd. 9.d) as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Environment and Natural Resources Trust Fund.