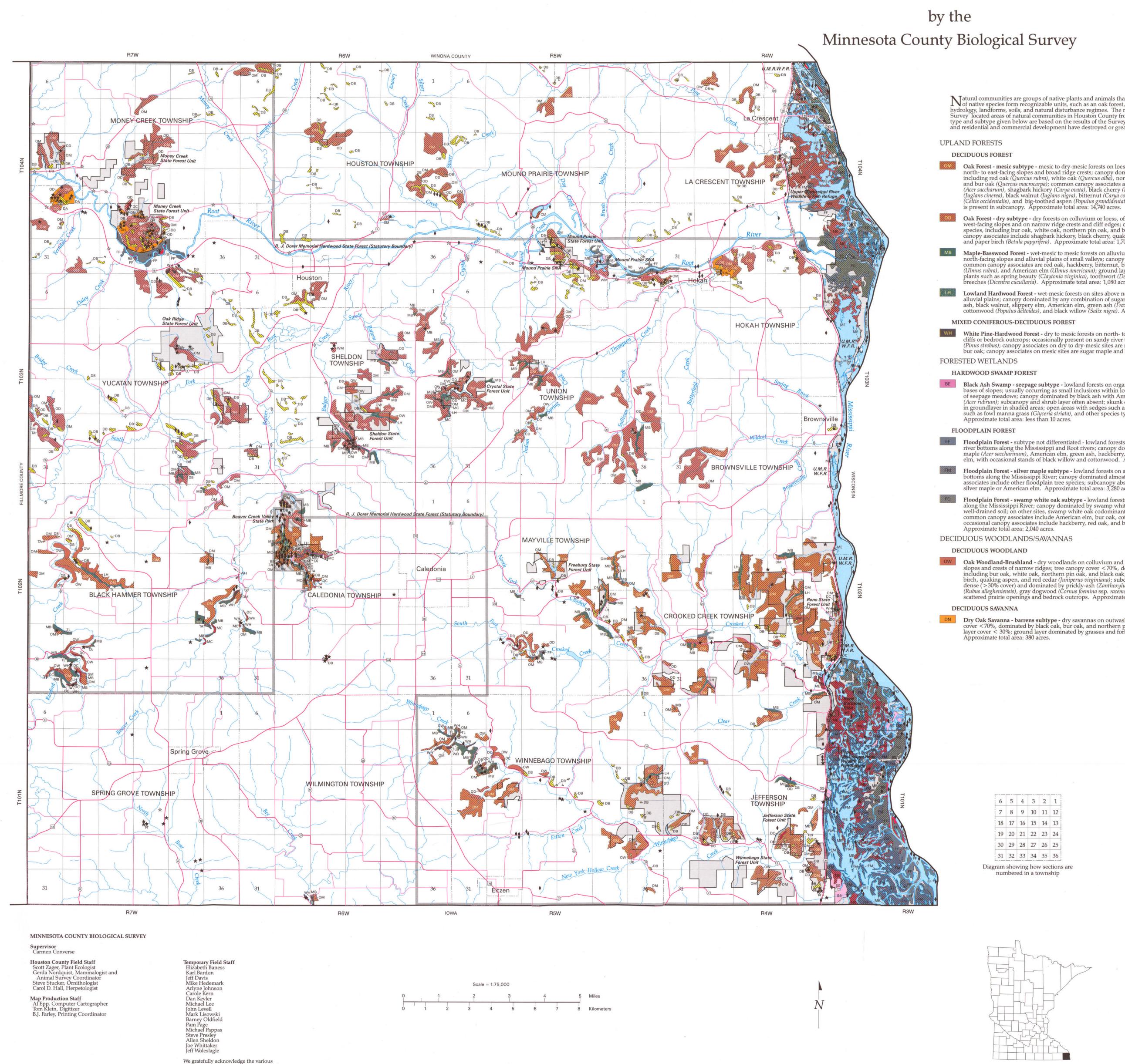


NATURAL COMMUNITIES AND RARE SPECIES OF HOUSTON COUNTY, MINNESOTA



NR regional and area staff who assisted

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 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 Houston County from 1990 to 1993 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 communities. Natural communities cover approximately 31,160 acres, or 8.8% of the land area of Houston County.

UPLAND FORESTS

- Oak Forest mesic subtype mesic to dry-mesic forests on loess, colluvium, or outwash, usually on north- to east-facing slopes and broad ridge crests; canopy dominated by one or more oak species, including red oak (Quercus rubra), white oak (Quercus alba), northern pin oak (Quercus ellipsoidalis), and bur oak (Quercus macrocarpa); common canopy associates are basswood (Tilia americana), sugar maple (Acer saccharum), shagbark hickory (Carya ovata), black cherry (Prunus serotina), butternut (Juglans cinerea), black walnut (Juglans nigra), bitternut (Carya cordiformis), hackberry (Celtis occidentalis), and big-toothed aspen (Populus grandidentata); ironwood (Ostrya virginiana)
- Oak Forest dry subtype dry forests on colluvium or loess, often on upper portions of south- to west-facing slopes and on narrow ridge crests and cliff edges; canopy dominated by one or more oak species, including bur oak, white oak, northern pin oak, and black oak (*Quercus velutina*); common canopy associates include shagbark hickory, black cherry, quaking aspen (*Populus tremuloides*), and paper birch (*Betula papyrifera*). Approximate total area: 1,700 acres.
- Maple-Basswood Forest wet-mesic to mesic forests on alluvium, colluvium, or loess, usually on lower north-facing slopes and alluvial plains of small valleys; canopy dominated by sugar maple and basswood; common canopy associates are red oak, hackberry, bitternut, black ash (Fraxinus nigra), slippery elm (Ulmus rubra), and American elm (Ulmus americana); ground layer contains spring blooming herbaceous plants such as spring beauty (Claytonia virginica), toothwort (Dentaria laciniata), and Dutchman's breeches (Dicentra cucullaria). Approximate total area: 1,080 acres.
- Lowland Hardwood Forest wet-mesic forests on sites above normal flood level; on channeled alluvial plains; canopy dominated by any combination of sugar maple, basswood, bur oak, black ash, black walnut, slippery elm, American elm, green ash (Fraxinus pennsylvanica), hackberry, cottonwood (Populus deltoides), and black willow (Salix nigra). Approximate total area: 410 acres. MIXED CONIFEROUS-DECIDUOUS FOREST
- White Pine-Hardwood Forest dry to mesic forests on north- to east-facing slopes, often associated with cliffs or bedrock outcrops; occasionally present on sandy river terraces; canopy dominated by white pine bur oak; canopy associates on mesic sites are sugar maple and basswood. Approximate total area: 130 acres.

HARDWOOD SWAMP FOREST

- Black Ash Swamp seepage subtype lowland forests on organic soil in groundwater seepage areas bases of slopes; usually occurring as small inclusions within lowland hardwood forests or at edges of seepage meadows; canopy dominated by black ash with American elm and rarely with red maple (Acer rubrum); subcanopy and shrub layer often absent; skunk cabbage (Symplocarpus foetidus) common in groundlayer in shaded areas; open areas with sedges such as awl-fruited sedge (*Carex stipata*), grasses such as fowl manna grass (*Glyceria striata*), and other species typical of wet meadows. Approximate total area: less than 10 acres.
- Floodplain Forest subtype not differentiated lowland forests on alluvium on seasonally flooded river bottoms along the Mississippi and Root rivers; canopy dominated by any combination of silver
- maple (*Acer saccharinum*), American elm, green ash, hackberry, river birch (*Betula nigra*), and slippery elm, with occasional stands of black willow and cottonwood. Approximate total area: 1,020 acres. Floodplain Forest - silver maple subtype - lowland forests on alluvium on seasonally flooded river bottoms along the Mississippi River; canopy dominated almost entirely by silver maple; canopy associates include other floodplain tree species; subcanopy absent or dominated by dense patches of silver maple or American elm. Approximate total area: 3,280 acres.
- Floodplain Forest swamp white oak subtype lowland forests on seasonally flooded river bottoms along the Mississippi River; canopy dominated by swamp white oak (Quercus bicolor) on moderately well-drained soil; on other sites, swamp white oak codominant with silver maple or associated species; common canopy associates include American elm, bur oak, cottonwood, green ash, and river birch; occasional canopy associates include hackberry, red oak, and basswood. Approximate total area: 2,040 acres.

DECIDUOUS WOODLANDS/SAVANNAS

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

- Oak Woodland-Brushland dry woodlands on colluvium and loess on steep, south- to west-facing upper slopes and crests of narrow ridges; tree canopy cover < 70%, dominated by one or more oak species, including bur oak, white oak, northern pin oak, and black oak; common canopy associates are paper birch, quaking aspen, and red cedar (Juniperus virginiana); subcanopy absent; shrub layer often dense (>30% cover) and dominated by prickly-ash (Zanthoxylum americanum), common blackberry (Rubus allegheniensis), gray dogwood (Cornus foemina ssp. racemosa), and smooth sumac (Rhus glabra); scattered prairie openings and bedrock outcrops. Approximate total area: 750 acres.
- Dry Oak Savanna barrens subtype dry savannas on outwash sand on river terraces; tree canopy cover <70%, dominated by black oak, bur oak, and northern pin oak; subcanopy usually absent; shrub layer cover < 30%; ground layer dominated by grasses and forbs typical of dry prairies and woodlands.

- Dry Prairie barrens subtype dry prairies on outwash sand on river terraces; also in sparsely-vegetated sandy openings within dry oak savanna where tree canopy cover is less than 30%; common graminoids are little bluestem (Schizachyrium scoparium), Indian grass (Sorghastrum nutans), side-oats grama (Bouteloua curtipendula), Junegrass (Koeleria macrantha), big bluestem (Andropogon gerardii), and Schweinitz's nut-sedge (Cyperus schweinitzii); common forbs are goat's-rue (Tephrosia virginiana), wild lupine (Lupinus perennis), horsemint (Monarda punctata), and hairy puccoon (Lithospermum caroliniense).
- Dry Prairie bedrock bluff subtype dry prairies on colluvium and loess with exposed bedrock on very steep south- to west-facing upper bluff slopes (rarely on lower slopes); common graminoids are little bluestem, big bluestem, Indian grass, side-oats grama, porcupine grass (Stipa spartea), prairie dropseed (Sporobolus heterolepis), and plains muhly (Muhlenbergia cuspidata); common forbs are prairie birdfoot violet (Viola pedatifida), and gray goldenrod (Solidago nemoralis); leadplant (Amorpha canescens) is a common shrub. Approximate total area: 1,960 acres.

SHRUB WETLANDS

- **Shrub Swamp** wet shrub communities bordering mixed emergent marshes in frequently flooded depressions on the Root and Mississippi river floodplains; dominated by willows (*Salix* spp.) and red-osier dogwood (*Cornus stolonifera*) with false indigo (*Amorpha fruticosa*) and silver maple saplings. Approximate total area: 210 acres.
- Shrub Swamp seepage subtype wet shrub communities on organic soil in areas of groundwater discharge at bases of sandy river terrace slopes adjacent to Root River floodplain; rarely contains small inclusions of calcareous seepage fen; dominated by any combination of bog birch (Betula glandulifera), red-osier dogwood, Bebb's willow (Salix bebbiana), pussy willow (Salix discolor), wild black currant (Ribes americanum), and speckled alder (Alnus incana ssp. rugosa). Approximate total area: 10 acres.

- Seepage Meadow open wetlands on mineral or organic soil in areas of groundwater discharge n stream channels and depressions at bases of old river terraces; vegetation includes species typical of mixed emergent marsh, shrub swamp, and black ash swamp; sedge- and grass-dominated ones typically include tussock sedge (*Carex stricta*), lake sedge (*Carex lacustris*), and blue-joint Calamagrostis canadensis); other species present are boneset (Eupatorium perfoliatum), turtlehead Chelone glabra), swamp lousewort (Pedicularis lanceolata), and northern marsh fern (Thelypteris palustris).
- **Wet Meadow -** open wetlands on very poorly drained mineral or organic soil at bases of stream terraces or bordering mixed emergent marshes; dominated by grass and sedge species typical of seepage meadows.

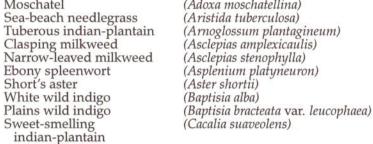
EMERGENT MARSH

- Cattail Marsh open wetlands along lake margins and in shallow basins; dominated by broad-leaved cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*), and their hybrids.
- Mixed Emergent Marsh open wetlands on mineral or organic soil in frequently flooded depressions and sloughs of the Root and Mississippi river floodplains; standing water present most of the year; often includes distinct zones dominated most commonly by river bulrush (Scirpus fluviatilis), common reed grass (Phragmites australis), cattails, sessile-fruited arrowhead (Sagittaria rigida), and broad-leaved arrowhead (Sagittaria latifolia). Approximate total area: 2,970 acres. BEDROCK AND BEACH COMMUNITIES
- River Beach sandy beaches along banks and islands of the Root and Mississippi rivers; maintained y fluctuating water levels and scouring floods; common species include swamp smartweed olygonum coccineum), dark green bulrush (Scirpus atrovirens), brook nut-sedge (Cyperus rivularis), red-footed spikerush (*Eleocharis erythropoda*), catchfly grass (*Leersia lenticularis*), Walter's barnyard grass (*Echinochloa walteri*), creeping lovegrass (*Eragrostis hypnoides*), purple sandgrass (*Triplasis purpurea*), sandbar willow (*Salix exigua*), and seedlings and saplings of floodplain forest tree species. Approximate total area: 100 acres.
- Moist Cliff moist to wet communities on exposed north- to east-facing dolomite or sandstone bedrock escarpments; mosses and foliose lichens common; vascular plants include jeweled shooting star Dodecatheon amethystinum), Mackay's brittle fern (Cystopteris tenuis), slender cliff-brake (Cryptogramma stelleri), and species of adjacent mesic forests such as miterwort (Mitella diphylla). Approximate total area: 60 acres.
- Dry Cliff dry communities on exposed south- to southwest-facing dolomite or sandstone bedrock escarpments, often associated with dry prairie; crustose lichens common; vascular plants sparse but include smooth cliff-brake (*Pellaea glabella*), columbine (*Aquilegia canadensis*), harebell Campanula rotundifolia), and cliff goldenrod (Solidago sciaphila). Approximate total area: 110 acres.
- Talus Slope dry to wet-mesic communities associated with accumulations of dolomitic rock fragments and soil at bases of cliffs and on very steep slopes; sparsely vegetated or covered with mosses, ferns, and pale touch-me-not (Impatiens pallida); common associates include Canada yew (Taxus canadensis), nountain maple (Acer spicatum), and yellow birch (Betula alleghaniensis). Approximate total area: 20 acres.
- Talus Slope algific subtype wet to mesic communities on talus thinly covered with soil at bases of iffs and on very steep north-facing slopes; talus bathed by cool air draining from upland sinkholes down through ice-filled caves and fissures; cool microhabitat supports populations of rare Pleistocene land snails and plants more typical of regions with cooler climates, such as Iowa golden saxifrage Thrysosplenium iowense); common associates include Canada yew, mountain maple, and yellow birch. Approximate total area: 20 acres.

RARE SPECIES AND ANIMAL AGGREGATIONS

Locations of rare plants, rare animals, and selected animal aggregations are maintained in the Natural Heritage Information System. The following rare species and animal aggregations have been found in Houston County. Most rare species are protected under the provisions of the Federal Endangered Species Act or the Minnesota Endangered Species Statute and associated Rules, or were protected when the Minnesota County Biological Survey was conducted in the county. An asterisk (*) indicates that no recent observation (1970-present) of that species has been confirmed. Mapped locations were determined by ground inventory

★ Plants, federally- or state-listed



(Carex davisii)

(Carex laevivaginata)

Chrysosplenium iowense)

Cypripedium candidum)

Desmodium nudiflorum) centra canadensis)

(Platanthera praeclara)

(Polystichum acrostichoide

Psoralidium tenuiflora)

nphoricarpos orbiculatu

aleriana edulis var. ciliata)

(Verbena simplex)

(Echinochloa walteri)

esmodium cuspidatum var. longifolium)

(Carex laxiculmis)

(Carex typhina)

Carex woodii)

Cirsium hillii)

- Carey's sedge Davis' sedge Smooth-sheathed
 - Wood's sedge Iowa golden saxifrage Hill's thistle Small white lady's-slipper Big tick-trefoil Stemless tick-trefoil
 - Narrow-leaved spleenwor plazium pycnocarpon Goldie's fern ryopteris goldiana Marginal shield-fern ryopteris marginal Rattlesnake-master Upland boneset Supatorium sessilifolium Rock clubmoss American water-pennywort Hydrocotyle americana) (Jeffersonia diphylla)
 - Creeping juniper ersia lenticularis) espedeza leptostachya, Three-flowered melic Rock sandwort * (Minuartia dawsonensis) Glade mallow * Napaea dioica) Rhombic-petaled evening (Oenothera rhombipetala
 - One flowered broom-rape Drobanche uniflora Canadian forked chickweed Paronychia canadensis) (Parthenium integrifolium) Purple cliff-brake (Pellaea atropurpurea) Broad beech-fern * Phegopteris hexagonoptera)

Western prairie fringed

- Bog bluegrass Wolf's bluegrass Christmas fern Slender-leaved scurf pea Three-leaved coneflower Ovate-leaved skullcap
- Scutellaria ovata) (Silene nivea) Snowy campion Reniform sullivantia Rough-seeded fameflower alinum rugospermum) Purple sandgrass Triplasis purpurea)
- Silverleaf grape ☆ Plants, previously state-listed Illinois tick-trefoil (Desmodium illinoense)

Ohio spiderwort

Walter's barnyard grass

Canadian black snakeroot (Sanicula canadensis)

Narrow-leaved vervain

Animal Aggregations

Bat concentration Colonial waterbird nesting site

♦ Animals, federally- or state-listed

(Microtus pinetorum) Northern myotis (Myotis septentrionalis Eastern pipistrelle Pipistrellus subflavus) Eastern spotted skunk *

- (Spilogale putorius) Dendroica cerulea) Cerulean warbler Acadian flycatcher Empidonax virescens) Peregrine falcon * Falco peregrinus) Common moorhen (Gallinula chloropus) (Haliaeetus leucocephalus, (Seiurus motacilla)
- Northern cricket frog (Acris crepitans) Smooth soft-shell turtle (Avalone mutica) napping turtle (Chelydra serpentina) Timber rattlesnake (Crotalus horridus) (Eumeces fasciatus)
- Five-lined skink Gopher snake (Acipenser fulvescens) (Cycleptus elongatus)
- (Erimystax x-punctata) allid shine: (Notropis amnis) (Polyodon spathula)
- Butterfly mussel ampsilis higginsi) liggins eve mussel Black sandshell mussel Ligumia recta) Monkeyface mussel Quadrula metanevra) (Vertigo hubrichti) Pleistocene vertigo
- (Hesperia ottoe) Ottoe skipper *
- ♦ Animals, previously state-listed Mule deer (Odocoileus hemionus)
- Sandhill crane (Grus canadensis) Reptiles and Amphibians Eastern hognose snake (Heterodon platurhinos) Milk snake (Lampropeltis triangulum) Rana catesbeiana) (Rana palustris)
- Bluntnose darter * (Etheostoma chlorosomum) American brook lamprey (Lampetra appendix) Black redhorse Pugnose minnow

Morone mississippiensis) (Moxostoma duauesnei) (Notropis emilae) (Scaphirhynchus platorynchus) Shovelnose sturgeon

MISCELLANEOUS FEATURES

- ---- City and township boundaries
- Public ownership within statutory boundaries of managed areas (WMA = State Wildlife Management Area) (SNA = State Scientific and Natural Area) (U.M.R.W.F.R. = Upper Mississippi River Wildlife & Fish Refuge)
- Private ownership within statutory boundaries of managed areas

---- Primary roads —— Secondary roads

- Other roads

Lakes and Rivers - open water, sometimes with beds of submergent vegetation. Approximate total area: 8,660 acres.

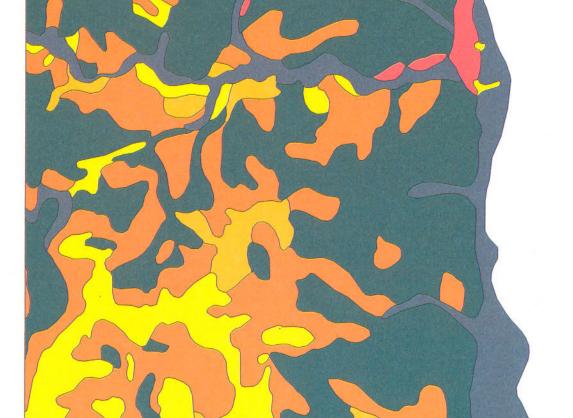
FOOTNOTES

- . Minnesota Natural Heritage Program. 1993. Minnesota's native vegetation: A key to natural communities, version 1.5. Minnesota Department of Natural Resources,
- 2. 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
- rare animals, and natural communities. 3. Natural community boundaries were delineated from 1:40,000 color infrared photography taken in April, 1991 (National Aerial Photography Program, U.S.G.S., U.S. Department of the Interior) and from 1:15,840 color infrared photography taken in October, 1992 (Minnesota Department of Natural Resources, Division of Forestry, Resource Assessment Unit, Grand Rapids, Minnesota). Additional data,

recorded in 1991, were used to help delineate natural community boundaries within

- the Mississippi River floodplain in Houston County (Environmental Management Technical Center, National Biological Service, United States Department of the Interior, Onalaska, Wisconsin).
- Acreage figures are approximate to the nearest ten acres. 5. 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 fatal*, delited by B. Coffin and L. Pfannmuller, University of Minnesota Press, Minneapolis, 1988.
- Data are available from the Minnesota Natural Heritage Information System, Department of Natural Resources, St. Paul, Minnesota. Phone (612) 296-2835.
- 7. Civil division, transportation, water features, and managed area boundaries data were obtained from the Department of Natural Resources, St. Paul, Minnesota. Land ownership within managed areas is sometimes obscured by natural community map units. Every effort was made to obtain current versions of these data, however, errors may exist
- 8. 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).

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



larschner's original descriptions, as appropriate for southeastern Minnesota. Current natural community names' that fall within the categories described by Marschner are given in parentheses. HARDWOOD FORESTS Upland Deciduous Forest - bur oak, white oak, red oak, northern pin oak, elm, basswood, ash, maple, hornbeam, aspen, birch (Maple-Basswood Forest, Oak Forest,

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

Public Land Survey records from 1853-1854. The legend contains slight modifications of

Floodplain Forest, Lowland Hardwood Forest, Hardwood Swamp). River Bottom Forest - elm, ash, cottonwood, boxelder, silver maple, willow, aspen, hackberry (Floodplain Forest).

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). GRASSLAND Prairie - (Dry Prairie, Mesic Prairie).

Calcareous Seepage Fen, Rich Fen).

Wet Prairies, Marshes and Sloughs - marsh-grasses, flags, rushes, wild rice, with willow in places (Willow Swamp, Emergent Marsh, Wet Meadow,