



Floristic Survey and Assessment of the Illinois Department of Transportation
North Chicago (U.S. Route 41/Illinois Route 137) Wetland
Mitigation Site (Excess Parcel) in Lake County

Final Report

by

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the Illinois Natural Areas Inventory. However, the prairie communities are severely threatened with shrub invasion. Ecological restoration including management with prescribed fire probably would rapidly enhance the total area and natural quality of these remnant plant communities. Natural communities are discussed in more detail following the section on threatened and endangered species.

Threatened and Endangered Species

Agropyron trachycaulon (Link) Malte. var. *unilaterale* (Vasey) Malte. - Bearded wheat grass (SE) is locally occasional with most individuals in the southeastern quarter of the south-quarter unit of the study area (Figure 1). It occurs primarily in mesic prairie with a few plants observed in sedge meadow habitat. Total area of mesic prairie appears to be declining due to shrub encroachment. If unchecked, this probably will result in a decline in the population level for this species. Population estimates and species-associate data are summarized in Appendix 1.

Agropyron trachycaulon var. *unilaterale* is a northern perennial grass species that occurs in Illinois near its midwestern southern-range extent. Extant populations are known from three northern Illinois counties (Herkert 1991), including Lake, Cook, and Winnebago. At least one other population was known previously from Lake County in sedge meadow habitat at Gavin Bog and Prairie Nature Preserve (Taft and Solecki 1990).

Oenothera perennis L. - A localized population of small sundrops (SE) occurs near the east-central edge of the south-quarter unit (Figure 1). Because of difficulty of precise orientation within dense shrub thickets, I am not certain if this colony is completely outside of the study area boundary or if a portion of it is included. All plants occur in a prairie opening within a shrub-dominated matrix. Similar to populations of *Agropyron trachycaulon* var. *unilaterale*, this population of *O. perennis* is threatened by shrub encroachment in its prairie habitat. Population and species-associate data are summarized in Appendix 2. *Oenothera perennis* was also seen in the second-quarter unit (Figure 1), evidently in old field/prairie habitat (Tessene, pers. comm.). I did not see this species in that area, but the populations are apparently similar in size.

Oenothera perennis is a perennial forb with a distribution ranging from Newfoundland to Manitoba, south to Minnesota and Ohio, and in the mountains to Georgia (Steyermark 1963). In Illinois, like the previous species, extant populations are known from Lake, Cook, and Winnebago counties. Also similar to *Agropyron trachycaulon* var. *unilaterale*, a small population of small sundrops recently has been observed at Gavin Bog and Prairie Nature Preserve in old field/prairie habitat (Taft and Solecki 1990).

Ranunculus cymbalaria Pursh - Seaside crowfoot (SE) occurs at the edge of an Abbott Labs parking lot on the west side of the study unit (Figure 1). This diminutive species was originally found at this location by Paul Tessene (Illinois Natural History Survey); it is present as a small colony about 2-m² in size. Population and species-associate data are summarized in Appendix 3. This disturbed location may not be sustainable. While preparing for field work in the study area during 1995, I met two staff members of Abbott Labs, both dressed in protective clothing, preparing to apply herbicides to the margins of the parking lot. Once informed about the

endangered species location, they indicated they would avoid applying herbicides to that location. These individuals indicated that that particular area at the edge of the parking lot, for unexplained reasons, remains saturated throughout most of the year. *Ranunculus cymbalaria* is primarily a halophyte and presumably the habitat suitability for this species at this location is enhanced by applications of deicing salts to the parking lot.

Ranunculus cymbalaria is a small (up to 15 cm. tall) perennial, stoloniferous, herbaceous forb with a circumboreal distribution ranging south in the northeastern United States to New Jersey, Illinois, and Iowa (Gleason 1952, Herkert 1991). It is widespread in the western U.S. Habitats include brackish or alkaline situations, particularly on muddy shores (Gleason 1952). In Illinois, most populations were found during the last century where this species was recorded from five northeastern counties and Henry County. Currently, one other Lake County (and possibly one Cook County) population is known in Illinois (Herkert 1991). The other Lake County population is threatened by tollway construction. During the past year, consultants for the Toll Highway Authority have discussed mitigation and reintroduction measures for this taxon with Deanna Glosser of Natural Resources Review and Coordination, Illinois Department of Natural Resources, and me. Currently, I do not know the fate of the tollway population which occurs in a ditch adjacent to a tollway. Similar to the Abbott Labs colony, the habitat suitability for *R. cymbalaria* in the tollway ditch may be enhanced by run-off of deicing salts. The occurrence of this species in non-saline habitats elsewhere in its range suggests that it may also persist in certain Illinois wetlands where open moist soil is available. Habitat with these characteristics is present locally in the Excess Parcel study area.

Veronica scutellata L. - Marsh speedwell (ST) occurs in a marsh within the third-quarter unit (Figure 1). Population and associate data are summarized in Appendix 4. *Veronica scutellata* has a circumboreal distribution ranging south in the northeastern United States to Virginia and to California in the west (Gleason 1952). In Illinois it has been found in six northeastern counties and in three central Illinois counties bordering the Illinois River. Currently, extant populations are known from about five counties, all in northeastern Illinois. Habitats include marshes, fens, and pond margins (personal observation). Suitable habitat is abundant in the study area; however, only a single stem of this inconspicuous, delicate species was seen. In Illinois, this species often occurs at low population levels.

All of the above taxa observed in or near the study area are at risk of population decline and extirpation. *Agropyron trachycaulon* var. *unilaterale* and *Oenothera perennis* are threatened by ecological changes associated with fire absence in their prairie habitat and encroachment by shrubs including the non-native *Rhamnus cathartica*. *Ranunculus cymbalaria* is at risk due to its occurrence as a single, very local colony at the edge of a parking lot subject to mechanical and chemical disturbances. *Veronica scutellata* is at risk since, apparently, it occurs in the study area as a single individual.

In addition to the species discussed above, there was an earlier report of the possible occurrence of *Lathyrus ochroleucus* (Taft 1995). Also, *Carex atherodes*, a species formerly listed in Illinois as endangered is present in the study area. Habitats present in the study area appear suitable for other species listed as threatened and endangered by the IESPB but not seen

during this botanical survey. These taxa are discussed below.

Lathyrus ochroleucus Hook. - As mentioned in a previous memorandum (Taft 1995), a population of a *Lathyrus* species that possesses some characteristics of *L. ochroleucus* (ST) is present at the margin of a shrub-thicket and sedge meadow in the study area. This material has been determined to be a cream-colored form of *Lathyrus palustris* L. var. *myrtifolius* (Muhl.) Gray (pale vetchling). Vegetative material from this population (e.g., stipule and leaflet shape) resembles *L. ochroleucus*. The cream-colored flowers also are characteristic of pale vetchling. However, flowering phenology (July), habitat (moist edge of sedge meadow), and other vegetative characteristics on flowering material are typical of *L. palustris*.

Carex atherodes Spreng. - This sedge is present in the study area as three small colonies. Colonies occur in marsh and sedge meadow habitats and in moist soil beneath a large cottonwood (Figure 1).

In addition to the above species, habitat present in the survey area is similar to nearby habitats where extant populations of *Platanthera leucophaea* (FT, SE) occur. The prairie white-fringed orchid is present at three sites within 2 km from the center of the study area. *P. leucophaea* is found on Abbott Labs property to the west of IL Route 43, on Wrigley property to the north (west side of IL 43), and in a cat-tail marsh along the east side IL 43 to the north (personal observation). The intricate wetland/prairie complex, particularly in the south-quarter unit, appears to be ideal for this species. Habitat present in the Excess Parcel survey area also is very similar to habitats at other Lake County stations for *Cypripedium candidum* (SE). This study area has many similarities to the prairie, sedge meadow, and marsh complex at Gavin Bog and Prairie Nature Preserve in Lake County. A botanical inventory of that site identified numerous threatened and endangered species in these habitats including *Agropyron trachycaulon* var. *unilaterale*, *Oenothera perennis*, *Veronica scutellata*, and *Cypripedium candidum* (Taft and Solecki 1990). These taxa were not known from that site until vegetation management, including brush cutting and prescribed fire, was implemented. Excluding the bog habitats, the present study area has many similarities to the pre-managed Gavin Bog and Prairie Nature Preserve. Management of the entire Excess Parcel study unit with brush cutting and prescribed fire would have numerous benefits and may result in the appearance of threatened and endangered plant species not observed during this survey.

As noted by Plocher et al. (1996) habitat is also present that appears to be suitable for other species listed by the Illinois Endangered Species Protection Board as threatened or endangered. These include *Beckmannia syzigachne*, *Carex crawei*, *Cypripedium parviflorum*, *Galium labradoricum*, *Rorippa islandica*, *Sisyrinchium montanum*, and *Tomanthera auriculata*. The survey area was searched extensively during this study and these species were not seen. Plocher et al. (1996) also indicate suitable habitat is present for *Cypripedium reginae* and *Calopogon tuberosus*. Though exceptions exist, these latter two taxa are more typical of sandy and/or peaty habitats. No sand or peat deposits were observed in the survey area.

Natural Communities and Qualitative Assessment

PreEurosettlement History - According to the General Land Office (GLO) Public Land Survey notes, in the period of 1837-1840 vegetation in this study area was prairie with adjacent areas of wet prairie, marsh, and savanna (Moran 1978). A finer-scale survey at that time likely would have identified local inclusions of wet prairie and marsh among the general vegetation classes in the present survey unit. Sedge meadow was not a community type the GLO surveys recorded and was probably included among marsh and wet prairie.

Soils - Soils in the study area belong to the Frankfort-Montgomery-Wauconda association (Paschke and Alexander 1970). These are level to gently sloping, somewhat poorly drained, deep soils that have slow to moderately slow permeability. Included are level to depressional sites with poorly to very poorly drained soils with slow permeability. Dominant soils mapped include Frankfort silt loam and Montgomery silty clay. Frankfort soils are characterized by a seasonally high water table and slow permeability. Montgomery silty clay formed in clayey lake bed and/or glacial till deposits with marsh vegetation. This is the dominant wetland soil in the study area (Plocher et al. 1996) and is found throughout the study area in the depressions. Zurich and Nappanee silt loams occur in the northeastern corner of the project area and, according to Paschke and Alexander (1970), formed under forest cover. Soil surveys by Plocher et al. (1996) largely agree with the soil mapping reported by Paschke and Alexander (1970).

Disturbance History - Judging from evidence in an aerial photograph showing the study area in 1967, much of the northern three quarter units has a history of cultivation. With the exceptions of a small wetland area, most of the northern two quarter units (N/2 of the survey area) had been cultivated with row crops. Attempts at cultivation appear to have been made in about 60% of the third-quarter unit; wetlands comprising the rest of that unit do not appear to have been cultivated. The south-quarter unit does not have evidence of past use as cropland but may have been used as pasture. However, the natural communities remaining in the south-quarter unit do not appear to have been degraded severely by a grazing history. All of the cultivated units appear to be undergoing secondary succession in 1967 aerial photography. Several prairie species currently are common in portions of the formerly cultivated areas.

A complete lack of fire over a period of many years in the south two quarter units and particularly the south-quarter unit has resulted in the development of large, dense shrub-dominated thickets. *Rhamnus cathartica*, an adventive species, and *Cornus racemosa* are very abundant. These thickets are difficult to penetrate. Deer trails provide the only "convenient" means of travel in these thickets. Though the ground cover is heavily shaded, a few prairie species persist at low density. These areas may have the capacity for rapid recovery with the removal of the shrub stratum. See following section on vegetation management recommendations.

Natural Community Descriptions - During this study, a total of 256 taxa of vascular plants were recorded from the Excess Parcel survey area (Table 1). Common names for each taxon and Floristic Integrity Assessment (FIA) data for the entire study unit are summarized in Appendix 5.

The results from FIA are discussed in a following section (Natural Quality Assessment). Portions of the survey area, particularly in the south half, encompass a complex of habitats including marsh, pond, sedge meadow, and wet-to-mesic prairie. Community composition changes gradually among these habitats as species respond individually to moisture gradients and inundation periods. Disturbance history forms an additional level of complexity with gradients from, for example, old field to prairie lacking distinct separation. This blending of compositional characteristics defies efforts to comprise discrete comprehensive species lists since boundaries between communities and levels of disturbance often are poorly defined. For this reason, the comprehensive listing of taxa in Table 1 utilizes broadly defined communities. Species from prairie and successional field (including old field and shrubland) are merged since distinctions are not always clear. The wetland communities of pond, marsh, and sedge meadow are also merged due to imperceptible changes among these communities without clear borders. To provide descriptions of each separate plant community, brief lists of characteristic species are provided below.

Marsh - Marsh comprises about 5.3 ha (13.2 acres), about 8.6%, of the survey area (Plocher et al. 1996). **Dominant species**, not including floating aquatics which are separately described in the Pond Community (below), are: *Typha angustifolia*, *T. latifolia*, and the adventive *Lythrum salicaria*. The dominance of these species was confirmed by sample data (Plocher et al. 1996). **Common species** include the following taxa: *Carex lanuginosa*, *C. stricta*, *Calamagrostis canadensis*, *Eleocharis smallii*, *Eupatorium maculatum*, *E. perfoliatum*, *Glyceria striata*, *Helianthus grosseserratus*, *Iris shrevei*, *Lycopus americanus*, *Phalaris arundinacea*, and *Polygonum amphibium*. **Occasional species** are: *Alisma plantago-aquatica* var. *parviflorum*, *Asclepias incarnata*, *Aster puniceus* var. *firmus*, *Bidens cernua*, *B. frondosa*, *Caltha palustris*, *Carex lacustris*, *C. sartwellii*, *Geum allepicum*, *G. laciniatum*, *Ludwigia palustris*, *Oxypolis rigidior*, *Scirpus acutus*, *S. fluviatilis*, *S. tabernaemontanii*, *Sium suave*, and *Verbena hastata*. Noteworthy **uncommon species** include *Veronica scutellata*, a species listed as threatened in Illinois (Herkert 1991), and *Carex atherodes*. Both taxa are discussed in the previous section of this report.

An additional area of about 1.0 ha (2.5 acres), or 1.6% of the survey area, was mapped by Plocher et al. (1996) as wet meadow. This includes very degraded wetland dominated by *Phalaris arundinacea*, *Poa pratensis**, *Rhamnus cathartica**, and *Cornus racemosa*.

Pond - Open-water pond habitats associated with some of the marshes in the project area, particularly in the southern half, support a distinct species assemblage. **Common to occasional species** include: *Ceratophyllum demersum*, *Lemna minor*, *L. trisulca*, *Ludwigia palustris*, *Myriophyllum heterophyllum*, *Polygonum amphibium*, *Potamogeton foliosus*, *Proserpinaca palustris*, *Ranunculus flabellaris*, *R. longirostre*, and *Utricularia vulgaris*.

Sedge Meadow - Sedge meadow comprises about 5.1 ha (12.5 acres), about 8.1%, of the survey area (Plocher et al. 1996). **Dominant species**, based on sample data (Plocher et al. 1996), are: *Carex stricta*, *Calamagrostis canadensis*, *Helianthus grosseserratus*, *Juncus dudleyi*, and, locally, *Phalaris arundinacea*. **Common species** include: *Carex lanuginosa*, *C. sartwellii*,

Cornus racemosa, *Equisetum arvense*, *Glyceria striata*, *Lysimachia quadriflora*, *Oxypolis rigidior*, *Penstemon digitalis*, *Phlox glaberrima*, *Salix petiolaris*, and *Solidago canadensis*.

Occasional species are: *Aster praealtus*, *Carex annectans*, *C. buxbaumii*, *C. comosa*, *C. cristatella*, *C. haydenii*, *C. lacustris*, *C. tenera*, *C. tetanica*, *Cornus stolonifera*, *Epilobium coloratum*, *Euthamia graminifolia*, *Galium obtusum*, *Gentiana andrewsii*, *Lathyrus palustris*, *Leersia oryzoides*, *Liatris spicata*, *Mentha arvensis*, *Mimulus ringens*, *Onoclea sensibilis*, *Pycnanthemum virginicum*, *Salix discolor*, *Scirpus acutus*, *S. atrovirens*, *S. cyperinus*, *S. tabernaemontanii*, *Scutellaria lateriflora*, *Smilacina stellata*, *Solidago gigantea*, *Spartina pectinata*, *Spiraea alba*, *Verbena hastata*, and *Vernonia fasciculata*. Noteworthy **uncommon species** are *Carex lasiocarpa* and *Epilobium leptophyllum*. These latter taxa are uncommon throughout Illinois and are primarily found in high quality sedge meadows and/or graminoid fen or seep communities in the northern half of the state. A few individuals of *Agropyron trachycaulon* var. *unilaterale*, a species listed as threatened in Illinois (Herkert 1991) and discussed in the previous section of this report, also occur in sedge meadow, though most of the population occurs in prairie habitat.

Prairie - Forbland/prairie comprises about 3.5 ha (8.6 acres), or 5.6%, of the survey area (Plocher et al. 1996). **Dominant species**, based on sample data (Plocher et al. 1996), are: *Cornus racemosa*, *Poa pratensis**, *P. compressa**, *Solidago canadensis*, *S. rigida*, *Potentilla recta**, *Festuca pratensis**, and *Helianthus grosseserratus* (Plocher et al. 1996). These data, with 50% of the listed species adventive to North America, clearly reflect the composition of the more degraded prairie areas. If, by chance, sample data had come from the areas identified in this report as high quality prairie (Figure 1, see discussion below), only native prairie species would be included. The various prairie communities identified within the study area are briefly described below.

Wet Prairie - Wet prairie occurs in the zone bordering marsh and sedge meadow and is characterized by the local dominance of *Spartina pectinata* with occasional *Hierochloë odorata*. Wet prairie is rare in the project area and is found only in the south-quarter unit (Figure 1).

Wet-Mesic Prairie - Wet-mesic prairie occurs in the zone between sedge meadow and mesic prairie or shrubland. Wet-mesic prairie is more common in the study area than wet prairie but the total area is unmeasured. Certain locations in the southern half of the study area provide outstanding demonstrations of the described blending of community types, with species typical of sedge meadow and marsh overlapping with species typical of wet to mesic prairie. **Dominant species** include: *Spartina pectinata*, *Silphium terebinthinaceum*, *Andropogon gerardii*. **Common to occasional species** include: *Cacalia plantaginea*, *Carex stricta*, *Eryngium yuccifolium*, *Euthamia graminifolia*, *Gentiana andrewsii*, *Lysimachia quadriflora*, *Phlox glaberrima*, *Spiraea alba*, and *Zizia aurea*.

Mesic Prairie - Most of the preEurosettlement vegetation on the site was probably mesic prairie (Moran 1978). Because of the suitability for cropland, this habitat also has been the most impacted by post-settlement disturbances. Comparisons of the floristic integrity of degraded

mesic prairie (mostly in the north half of the survey area) and high-quality prairie (in the south-quarter unit and southern half of the third-quarter unit) are made in Table 2. Composition and FIA of degraded prairie is described in Appendix 6; composition and FIA of high-quality prairie is described in Appendix 7. Area of mesic prairie not impacted by cultivation has been reduced dramatically by shrub invasion, a salient consequence of fire absence. Composition of these qualitatively distinct prairie areas is summarized briefly below.

Dominant species in degraded prairie include: *Ambrosia artemisiifolia*, *Carex granularis*, *Cornus racemosa*, *Equisetum arvense*, *Fragaria virginiana*, *Juncus dudleyi*, *Poa compressa**, *P. pratensis**, *Rhamnus cathartica**, *Senecio pauperculus*, *Solidago canadensis*, *S. juncea*, *S. nemoralis*, and *S. rigida*. **Common to occasional species** in degraded prairie are: *Achillea millefolium**, *Agrostis alba**, *Andropogon gerardii*, *Aster ericoides*, *Aster novae-angliae*, *Daucus carota**, *Eleocharis smallii*, *Eupatorium altissimum*, *Euthamia graminifolia*, *Festuca pratensis**, *Helianthus grosseserratus*, *Hieracium caespitosum**, *Hypoxis hirsuta*, *Liatris aspera*, *L. pycnostachya*, *L. spicata*, *Melilotus alba**, *Monarda fistulosa*, *Rhus glabra*, *Silphium terebinthinaceum*, *Sisyrinchium albidum*, and *Trifolium pratense**.

Dominant species in undegraded prairie include: *Andropogon gerardii*, *Pedicularis canadensis*, and *Silphium terebinthinaceum*. **Common to occasional species** include:

Agropyron trachycaulon var. *unilaterale*
Allium canadense
Allium cernuum
Asclepias purpurea
Asclepias sullivantii
Asclepias tuberosa
Aster azureus
Bromus kalmii
Cacalia tuberosa
Castilleja coccinea
Cirsium discolor
Comandra umbellata
Cornus racemosa
Corylus americana
Crataegus flabellata
Dichanthelium acuminatum var. *fasciculata*
Echinacea pallida
Eryngium yuccifolium
Gentiana andrewsii
Heuchera richardsonii

Liatris pycnostachya
Liatris spicata
Lobelia spicata
Parthenium integrifolium
Phlox pilosa
Populus tremuloides
Pycnanthemum virginiana
*Rhamnus cathartica**
Rosa carolina
Rudbeckia hirta
Schizachyrium scoparium
Silphium integrifolium
Solidago juncea
Sorghastrum nutans
Spiraea alba
Spiranthes cernua
Sporobolus heterolepis
Tradescantia ohiensis
Veronicastrum virginicum
Zizia aurea.

A noteworthy **uncommon species** is *Oenothera perennis*, a species listed as endangered in Illinois (Herkert 1991) and discussed in the previous section of this report.

Successional Field - The largest community type in the study area is successional field, according to the community classification of White and Madany (1978). Plocher et al. (1996) refer to this community as Shrubland/Forbland. They mapped a total area of 45.7 ha (112.9 acres), about 73% of the study area. Shrubland in the northern half of the study area is the product of secondary succession following a history of cultivation. Much of the shrubland in the southern half of the study area appears to have invaded prairie due to fire absence. **Abundant species** among the shrub thickets are: *Cornus racemosa* and *Rhamnus cathartica**. **Common to occasional species** include *Crataegus flabellata*, *C. mollis*, *Lonicera tatarica**, *Lonicera x bella**, and *Viburnum lentago*. Some prairie species are present at low density beneath these shrub thickets (e.g., *Dodecatheon meadia*, *Hypoxis hirsuta*, *Silphium terebinthinaceum*, and *Viola pedatifida*).

Forest - A forest community is present totaling 0.77 ha (1.9 acres), about 1.2% of the study area (Plocher et al. 1996). This is a very degraded forest dominated by *Quercus palustris* with occasional *Prunus serotina*, *Populus deltoides*, and *Quercus macrocarpa*. Ground cover and shrub strata are strongly dominated by seedlings and saplings of *Rhamnus cathartica**.

Natural Quality Evaluation - Most of the study area is degraded and recovering from past disturbances including cultivation. Some promising trends appear to be underway as species from remnant prairie and wetland habitats in the south half of the study area are invading the successional fields in the north half of the study area. Trends that appear to be threatening floristic diversity and integrity include the establishment and growth of shrub thickets (see management recommendations below). Portions of the southern half of the study area are outstanding examples of natural communities in Illinois. In particular, remnants of marsh, sedge meadow, and prairie in the south-quarter unit and a small portion of the third-quarter unit appear to be Grade B quality (Figure 1), according to the criteria of the Illinois Natural Areas Inventory (White 1978). Grade B habitats qualify for inclusion as Category I natural areas. As further support for the greater integrity of the vegetation in the southern-quarter unit, the composition of mesic prairie in that portion of the study area (described above and in Appendix 7) has a significantly higher (t-stat = 5.7, df = 176, p < 0.000) mean coefficient of conservatism ($\bar{x}CC = 5.05$) compared with prairie areas in the north half of the study area ($\bar{x}CC = 2.75$) (described above and in Appendix 6). The floristic integrity of the two qualitatively different areas of prairie are compared in Table 2. Currently, shrub invasion is a serious threat to all prairie vegetation in the study area. A Floristic Integrity Assessment determined for the entire Excess Parcel study area yields a Floristic Quality Index of 63.5 (including adventives) with a mean coefficient of conservatism of 3.97 (including adventives). This extraordinarily high index is strongly influenced by the high floristic integrity found in the southern-half and, in particular, the south-quarter unit. The evidence for species movement from the south-quarter unit to the north suggests that with management, the entire site has restoration potential.

Management Recommendations - With the expedient application of vegetation management, including brush cutting, stump-treatment herbicide applications (particularly targeting *Rhamnus cathartica** and *Cornus racemosa*), and persistent applications of prescribed fire, the floristic

integrity of much of the Excess Parcel study area can improve. Prairie and sedge meadow/marsh habitats at Gavin Bog and Prairie Nature Preserve, also in Lake County, provide an example that dramatic improvements to floristic integrity can be achieved with vegetation management. Prior to intensive restoration efforts, those communities at Gavin Bog apparently resembled portions of the Excess Parcel characterized by dense shrub thickets.

Trends anticipated with vegetation management in the degraded north-half of the study area would include a reduction of shrub-dominated thickets and, possibly, cool-season adventive grasses (e.g., *Poa compressa*, *P. pratensis*, *Festuca pratensis*, *Phalaris arundinacea*). Native warm-season grasses (e.g., *Andropogon gerardii*, *Sorghastrum nutans*, *Schizachyrium scoparium*) typically respond to prescribed fire with increases in abundance. Reduction of shade of shrub thickets will likely increase local species diversity. Currently, shrub thickets are expanding into high-quality prairie habitats in the southern half of the study area. Many areas in the south-quarter unit appear to be at a threshold of restoration potential. Without expedient application of vegetation management, prairie recently infested with shrubs and existing high-quality areas of mesic prairie will have to go through a rehabilitation phase before restoration to conditions prior to shrub invasion can be anticipated. Without vegetation management, the long-term persistence of prairie habitats and species in the project area is threatened. Further, populations of at least two endangered species, *Agropyron trachycaulon* var. *unilaterale* and *Oenothera perennis*, are threatened by unchecked shrub invasion.

CONCLUSIONS

The Excess Parcel study area offers exceptional opportunities to preserve existing high-quality remnants of prairie, sedge meadow, and marsh including marsh ponds. A total of 256 taxa of flowering plants were recorded from the study area during field work in 1995 and, briefly, 1996. Populations of three threatened and endangered plant species (*Agropyron trachycaulon* var. *unilaterale* [SE], *Oenothera perennis* [SE], and *Veronica scutellata* [ST]) are present in the study area and a fourth species (*Ranunculus cymbalaria* [SE]) occurs just outside the study area boundaries. Habitats are present that are similar to habitats for other threatened and endangered species found in the region (e.g., *Cypripedium candidum* [SE], *Platanthera leucophaea* [FT, SE]). Vegetation management activities can improve floristic integrity in degraded portions of the project area and contribute to the maintenance and expansion of existing high-quality remnant plant communities. The study area offers exceptional opportunities for research in vegetation and restoration ecology. Opportunities particularly are available for research into factors that contribute to: 1) assembly rules in plant communities, 2) the maintenance of diversity, 3) processes in restoration ecology, and 4) species-level approaches including endangered species recovery.

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Species Composition - Excess Parcel

Table 1. Composition of vascular plants in the U.S. Route 41/IL Route 137, Illinois Department of Transportation Excess Parcel Mitigation Site, Lake County. Threatened and endangered species are shown in bold. Adventive species are indicated with asterisks (*).			
Cover Class	Latin Species Name	Marsh-Pond/ Sedge Meadow	Prairie/Old Field
3	<i>Achillea millefolia</i> *		X
1	<i>Agrimonia gryposepala</i>		X
2	<i>Agropyron trachycaulon</i> var. <i>unilaterale</i>	X	X
2	<i>Agrostis alba</i> *		X
2	<i>Agrostis alba</i> var. <i>palustris</i>	X	
2	<i>Alisma plantago-aquatica</i> var. <i>parviflorum</i>	X	
2	<i>Allium canadense</i>		X
2	<i>Allium cernuum</i>		X
3 to 4	<i>Ambrosia artemisiifolia</i>		X
2 to 3	<i>Andropogon gerardii</i>		X
1 to 2	<i>Anemone cylindracea</i>		X
1 to 2	<i>Anemone virginica</i>		X
2	<i>Antenaria neglecta</i>		X
2	<i>Apocynum sibericum</i>	X	X
2	<i>Asclepias incarnata</i>	X	
2	<i>Asclepias purpurescens</i>		X
2	<i>Asclepias sullivantii</i>		X
1 to 2	<i>Asclepias syriaca</i>		X
2	<i>Asclepias tuberosa</i>		X
3	<i>Aster azureus</i>		X
3	<i>Aster ericoides</i>		X
2	<i>Aster novae-angliae</i>	X	X
2	<i>Aster pilosus</i>	X	
2	<i>Aster praealtus</i>	X	X
2	<i>Aster puniceus</i> var. <i>firmus</i>	X	
2	<i>Aster simplex</i>	X	
1	<i>Baptisia lactea</i>		X
1	<i>Baptisia leucophaea</i>		X
2	<i>Bidens cernua</i>	X	
2	<i>Bidens frondosa</i>	X	
2	<i>Bromus kalmii</i>		X
2	<i>Cacalia plantaginea</i>		X
3	<i>Calamagrostis canadensis</i>	X	
2	<i>Caltha palustris</i>	X	
2	<i>Calystegia sepium</i>		X
2	<i>Carex annectans</i>	X	
2	<i>Carex annectans</i> var. <i>xanthocarpa</i>	X	
1	<i>Carex atherodes</i>	X	
2	<i>Carex buxbaumii</i>	X	
2	<i>Carex comosa</i>	X	
2	<i>Carex cristatella</i>	X	
3	<i>Carex granularis</i>		X
2	<i>Carex haydenii</i>	X	
2	<i>Carex hirsutella</i>		X

Species Composition - Excess Parcel

Cover Class	Latin Species Name	Marsh-Pond/ Sedge Meadow	Prairie/Old Field
2	<i>Carex lacustris</i>	X	
3	<i>Carex lanuginosa</i>	X	
1	<i>Carex lasiocarpa</i>	X	
2	<i>Carex sartwellii</i>	X	
3 to 4	<i>Carex stricta</i>	X	
2	<i>Carex tenera</i>	X	
1 to 2	<i>Carex tetanica</i>	X	
2	<i>Castilleja coccinea</i>		X
2	<i>Ceratophyllum demersum</i>	X	
2	<i>Cichorium intybus*</i>		X
2	<i>Cicuta maculata</i>	X	
2	<i>Cinna arundinacea</i>	X	
1	<i>Circaea lutetiana</i>		X
2	<i>Cirsium arvense*</i>	X	
1 to 2	<i>Cirsium discolor</i>	X	X
1	<i>Cirsium vulgare*</i>	X	
1	<i>Comandra umbellata</i>		X
1	<i>Coreopsis palmata</i>		X
1	<i>Cornus obliqua</i>		X
3 to 4	<i>Cornus racemosa</i>	X	X
1 to 2	<i>Cornus stolonifera</i>	X	
2	<i>Corylus americanus</i>		X
2	<i>Crataegus flabellata</i>		X
1	<i>Crataegus mollis</i>		X
2	<i>Dactylis glomerata*</i>		X
3	<i>Daucus carota*</i>		X
2	<i>Desmodium sp.</i>		X
2	<i>Dichanthelium acuminatum var. fasciculatum</i>		X
1 to 2	<i>Dichanthelium shaerocarpum</i>		X
1	<i>Dipsacus laciniatus*</i>		X
1 to 2	<i>Dodecatheon meadia</i>		X
2	<i>Echinacea pallida</i>		X
1	<i>Eleagnus angustifolia*</i>		X
2	<i>Eleocharis acicularis</i>	X	
3 to 4	<i>Eleocharis smallii</i>	X	X
2	<i>Epilobium coloratum</i>	X	
1	<i>Epilobium leptophyllum</i>	X	
3 to 4	<i>Equisetum arvense</i>	X	X
2	<i>Equisetum x ferrissii</i>	X	
1	<i>Erechtites hieracifolia</i>	X	
2	<i>Erigeron philadelphicus</i>	X	
2	<i>Eryngium yuccifolium</i>		X
3	<i>Eupatorium altissimum</i>		X
3	<i>Eupatorium maculatum</i>	X	
2	<i>Eupatorium perfoliatum</i>	X	
1 to 2	<i>Euphorbia corollata</i>		X
2	<i>Euthamia graminifolia</i>	X	X

Species Composition - Excess Parcel

Cover		Marsh-Pond/	Prairie/Old
Class	Latin Species Name	Sedge Meadow	Field
3	<i>Festuca pratense*</i>		X
3-Apr	<i>Fragaria virginiana</i>		X
2	<i>Fraxinus pennsylvanicus</i>	X	
2	<i>Galium obtusum</i>	X	
1 to 2	<i>Gentiana andrewsii</i>	X	X
2	<i>Geranium maculatum</i>		X
2	<i>Geum allepicum</i>	X	
2	<i>Geum laciniatum</i>	X	
1	<i>Glyceria septentrionalis</i>	X	
3	<i>Glyceria striata</i>	X	
2	<i>Helenium autumnale</i>	X	
3 to 4	<i>Helianthus grosseserratus</i>	X	X
2	<i>Helianthus rigidus</i>		X
1	<i>Helianthus strumosus</i>	X	
2	<i>Heuchera richardsonii</i>		X
1	<i>Hieracium aurantiacum*</i>		X
3	<i>Hieracium caespitosum*</i>		X
1	<i>Hieracium scabrum</i>		X
1 to 2	<i>Hierochloa odorata</i>	X	X
1 to 2	<i>Hypericum perforatum*</i>		X
2	<i>Hypericum punctatum</i>	X	
2	<i>Hypoxis hirsuta</i>		X
3	<i>Iris shrevei</i>	X	
2	<i>Juncus cf. greenei</i>	X	
3 to 4	<i>Juncus dudleyi</i>	X	X
1	<i>Juniperus virginicus</i>		X
1 to 2	<i>Koeleria macrantha</i>		X
1	<i>Krigia biflora</i>		X
1 to 2	<i>Lathyrus palustris</i>	X	
2	<i>Lathyrus palustris</i> var. <i>myrtifolius</i>	X	
1 to 2	<i>Leersia oryzoides</i>	X	
3	<i>Lemna minor</i>	X	
2 to 3	<i>Lemna trisulca</i>	X	
2	<i>Leucanthemum vulgare*</i>		X
2 to 3	<i>Liatris asper</i>		X
2-Jan	<i>Liatris pycnostachya</i>		X
2 to 3	<i>Liatris spicata</i>	X	X
1	<i>Lilium michiganense</i>		X
1	<i>Lithospermum canescens</i>		X
1	<i>Lobelia siphilitica</i>	X	
2 to 3	<i>Lobelia spicata</i>		X
2	<i>Lonicera tatarica*</i>	X	
2	<i>Lonicera x bella*</i>		X
2	<i>Ludwigia palustris</i>	X	
1	<i>Ludwigia polycarpa</i>	X	
3	<i>Lycopus americanus</i>	X	
1	<i>Lycopus virginicus</i>	X	

Species Composition - Excess Parcel

Cover Class	Latin Species Name	Marsh-Pond/ Sedge Meadow	Prairie/Old Field
3	<i>Lysimachia quadriflora</i>	X	
1	<i>Lysimachia thrysiflora</i>	X	
2	<i>Lythrum alatum</i>		X
2 to 4	<i>Lythrum salicaria*</i>	X	X
1	<i>Malus ioensis</i>		X
2	<i>Medicago lupulina*</i>		X
2 to 3	<i>Melilotus alba*</i>		X
2	<i>Mentha arvensis</i> var. <i>villosa</i>	X	
1 to 2	<i>Mimulus ringens</i>	X	
3	<i>Monarda fistulosa</i>		X
2	<i>Myriophyllum heterophyllum</i>	X	
2	<i>Oenothera perennis</i>		X
1 to 2	<i>Onoclea sensibilis</i>	X	
1	<i>Oxalis stricta</i>		X
2 to 3	<i>Oxypolis rigidior</i>	X	
2	<i>Panicum capillare</i>		X
1	<i>Panicum virgatum</i>		X
3	<i>Parthenium integrifolium</i>		X
2	<i>Pedicularis canadensis</i>		X
1	<i>Pedicularis lanceolata</i>	X	
2 to 3	<i>Penstemon digitalis</i>	X	X
1	<i>Penthorum sedoides</i>	X	
4	<i>Phalaris arundinacea</i>	X	
1	<i>Phleum pratense*</i>		X
3	<i>Phlox glaberrima</i>	X	
3	<i>Phlox pilosa</i>		X
1 to 2	<i>Phragmites australis</i>	X	
2	<i>Physalis pubescens</i>		X
1 to 2	<i>Plantago rugellii</i>	X	X
4	<i>Poa compressa*</i>		X
1	<i>Poa pratensis*</i>	X	
3 to 4	<i>Poa pratensis*</i>		X
3	<i>Polygonum amphibium</i>	X	
2	<i>Polygonum punctatum</i>	X	
2	<i>Populus deltoides</i>	X	
2	<i>Populus tremuloides</i>		X
2	<i>Potamogeton foliosus</i>	X	
1	<i>Potentilla arguta</i>		X
1	<i>Potentilla norvegica*</i>	X	
2	<i>Potentilla recta*</i>		X
2	<i>Potentilla simplex</i>		X
1	<i>Prenanthes</i> cf. <i>crepidinea</i>		X
1 to 2	<i>Proserpinaca palustris</i>	X	
2	<i>Prunella vulgaris</i> var. <i>elongata</i>		X
1	<i>Prunus americanus</i>		X
2	<i>Prunus serotina</i>		X
1 to 2	<i>Prunus virginiana</i>		X

Species Composition - Excess Parcel

Cover Class	Latin Species Name	Marsh-Pond/ Sedge Meadow	Prairie/Old Field
1 to 2	<i>Pycnanthemum pilosum</i>	X	
2 to 3	<i>Pycnanthemum virginiana</i>	X	X
1	<i>Quercus macrocarpa</i>		X
2	<i>Quercus palustris</i>		X
2	<i>Ranunculus flabellaris</i>	X	
2	<i>Ranunculus longirostre</i>	X	
2	<i>Ratibida pinnata</i>		X
4	<i>Rhamnus cathartica*</i>		X
2	<i>Rhamnus frangula*</i>	X	
2	<i>Rhus copallina</i>		X
3	<i>Rhus glabra</i>		X
1	<i>Ribes americana</i>	X	
2	<i>Rosa blanda</i>	X	
2	<i>Rosa carolina</i>		X
2	<i>Rosa multiflora*</i>		X
2	<i>Rubus flagellaris</i>		X
1	<i>Rubus strigosus</i>	X	
1	<i>Rumex crispus*</i>	X	
2	<i>Rudbeckia hirta</i>		X
2	<i>Sagittaria latifolia</i>	X	
2	<i>Salix alba*</i>	X	
2	<i>Salix discolor</i>	X	
2 to 3	<i>Salix petiolaris</i>	X	
2	<i>Schizachyrium scoparium</i>		X
2	<i>Scirpus acutus</i>	X	
2	<i>Scirpus atrovirens</i>	X	
2	<i>Scirpus cyperinus</i>	X	
2	<i>Scirpus fluviatilis</i>	X	
2	<i>Scirpus pendulus</i>		X
2	<i>Scirpus tabernaemontanii</i>	X	
2	<i>Scutellaria lateriflora</i>	X	
4	<i>Senecio pauperculus</i>		X
2	<i>Silphium integrifolium</i>		X
2 to 3	<i>Silphium terebinthinaceum</i>		X
2 to 3	<i>Sisyrinchium albidum</i>		X
2	<i>Sium suave</i>	X	
2	<i>Smilacina stellata</i>	X	X
2 to 4	<i>Solidago canadensis</i>	X	X
2	<i>Solidago gigantea</i>	X	X
2 to 3	<i>Solidago juncea</i>		X
3 to 4	<i>Solidago nemoralis</i>		X
1 to 2	<i>Solidago riddellii</i>	X	
4	<i>Solidago rigida</i>		X
2 to 3	<i>Sorghastrum nutans</i>		X
2 to 3	<i>Spartina pectinata</i>	X	X
2	<i>Spiraea alba</i>	X	X
2	<i>Spiranthes cernua</i>		X

Species Composition - Excess Parcel

Cover Class	Latin Species Name	Marsh-Pond/ Sedge Meadow	Prairie/Old Field
2	<i>Sporobolus heterolepis</i>		X
1	<i>Stachys palustris</i>	X	
1	<i>Stachys tenuifolia</i> var. <i>hispida</i>		X
1	<i>Stellaria meadia</i> *		X
1	<i>Taraxicum officinale</i> *		X
1 to 2	<i>Thalictrum dasycarpum</i>	X	X
1 to 2	<i>Tradescantia ohiensis</i>	X	
3	<i>Tradescantia ohiensis</i>		X
3	<i>Trifolium pratense</i> *		X
3	<i>Typha angustifolia</i>	X	
3 to 4	<i>Typha latifolia</i>	X	
2	<i>Ulmus rubra</i>	X	X
2	<i>Urtica dioica</i>	X	
2	<i>Utricularia gibba</i>	X	
2	<i>Utricularia vulgaris</i>	X	
2	<i>Verbena hastata</i>	X	
2	<i>Vernonia fasciculata</i>	X	
1	<i>Veronica scutellata</i>	X	
2	<i>Veronicastrum virginicum</i>	X	X
1	<i>Viburnum lentago</i>		X
2	<i>Viburnum opulus</i> *	X	
2	<i>Vicia americana</i>	X	
2	<i>Viola affinis</i>	X	
2	<i>Viola pedatifida</i>		X
1	<i>Viola sororia</i>	X	
2	<i>Vitis riparia</i>		X
1 to 2	<i>Zizea aptera</i>		X
2 to 3	<i>Zizea aurea</i>	X	X
Total Number of Taxa/Habitat		140	147
Total Taxa in Study Area		256	

Table 2. Summary Floristic Integrity Assessment data comparing degraded prairie and high-quality prairie in the Illinois Department of Transportation Excess Parcel study area, Lake County. Mean conservatism ranks are significantly different (t-stat = 5.7, df = 176, $p < 0.000$).

Parameter	Prairie (N/2)	Prairie (S/2)
INAI Community Classification	Mesic Prairie	Mesic Prairie
INAI Grade	C-to-D	B
Total Species Richness	92	86
% Adventive	25.0	5.8
Floristic Quality Index (FQI)	26.4	47.1
FQI (native species only)	30.5	48.5
Mean Conservatism Rank	2.75	5.03
Mean Conservatism (natives only)	3.67	5.35
Mean Wetness	1.8	1.8
Mean Wetness (natives only)	1.4	1.7
# Rare Species (T & E)	1	3

APPENDIX 1

THREATENED AND ENDANGERED SPECIES SUMMARY FORM

PROJECT AREA - US 411/IL 137 Excess Parcel

COUNTY - Lake

DATE - 22 June, 5 July 1995

TAXON - *Agropyron trachycaulon* (Link) Malte. STATUS - Illinois Endangered
var. *unilaterale* (Vasey) Malte.

LOCATION IN THE PROJECT AREA:

legal location - T44N R12E, SE/4, NW/4, NW/4 Section 18

south-quarter unit (Figure 1)

POPULATION DATA:

population size - about 25 plants seen with flowering culms throughout the SE quarter of the southern-quarter unit of the project area (Figure 1)

reproductive state - flowering; lowest spikelets with apparently mature achenes

voucher - Taft # 1252, 1253, 1261 (ILLS)

DESCRIPTION OF THE COMMUNITY:

community classification - Mesic prairie; sedge meadow

community dominants - *Andropogon gerardii*, *Solidago rigida*, *Cornus racemosa*, *Silphium terebinthinaceum*

species' associates - *Bromus kalmii*, *Andropogon gerardii*, *Rudbeckia hirta*, *Castilleja coccinea*, *Helianthus rigidus*, *Monarda fistulosa*, *Silphium terebinthinaceum*, *Asclepias purpurea*, *Cacalia plantaginifolia*, *Lobelia spicata*, *Cornus racemosa*, *Anemone virginiana*, *Euthamia graminifolia*, *Echinacea pallida*, *Pycnanthemum virginiana*, *Solidago canadensis*

comments - see species account in text of report.

APPENDIX 2

THREATENED AND ENDANGERED SPECIES SUMMARY FORM

PROJECT AREA - US 411/IL 137 Excess Parcel

COUNTY - Lake

DATE - 14 June 1995

TAXON - *Oenothera perennis* L.

STATUS - Illinois Endangered

LOCATION IN THE PROJECT AREA:

legal location - Population 1: T44N R12E, SE/4, NE/4, NW/4, NW/4 Section 18
(south-quarter unit [Figure 1])

Population 2: T44N R12E, NE/4, SW/4, NW/4, SW/4 Section 7
(second-quarter unit from north [Figure 1])

POPULATION DATA:

population size - 32 plants seen in population #1; population #2 was reported to be a similar size

reproductive state - flowering with some fruit development

voucher - Taft # 1244 (ILLS)

DESCRIPTION OF THE COMMUNITY:

community classification - Mesic prairie

community dominants - *Cornus racemosa*, *Solidago rigida*, *Pedicularis canadensis*, *Rhamnus cathartica*, *Parthenium integrifolium*, *Liatris* cf. *spicata*

species' associates - *Silphium terebinthinaceum*, *Cornus racemosa*, *Desmodium* sp.,
Potentilla simplex, *Parthenium integrifolium*, *Pedicularis canadensis*,
Hyposix hirsuta, *Solidago juncea*, *Senecio pauperculus*,
Leucanthemum vulgare, *Hieracium caespitosum*

comments - Population #1 is localized in small, fairly high quality prairie openings within dense shrub thicket of *Rhamnus cathartica*, *Cornus racemosa*, and *Crataegus* sp. See species account in text of report for more details about the distribution and habitat of this species.

APPENDIX 3

THREATENED AND ENDANGERED SPECIES SUMMARY FORM

PROJECT AREA - US 411/IL 137 Excess Parcel

COUNTY - Lake

DATE - 14 June 1995

TAXON - *Ranunculus cymbalaria* Pursh

STATUS - Illinois Endangered

LOCATION IN THE PROJECT AREA: (see Figure 1)

legal location - T44N R11E, NE/4, NE/4, NE/4, SE/4 Section 12

POPULATION DATA:

population size - 200-300 flowering stems within 2-m² area; population size unknown for this stoloniferous species

reproductive state - flowering with fruit development

voucher - Taft # 1262 (ILLS)

photograph - yes

DESCRIPTION OF THE COMMUNITY:

community classification - successional field (edge of parking lot)

community dominants - *Poa pratensis*, *Festuca pratensis*, *Scirpus pendulus*, *Agrostis alba*

species' associates - *Agrostis alba*, *Poa pratensis*, *Scirpus pendulus*, *Plantago rugellii*

comments - This population occurs just outside of the Excess Parcel study area boundary. The site is at the edge of a parking lot for Abbott Labs just west of the study area. Landscape maintenance personnel were applying pesticides to the parking lot edge. They were notified of the population and indicated they would avoid it.

APPENDIX 4

THREATENED AND ENDANGERED SPECIES SUMMARY FORM

PROJECT AREA - US 411/IL 137 Excess Parcel

COUNTY - Lake

DATE - 14 June 1995

TAXON - *Veronica scutellata* L.

STATUS - Illinois Threatened

LOCATION IN THE PROJECT AREA: (see Figure 1)

legal location - T44N R12E, SW/4, SE/4, NE/4, SW/4 Section 7
(third quarter unit from north)

POPULATION DATA:

population size - 1 individual

reproductive state - flowering with fruit development

voucher - no specimen taken (population of 1)

photograph - yes

DESCRIPTION OF THE COMMUNITY:

community classification - marsh

community dominants - *Typha latifolia*, *Lythrum salicaria*, *Carex stricta*, *Calamagrostis canadensis*

species' associates - *Eupatorium perfoliatum*, *Typha latifolia*, *Iris shrevei*,
Lythrum salicaria, *Eleocharis smallii*, *Epilobium coloratum*,
Lycopus americanus, *Sium suave*

comments - none; see species account in text of report.

Appendix 5

SITE: Excess Parcel
 COUNTY: Lake
 DATE: 1995-1996
 BY: John Taft
 FILE: lakexssp.prn

FLORISTIC QUALITY DATA		NATIVE	86.7%	ADVENTIVE	13.3%
222	NATIVE SPECIES	11 Tree	4.3%	1 Tree	0.4%
256	Total Species	17 Shrub	6.6%	6 Shrub	2.3%
4.58	NATIVE MEAN	1 Vine	0.4%	0 Vine	0.0%
3.97	W/Adventives	146 Forb	57.0%	20 Forb	7.8%
68.19	NATIVE INDEX	21 Grass	8.2%	7 Grass	2.7%
63.50	W/Adventives	24 Sedge	9.4%	0 Sedge	0.0%
-0.9	NATIVE WETNESS	2 Fern	0.8%	0 Fern	0.0%
-0.5	W/Adventives				
AVG: FACULTATIVE (+)					

ACRONYM	CC	SCIENTIFIC NAME	CW	WETNESS	PHYSIOG	COMMON NAME
ACHMIL	*	ACHILLEA MILLEFOLIUM	3	FACU	A FORB	COMMON MILFOIL
AGRGRY	2	Agrimonia gryposepala	2	FACU+	N FORB	TALL AGRIMONY
AGRTRU	8	Agropyron trachycaulum unilaterale	3	FACU	N GRASS	BEARDED WHEAT GRASS
AGRALA	0	Agrostis alba	-3	FACW	N GRASS	RED TOP
AGRALP	8	Agrostis alba palustris	-3	FACW	N GRASS	CREEPING BENT GRASS
ALIPPA	2	Alisma plantago-aquatica parviflorum	-5	OBL	N FORB	COMMON WATER PLANTAIN
ALLCER	7	Allium cernuum	5	UPL	N FORB	NODDING WILD ONION
AMBART	0	Ambrosia artemisiifolia	3	FACU	N FORB	BITTERWEED
ANDGER	5	Andropogon gerardii	1	FAC-	N GRASS	BIG BLUESTEM
ANECYL	8	Anemone cylindrica	5	UPL	N FORB	CANDLE ANEMONE
ANEVIR	4	Anemone virginiana	5	UPL	N FORB	TALL ANEMONE
ANTNEG	4	Antennaria neglecta	5	UPL	N FORB	CAT'S FOOT
APOSIB	2	Apocynum sibiricum	-1	FAC+	N FORB	INDIAN HEMP
ASCINC	4	Asclepias incarnata	-5	OBL	N FORB	SWAMP MILKWEED
ASCPUR	7	Asclepias purpurascens	3	FACU	N FORB	PURPLE MILKWEED
ASCSUL	8	Asclepias sullivantii	5	UPL	N FORB	PRAIRIE MILKWEED
ASCSYR	0	Asclepias syriaca	5	UPL	N FORB	COMMON MILKWEED
ASCTUB	5	Asclepias tuberosa interior	5	UPL	N FORB	BUTTERFLYWEED
ASTAZU	8	Aster azureus	5	UPL	N FORB	AZURE ASTER
ASTERI	4	Aster ericoides	4	FACU-	N FORB	HEATH ASTER
ASTNOV	4	Aster novae-angliae	-3	FACW	N FORB	NEW ENGLAND ASTER
ASTPIL	0	Aster pilosus	4	FACU-	N FORB	HAIRY ASTER
ASTPRA	4	Aster praealtus	-5	OBL	N FORB	WILLOW-LEAVED ASTER
ASTPUN	8	Aster puniceus	-5	OBL	N FORB	SWAMP ASTER
ASTSIM	3	Aster simplex	-5	OBL	N FORB	PANICLED ASTER
BAPLAC	6	Baptisia lactea	3	FACU	N FORB	WHITE WILD INDIGO
BAPLEL	9	Baptisia leucophaea	5	UPL	N FORB	CREAM WILD INDIGO
BIDCER	2	Bidens cernua	-5	OBL	N FORB	NODDING BEGGAR-TICKS
BIDFRO	1	Bidens frondosa	-3	FACW	N FORB	COMMON BEGGAR-TICKS
BROKAL	10	Bromus kalmii	0	FAC	N GRASS	PRAIRIE BROME
CACPLA	10	Cacalia plantaginea	0	FAC	N FORB	PRAIRIE INDIAN PLANTAIN
CALCAN	3	Calamagrostis canadensis	-5	OBL	N GRASS	BLUEJOINT GRASS
CALTPA	7	Caltha palustris	-5	OBL	N FORB	COWSLIP
CALSEP	1	Calystegia sepium	0	FAC	N FORB	AMERICAN BINDWEED
CXANNA	3	Carex annectens	-3	FACW	N SEDGE	SEDGE
CXANNX	3	Carex annectens xanthocarpa	-3	FACW	N SEDGE	SEDGE
CXATHE	6	Carex atherodes	-5	OBL	N SEDGE	SEDGE
CXBUXB	10	Carex buxbaumii	-5	OBL	N SEDGE	BUXBAUM SEDGE
CXCOMO	5	Carex comosa	-5	OBL	N SEDGE	BRISTLY SEDGE
CXCRI5	3	Carex cristatella	-4	FACW+	N SEDGE	SEDGE
CXGRNG	3	Carex granularis	-4	FACW+	N SEDGE	MEADOW SEDGE
CXHAYD	8	Carex haydenii	-5	OBL	N SEDGE	HAYDEN SEDGE

ACRONYM	CC	SCIENTIFIC NAME	WETNESS	PHYSIOG	COMMON NAME	
CXHIRS	5	Carex hirsutella	4	FACU-	N SEDGE	SEDGE
CXLACU	6	Carex lacustris	-5	OBL	N SEDGE	RIVER SEDGE
CXLANU	4	Carex lanuginosa	-5	OBL	N SEDGE	WOOLY SEDGE
CXLASI	10	Carex lasiocarpa	-5	OBL	N SEDGE	SEDGE
CXSART	5	Carex sartwellii	-5	OBL	N SEDGE	SARTWELL SEDGE
CXSTRI	5	Carex stricta	-5	OBL	N SEDGE	TUSSOCK SEDGE
CXTENE	5	Carex tenera	-1	FAC+	N SEDGE	SEDGE
CXTETA	5	Carex tetanica	-3	FACW	N SEDGE	SEDGE
CASCOC	10	Castilleja coccinea	0	FAC	N FORB	INDIAN PAINTBRUSH
CERDEM	3	Ceratophyllum demersum	-5	OBL	N FORB	COONTAIL
CICINT	*	CICHORIUM INTYBUS	5	UPL	A FORB	BLUE SAILORS
CICMAC	4	Cicuta maculata	-5	OBL	N FORB	WATER HEMLOCK
CINARU	5	Cinna arundinacea	-3	FACW	N GRASS	STOUTWOOD REED
CIRLUT	0	Circaea lutetiana canadensis	3	FACU	N FORB	ENCHANTER'S NIGHTSHADE
CIRARV	*	CIRSIUM ARVENSE	3	FACU	A FORB	CANADA THISTLE
CIRDIS	2	Cirsium discolor	5	UPL	N FORB	FIELD THISTLE
CIRVUL	*	CIRSIUM VULGARE	4	FACU-	A FORB	BULL THISTLE
COMUMB	6	Comandra umbellata	3	FACU	N FORB	BASTARD TOAD-FLAX
CORPAL	6	Coreopsis palmata	5	UPL	N FORB	PRAIRIE COREOPSIS
COROBL	4	Cornus obliqua	-5	OBL	N SHRUB	PALE DOGWOOD
CORRAC	1	Cornus racemosa	-2	FACW-	N SHRUB	GRAY DOGWOOD
CORSTS	3	Cornus stolonifera	-3	FACW	N SHRUB	RED OSIER DOGWOOD
CORAME	4	Corylus americana	0	FAC	N SHRUB	AMERICAN FILBERT
CRAFLA	5	Crataegus flabellata	5	UPL	N TREE	HAWTHORN
CRAMOL	2	Crataegus mollis	-2	FACW-	N TREE	RED HAW
DACGLO	*	DACTYLIS GLOMERATA	3	FACU	A GRASS	ORCHARD GRASS
DAUCAR	*	DAUCUS CAROTA	4	FACU-	A FORB	QUEEN-ANNE'S-LACE
DICACF	1	Dichanthelium acuminatum fasciculatum	0	FAC	N GRASS	PANIC GRASS
DICSPH	7	Dichanthelium sphaerocarpon	3	FACU	N GRASS	
DIPLAC	*	DIPSACUS LACINIATUS	5	UPL	A FORB	CUT-LEAVED TEASEL
DODMEA	6	Dodecatheon meadia	3	FACU	N FORB	SHOOTING STAR
ECHPAL	7	Echinacea pallida	5	UPL	N FORB	PALE PURPLE CONEFLOWER
ELEACI	3	Eleocharis acicularis	-5	OBL	N SEDGE	NEEDLE SPIKE RUSH
ELESMA	5	Eleocharis smallii	-5	OBL	N SEDGE	
EPICOL	3	Epilobium coloratum	-5	OBL	N FORB	CINNAMON WILLOW HERB
EPILEP	9	Epilobium leptophyllum	-5	OBL	N FORB	BOG WILLOW HERB
EQUARV	0	Equisetum arvense	0	FAC	N FERN	COMMON HORSETAIL
EQUFER	2	Equisetum X ferrissii	-3	FACW	N FERN	INTERMED. SCOURING RUSH
EREHIE	2	Erechtites hieracifolia	3	FACU	N FORB	FIRE WEED
ERIPHI	3	Erigeron philadelphicus	-3	FACW	N FORB	MARSH FLEABANE
ERYYUC	8	Eryngium yuccifolium	-1	FAC+	N FORB	RATTLESNAKE MASTER
EUPALT	1	Eupatorium altissimum	3	FACU	N FORB	TALL BONESET
EUPMAC	5	Eupatorium maculatum	-5	OBL	N FORB	SPOTTED JOE PYE WEED
EUPPER	4	Eupatorium perfoliatum	-4	FACW+	N FORB	COMMON BONESET
EUPCOR	3	Euphorbia corollata	5	UPL	N FORB	FLOWERING SPURGE
EUTGRA	3	Euthamia graminifolia	-2	FACW-	N FORB	GRASSLEAF GOLDENROD
FESDUR	*	FESTUCA DURIUSCULA	5	UPL	A GRASS	SHEEP FESCUE
FESPRA	*	FESTUCA PRATENSIS	4	FACU-	A GRASS	ENGLISH BLUEGRASS
FRAVIR	2	Fragaria virginiana	1	FAC-	N FORB	WILD STRAWBERRY
FRAPEP	5	Fraxinus pennsylvanica	-3	FACW	N TREE	RED ASH
GALOBT	5	Galium obtusum	-4	FACW+	N FORB	WILD MADDER
GENAND	8	Gentiana andrewsii	-3	FACW	N FORB	CLOSED GENTIAN
GERMAC	4	Geranium maculatum	3	FACU	N FORB	WILD GERANIUM
GEUALE	6	Geum aleppicum	-1	FAC+	N FORB	YELLOW AVENS
GEULAC	2	Geum laciniatum	-3	FACW	N FORB	ROUGH AVENS
GLYSEP	6	Glyceria septentrionalis	-5	OBL	N GRASS	FLOATING MANNA GRASS
GLYSTR	4	Glyceria striata	-5	OBL	N GRASS	FOWL MANNA GRASS
HELAUT	3	Helenium autumnale	-4	FACW+	N FORB	AUTUMN SNEEZEWEED
HELGRO	2	Helianthus grosseserratus	-2	FACW-	N FORB	SAWTOOTH SUNFLOWER
HELGRIG	6	Helianthus rigidus	5	UPL	N FORB	PRAIRIE SUNFLOWER
HELSTR	4	Helianthus strumosus	5	UPL	N FORB	PALE-LEAVED SUNFLOWER
HEURIC	7	Heuchera richardsonii grayana	1	FAC-	N FORB	PRAIRIE ALUMROOT
HIEAUR	*	HIERACIUM AURANTIACUM	5	UPL	A FORB	DEVIL'S PAINT BRUSH

ACRONYM	CC	SCIENTIFIC NAME	WETNESS	PHYSIOG	COMMON NAME
HIECAE	*	HIERACIUM CAESPITOSUM	5 UPL	A FORB	KING DEVIL
HIESCA	5	Hieracium scabrum	5 UPL	N FORB	HAIRY HAWKWEED
HIEODO	7	Hierochloe odorata	-3 FACW	N GRASS	SWEET GRASS
HYPPER	*	HYPERICUM PERFORATUM	5 UPL	A FORB	COMMON ST. JOHNS-WORT
HYPPUN	3	Hypericum punctatum	-1 FAC+	N FORB	SPOTTED ST. JOHNS-WORT
HYPHIR	6	Hypoxis hirsuta	0 FAC	N FORB	COMMON GOLDSTARGRASS
IRISHR	5	Iris shrevei	-5 OBL	N FORB	SOUTHERN BLUE FLAG
JUNDUD	4	Juncus dudleyi	0 FAC	N FORB	DUDLEY RUSH
JUNVIR	1	Juniperus virginiana	3 FACU	N TREE	EASTERN RED CEDAR
KOEMAC	7	Koeleria macrantha	5 UPL	N GRASS	CRESTED HAIR GRASS
KRIBIF	5	Krigia biflora	3 FACU	N FORB	FALSE DANDELAIN
LATPAP	7	Lathyrus palustris	-5 OBL	N FORB	MARSH PEAVINE
LATPAM	6	Lathyrus palustris myrtifolius	-5 OBL	N FORB	VETCHLING
LEEORY	3	Leersia oryzoides	-5 OBL	N GRASS	RICE CUTGRASS
LEMMIR	3	Lemna minor	-5 OBL	N FORB	COMMON DUCKWEED
LEMTRS	8	Lemna trisulca	-5 OBL	N FORB	IVY-LEAVED DUCKWEED
LESCAP	4	Lespedeza capitata	3 FACU	N FORB	BUSH CLOVER
LEUVUL	*	LEUCANTHEMUM VULGARE	5 UPL	A FORB	COMMON TANSY
LIAASP	7	Liatris aspera	5 UPL	N FORB	ROUGH BLAZING STAR
LIAPYC	6	Liatris pycnostachya	1 FAC-	N FORB	BUTTON SNAKEROOT
LIASPI	7	Liatris spicata	0 FAC	N FORB	BUTTON SNAKEROOT
LILMIC	6	Lilium michiganense	-1 FAC+	N FORB	MICHIGAN LILY
LITCAN	6	Lithospermum canescens	5 UPL	N FORB	HOARY PUCCOON
LOBSIP	4	Lobelia siphilitica	-4 FACW+	N FORB	BLUE CARDINAL-FLOWER
LOBSPI	5	Lobelia spicata	0 FAC	N FORB	SPIKED LOBELIA
LONTAT	*	LONICERA TATARICA	3 FACU	A SHRUB	TARTARIAN HONEYSUCKLE
LONBEL	*	LONICERA X BELLA	3 FACU	A SHRUB	HONEYSUCKLE
LUDPAL	4	Ludwigia palustris americana	-5 OBL	N FORB	MARSH PURSLANE
LUDPOL	5	Ludwigia polycarpa	-5 OBL	N FORB	FALSE LOOSESTRIFE
LYCAME	3	Lycopus americanus	-5 OBL	N FORB	COMMON WATER HOREHOUND
LYCVIR	5	Lycopus virginicus	-5 OBL	N FORB	BUGLE WEED
LYSQUR	8	Lysimachia quadriflora	-5 OBL	N FORB	NRRW-LEAVED LOOSESTRIFE
LYSTHY	7	Lysimachia thyrsoiflora	-5 OBL	N FORB	TUFTED LOOSESTRIFE
LYTALA	5	Lythrum alatum	-5 OBL	N FORB	WINGED LOOSESTRIFE
LYTSAL	*	LYTHRUM SALICARIA	-5 OBL	A FORB	PURPLE LOOSESTRIFE
MALIOE	3	Malus ioensis	5 UPL	N TREE	IOWA CRAB APPLE
MEDLUP	*	MEDICAGO LUPULINA	1 FAC-	A FORB	BLACK MEDIC
MELALB	*	MELILOTUS ALBA	3 FACU	A FORB	WHITE SWEET CLOVER
MENARV	4	Mentha arvensis villosa	-3 FACW	N FORB	FIELD MINT
MIMRIN	5	Mimulus ringens	-5 OBL	N FORB	MONKEY FLOWER
MONFIS	4	Monarda fistulosa	3 FACU	N FORB	WILD BERGAMOT
MYRHET	10	Myriophyllum heterophyllum	-5 OBL	N FORB	WATER MILFOIL
OENPER	8	Oenothera perennis	0 FAC	N FORB	SMALL SUNDROPS
ONOSEN	5	Onoclea sensibilis	-3 FACW	N FORB	SENSITIVE FERN
OXASTR	0	Oxalis stricta	3 FACU	N FORB	YELLOW WOOD SORREL
OXYRIG	7	Oxypolis rigidior	-5 OBL	N FORB	COWBANE
PANCAP	0	Panicum capillare	0 FAC	N GRASS	WITCH GRASS
PANVIR	4	Panicum virgatum	-1 FAC+	N GRASS	PRAIRIE SWITCHGRASS
PARINT	7	Parthenium integrifolium	5 UPL	N FORB	AMERICAN FEVERFEW
PEDCAN	7	Pedicularis canadensis	2 FACU+	N FORB	LOUSEWORT
PEDLAN	9	Pedicularis lanceolata	-4 FACW+	N FORB	SWAMP WOOD BETONY
PENDIG	4	Penstemon digitalis	1 FAC-	N FORB	FOXGLOVE BEARD-TONGUE
PENSED	2	Penthorum sedoides	-5 OBL	N FORB	DITCH STONECROP
PHAARU	*	PHALARIS ARUNDINACEA	-4 FACW+	A GRASS	REED CANARY GRASS
PHLPRA	*	PHLEUM PRATENSE	3 FACU	A GRASS	TIMOTHY
PHLGLA	6	Phlox glaberrima interior	-3 FACW	N FORB	SMOOTH PHLOX
PHLPIP	7	Phlox pilosa	1 FAC-	N FORB	DOWNY PHLOX
PHRAUS	1	Phragmites australis	-4 FACW+	N GRASS	COMMON RED REED
PHYPUB	3	Physalis pubescens	5 UPL	N FORB	ANNUAL GROUND CHERRY
PLARUG	0	Plantago rugelii	0 FAC	N FORB	RED-STALKED PLANTAIN
POACOM	*	POA COMPRESSA	2 FACU+	A GRASS	CANADIAN BLUEGRASS
POAPRA	*	POA PRATENSIS	1 FAC-	A GRASS	KENTUCKY BLUEGRASS
POLAMP	3	Polygonum amphibium	-5 OBL	N FORB	WATER SMARTWEED

ACRONYM	CC	SCIENTIFIC NAME	CW	WETNESS	PHYSIOG	COMMON NAME
POLPUN	3	<i>Polygonum punctatum</i>	-5	OBL	N FORB	DOTTED SMARTWEED
POPDEL	2	<i>Populus deltoides</i>	-1	FAC+	N TREE	EASTERN COTTONWOOD
POPTRE	3	<i>Populus tremuloides</i>	0	FAC	N TREE	QUAKING ASPEN
POTFOL	5	<i>Potamogeton foliosus</i>	-5	OBL	N FORB	LEAFY PONDWEED
POTARU	10	<i>Potentilla arguta</i>	4	FACU-	N FORB	PRAIRIE CINQUEFOIL
POTNOR	0	<i>Potentilla norvegica</i>	0	FAC	N FORB	ROUGH CINQUEFOIL
POTREC	*	POTENTILLA RECTA	5	UPL	A FORB	SULFUR CINQUEFOIL
POTSIM	3	<i>Potentilla simplex</i>	4	FACU-	N FORB	COMMON CINQUEFOIL
PROPAL	5	<i>Proserpinaca palustris</i>	-5	OBL	N FORB	MERMAID-WEED
PRUVUV	*	PRUNELLA VULGARIS	0	FAC	A FORB	SELF-HEAL
PRUVUE	1	<i>Prunella vulgaris elongata</i>	0	FAC	N FORB	SELF-HEAL
PRUSER	1	<i>Prunus serotina</i>	3	FACU	N TREE	WILD BLACK CHERRY
PRUVIR	3	<i>Prunus virginiana</i>	1	FAC-	N SHRUB	COMMON CHOKECHERRY
PYCPIL	6	<i>Pycnanthemum pilosum</i>	5	UPL	N FORB	HAIRY MOUNTAIN MINT
PYCVIR	5	<i>Pycnanthemum virginianum</i>	-4	FACW+	N FORB	COMMON MOUNTAIN MINT
QUEMAC	5	<i>Quercus macrocarpa</i>	1	FAC-	N TREE	BURR OAK
QUEPAL	4	<i>Quercus palustris</i>	-3	FACW	N TREE	PIN OAK
RANFLA	6	<i>Ranunculus flabellaris</i>	-5	OBL	N FORB	YELLOW WATER BUTTERCUP
RANLON	6	<i>Ranunculus longirostris</i>	-5	OBL	N FORB	LONGBEAK BUTTERCUP
RATPIN	4	<i>Ratibida pinnata</i>	5	UPL	N FORB	DROOPING CONEFLOWER
RHACAT	*	RHAMNUS CATHARTICA	3	FACU	A SHRUB	COMMON BUCKTHORN
RHAFRA	*	RHAMNUS FRANGULA	-1	FAC+	A SHRUB	GLOSSY BUCKTHORN
RHUCOP	2	<i>Rhus copallina</i>	5	UPL	N SHRUB	DWARF SUMAC
RHUGLA	1	<i>Rhus glabra</i>	5	UPL	N SHRUB	SMOOTH SUMAC
RHUTYP	2	<i>Rhus typhina</i>	5	UPL	N SHRUB	STAGHORN SUMAC
RIBAME	5	<i>Ribes americanum</i>	-3	FACW	N SHRUB	WILD BLACK CURRENT
ROSLA	4	<i>Rosa blanda</i>	3	FACU	N SHRUB	MEADOW ROSE
ROSCAR	4	<i>Rosa carolina</i>	4	FACU-	N SHRUB	PASTURE ROSE
ROSMUL	*	ROSA MULTIFLORA	3	FACU	A SHRUB	JAPANESE ROSE
RUBFLA	2	<i>Rubus flagellaris</i>	4	FACU-	N SHRUB	DEWBERRY
RUBSTR	6	<i>Rubus strigosus</i>	-2	FACW-	N SHRUB	RED RASPBERRY
RUDHIR	2	<i>Rudbeckia hirta</i>	3	FACU	N FORB	BLACK-EYED SUSAN
RUMCRP	*	RUMEX CRISPUS	-1	FAC+	A FORB	CURLY DOCK
SAGLAT	4	<i>Sagittaria latifolia</i>	-5	OBL	N FORB	ARROWHEAD
SALALA	*	SALIX ALBA	-3	FACW	A TREE	WHITE WILLOW
SALDIS	4	<i>Salix discolor</i>	-3	FACW	N SHRUB	PUSSY WILLOW
SALPET	6	<i>Salix petiolaris</i>	-5	OBL	N SHRUB	MEADOW WILLOW
SCHSCO	5	<i>Schizachyrium scoparium</i>	4	FACU-	N GRASS	LITTLE BLUESTEM
SCIACU	6	<i>Scirpus acutus</i>	-5	OBL	N SEDGE	GREAT BULRUSH
SCIATR	4	<i>Scirpus atrovirens</i>	-5	OBL	N SEDGE	DARK GREEN RUSH
SCICYP	5	<i>Scirpus cyperinus</i>	-5	OBL	N SEDGE	WOOL GRASS
SCIFLU	3	<i>Scirpus fluviatilis</i>	-5	OBL	N SEDGE	RIVER BULRUSH
SCIPEN	3	<i>Scirpus pendulus</i>	-5	OBL	N SEDGE	RED BULRUSH
SCITAB	4	<i>Scirpus tabernaemontanii</i>	-5	OBL	N SEDGE	GREAT BULRUSH
SCULAT	5	<i>Scutellaria lateriflora</i>	-5	OBL	N FORB	MAD-DOG SKULLCAP
SENPAU	4	<i>Senecio pauperculus</i>	-1	FAC+	N FORB	BALSAM GROUNDSEL
SILINT	5	<i>Silphium integrifolium</i>	5	UPL	N FORB	WHOLELEAF ROSINWEED
SILTER	5	<i>Silphium terebinthinaceum</i>	1	FAC-	N FORB	DOCK ROSIN-WEED
SISALB	4	<i>Sisyrinchium albidum</i>	3	FACU	N FORB	BLUE-EYED GRASS
SIUSUA	5	<i>Sium suave</i>	-5	OBL	N FORB	WATER PARSNIP
SMISTE	5	<i>Smilacina stellata</i>	1	FAC-	N FORB	STAR. FLSE SOLOMON SEAL
SOLCAN	1	<i>Solidago canadensis</i>	3	FACU	N FORB	CANADA GOLDENROD
SOLGIG	3	<i>Solidago gigantea</i>	-3	FACW	N FORB	LATE GOLDENROD
SOLJUN	4	<i>Solidago juncea</i>	5	UPL	N FORB	EARLY GOLDENROD
SOLNEM	3	<i>Solidago nemoralis</i>	5	UPL	N FORB	DYERSWEED GOLDENROD
SOLRID	7	<i>Solidago riddellii</i>	-5	OBL	N FORB	RIDDELL'S GOLDENROD
SOLRIG	4	<i>Solidago rigida</i>	4	FACU-	N FORB	RIGID GOLDENROD
SORNUT	4	<i>Sorghastrum nutans</i>	2	FACU+	N GRASS	INDIAN GRASS
SPAPEC	4	<i>Spartina pectinata</i>	-4	FACW+	N GRASS	FRESHWATER CORD GRASS
SPIALB	6	<i>Spiraea alba</i>	-4	FACW+	N SHRUB	MEADOW-SWEET
SPIMAG	4	<i>Spiranthes cernua</i>	-2	FACW-	N FORB	NODDING LADIES' TRESSES
SPOHET	9	<i>Sporobolus heterolepis</i>	4	FACU-	N GRASS	NORTHERN DROP SEED
STAPAL	5	<i>Stachys palustris</i>	-5	OBL	N FORB	WOUNDWORT

ACRONYM	CC	SCIENTIFIC NAME	CW	WETNESS	PHYSIOG	COMMON NAME
STATEH	5	<i>Stachys tenuifolia hispida</i>	-5	OBL	N FORB	HAIRY HEDGE NETTLE
STEMED	*	<i>STELLARIA MEDIA</i>	3	FACU	A FORB	COMMON CHICKWEED
TAROFF	*	<i>TARAXACUM OFFICINALE</i>	3	FACU	A FORB	COMMON DANDELION
THADAD	5	<i>Thalictrum dasycarpum</i>	-2	FACW-	N FORB	PURPLE MEADOW RUE
TRAOHI	3	<i>Tradescantia ohiensis</i>	2	FACU+	N FORB	SPIDERWORT
TRIPRA	*	<i>TRIFOLIUM PRATENSE</i>	2	FACU+	A FORB	RED CLOVER
TYPANG	*	<i>TYPHA ANGUSTIFOLIA</i>	-5	OBL	A FORB	NARROW-LEAVED CATTAIL
TYPLAT	1	<i>Typha latifolia</i>	-5	OBL	N FORB	CATTAIL
ULMRUB	3	<i>Ulmus rubra</i>	0	FAC	N TREE	SLIPPERY ELM
URTDIO	2	<i>Urtica dioica</i>	-1	FAC+	N FORB	STINGING NETTLE
UTRGIB	7	<i>Utricularia gibba</i>	-5	OBL	N FORB	HUMPED BLADDERWORT
UTRVUL	6	<i>Utricularia vulgaris</i>	-5	OBL	N FORB	COMMON BLADDERWORT
VERHAS	3	<i>Verbena hastata</i>	-4	FACW+	N FORB	BLUE VERVAIN
VERFAS	5	<i>Vernonia fasciculata</i>	-3	FACW	N FORB	COMMON IRONWEED
VERSCU	10	<i>Veronica scutellata</i>	-5	OBL	N FORB	MARSH SPEEDWELL
VERVIM	6	<i>Veronicastrum virginicum</i>	0	FAC	N FORB	CULVER'S ROOT
VIBLEN	4	<i>Viburnum lentago</i>	-1	FAC+	N SHRUB	NANNYBERRY
VIBOPU	*	<i>VIBURNUM OPULUS</i>	0	FAC	A SHRUB	EUR. HIGH-BUSH CRANBERR
VICAME	7	<i>Vicia americana</i>	5	UPL	N FORB	AMERICAN VETCH
VIOAFF	2	<i>Viola affinis</i>	0	FAC	N FORB	WOODLAND BLUE VIOLET
VIOPEF	10	<i>Viola pedatifida</i>	4	FACU-	N FORB	PRAIRIE VIOLET
VIOSOR	3	<i>Viola sororia</i>	1	FAC-	N FORB	WOOLLY BLUE VIOLET
VITRIP	3	<i>Vitis riparia</i>	-2	FACW-	N VINE	RIVERBANK GRAPE
ZIZAPT	10	<i>Zizia aptera</i>	3	FACU	N FORB	HRT-LVED MEADOW PARSNIP
ZIZAUR	6	<i>Zizia aurea</i>	-1	FAC+	N FORB	GOLDEN ALEXANDERS

Appendix 6

SITE: Excess Parcel (C-D Prairie)
 COUNTY: Lake
 DATE: 1995-1996
 BY: John Taft
 FILE: lakexscd.prn

FLORISTIC QUALITY DATA		NATIVE	75.0%	ADVENTIVE	25.0%
69	NATIVE SPECIES	5 Tree	5.4%	0 Tree	0.0%
92	Total Species	8 Shrub	8.7%	3 Shrub	3.3%
3.67	NATIVE MEAN	1 Vine	1.1%	0 Vine	0.0%
2.75	W/Adventives	45 Forb	48.9%	14 Forb	15.2%
30.46	NATIVE INDEX	4 Grass	4.3%	6 Grass	6.5%
26.38	W/Adventives	5 Sedge	5.4%	0 Sedge	0.0%
1.4	NATIVE WETNESS	1 Fern	1.1%	0 Fern	0.0%
1.8	W/Adventives				
AVG: FACULTATIVE (-)					

ACRONYM	CC SCIENTIFIC NAME	CW WETNESS	PHYSIOG	COMMON NAME
ACHMIL	* ACHILLEA MILLEFOLIUM	3 FACU	A FORB	COMMON MILFOIL
AGRALA	0 Agrostis alba	-3 FACW	N GRASS	RED TOP
ALLCER	7 Allium cernuum	5 UPL	N FORB	NODDING WILD ONION
AMBART	0 Ambrosia artemisiifolia	3 FACU	N FORB	BITTERWEED
ANDGER	5 Andropogon gerardii	1 FAC-	N GRASS	BIG BLUESTEM
ANECYL	8 Anemone cylindrica	5 UPL	N FORB	CANDLE ANEMONE
ANEVIR	4 Anemone virginiana	5 UPL	N FORB	TALL ANEMONE
ANTNEG	4 Antennaria neglecta	5 UPL	N FORB	CAT'S FOOT
APOSIB	2 Apocynum sibiricum	-1 FAC+	N FORB	INDIAN HEMP
ASCPUR	7 Asclepias purpurascens	3 FACU	N FORB	PURPLE MILKWEED
ASCSYR	0 Asclepias syriaca	5 UPL	N FORB	COMMON MILKWEED
ASTERI	4 Aster ericoides	4 FACU-	N FORB	HEATH ASTER
ASTNOV	4 Aster novae-angliae	-3 FACW	N FORB	NEW ENGLAND ASTER
ASTPRA	4 Aster praealtus	-5 OBL	N FORB	WILLOW-LEAVED ASTER
CALSEP	1 Calystegia sepium	0 FAC	N FORB	AMERICAN BINDWEED
CXGRNG	3 Carex granularis	-4 FACW+	N SEDGE	MEADOW SEDGE
CXHIRS	5 Carex hirsutella	4 FACU-	N SEDGE	SEDGE
CXTENE	5 Carex tenera	-1 FAC+	N SEDGE	SEDGE
CICINT	* CICHORIUM INTYBUS	5 UPL	A FORB	BLUE SAILORS
CIRDIS	2 Cirsium discolor	5 UPL	N FORB	FIELD THISTLE
COROBL	4 Cornus obliqua	-5 OBL	N SHRUB	PALE DOGWOOD
CORRAC	1 Cornus racemosa	-2 FACW-	N SHRUB	GRAY DOGWOOD
CRAFLA	5 Crataegus flabellata	5 UPL	N TREE	HAWTHORN
DACGLO	* DACTYLIS GLOMERATA	3 FACU	A GRASS	ORCHARD GRASS
DAUCAR	* DAUCUS CAROTA	4 FACU-	A FORB	QUEEN-ANNE'S-LACE
DIPLAC	* DIPSACUS LACINIATUS	5 UPL	A FORB	CUT-LEAVED TEASEL
DODMEA	6 Dodecatheon meadia	3 FACU	N FORB	SHOOTING STAR
ELESMA	5 Eleocharis smallii	-5 OBL	N SEDGE	
EQUARV	0 Equisetum arvense	0 FAC	N FERN	COMMON HORSETAIL
EUPALT	1 Eupatorium altissimum	3 FACU	N FORB	TALL BONESET
EUTGRA	3 Euthamia graminifolia	-2 FACW-	N FORB	GRASSLEAF GOLDENROD
FESDUR	* FESTUCA DURIOUSCULA	5 UPL	A GRASS	SHEEP FESCUE
FESPRA	* FESTUCA PRATENSIS	4 FACU-	A GRASS	ENGLISH BLUEGRASS
FRAVIR	2 Fragaria virginiana	1 FAC-	N FORB	WILD STRAWBERRY
HELGRO	2 Helianthus grosseserratus	-2 FACW-	N FORB	SAWTOOTH SUNFLOWER
HIEAUR	* HIERACIUM AURANTIACUM	5 UPL	A FORB	DEVIL'S PAINT BRUSH
HIECAE	* HIERACIUM CAESPITOSUM	5 UPL	A FORB	KING DEVIL
HIESCA	5 Hieracium scabrum	5 UPL	N FORB	HAIRY HAWKWEED
HYPFER	* HYPERICUM PERFORATUM	5 UPL	A FORB	COMMON ST. JOHNS-WORT
HYPHIR	6 Hypoxis hirsuta	0 FAC	N FORB	COMMON GOLDSTARGRASS
JUNDUD	4 Juncus dudleyi	0 FAC	N FORB	DUDLEY RUSH
JUNVIR	1 Juniperus virginiana	3 FACU	N TREE	EASTERN RED CEDAR

CC	SCIENTIFIC NAME	CW	WETNESS	PHYSIOG	COMMON NAME
LESCAP	4 Lespedeza capitata	3	FACU	N FORB	BUSH CLOVER
LEUVUL	* LEUCANTHEMUM VULGARE	5	UPL	A FORB	COMMON TANSY
LIAASP	7 Liatris aspera	5	UPL	N FORB	ROUGH BLAZING STAR
LIAPYC	6 Liatris pycnostachya	1	FAC-	N FORB	BUTTON SNAKEROOT
LIASPI	7 Liatris spicata	0	FAC	N FORB	BUTTON SNAKEROOT
LOBSPI	5 Lobelia spicata	0	FAC	N FORB	SPIKED LOBELIA
LONBEL	* LONICERA X BELLA	3	FACU	A SHRUB	HONEYSUCKLE
LYTSAL	* LYTHRUM SALICARIA	-5	OBL	A FORB	PURPLE LOOSESTRIFE
MALIOE	3 Malus ioensis	5	UPL	N TREE	IOWA CRAB APPLE
MEDLUP	* MEDICAGO LUPULINA	1	FAC-	A FORB	BLACK MEDIC
MELALB	* MELILOTUS ALBA	3	FACU	A FORB	WHITE SWEET CLOVER
MONFIS	4 Monarda fistulosa	3	FACU	N FORB	WILD BERGAMOT
PANCAP	0 Panicum capillare	0	FAC	N GRASS	WITCH GRASS
PENDIG	4 Penstemon digitalis	1	FAC-	N FORB	FOXGLOVE BEARD-TONGUE
PHLPRA	* PHLEUM PRATENSE	3	FACU	A GRASS	TIMOTHY
PLARUG	0 Plantago rugelii	0	FAC	N FORB	RED-STALKED PLANTAIN
POACOM	* POA COMPRESSA	2	FACU+	A GRASS	CANADIAN BLUEGRASS
POAPRA	* POA PRATENSIS	1	FAC-	A GRASS	KENTUCKY BLUEGRASS
POTREC	* POTENTILLA RECTA	5	UPL	A FORB	SULFUR CINQUEFOIL
POTSIM	3 Potentilla simplex	4	FACU-	N FORB	COMMON CINQUEFOIL
PRUVUV	* PRUNELLA VULGARIS	0	FAC	A FORB	SELF-HEAL
PRUSER	1 Prunus serotina	3	FACU	N TREE	WILD BLACK CHERRY
PYCVIR	5 Pycnanthemum virginianum	-4	FACW+	N FORB	COMMON MOUNTAIN MINT
RATPIN	4 Ratibida pinnata	5	UPL	N FORB	DROOPING CONEFLOWER
RHACAT	* RHAMNUS CATHARTICA	3	FACU	A SHRUB	COMMON BUCKTHORN
RHUCOP	2 Rhus copallina	5	UPL	N SHRUB	DWARF SUMAC
RHUGLA	1 Rhus glabra	5	UPL	N SHRUB	SMOOTH SUMAC
RHUTYP	2 Rhus typhina	5	UPL	N SHRUB	STAGHORN SUMAC
ROSCAR	4 Rosa carolina	4	FACU-	N SHRUB	PASTURE ROSE
ROSMUL	* ROSA MULTIFLORA	3	FACU	A SHRUB	JAPANESE ROSE
RUBFLA	2 Rubus flagellaris	4	FACU-	N SHRUB	DEWBERRY
RUDHIR	2 Rudbeckia hirta	3	FACU	N FORB	BLACK-EYED SUSAN
SCIPEN	3 Scirpus pendulus	-5	OBL	N SEDGE	RED BULRUSH
SENPAU	4 Senecio pauperculus	-1	FAC+	N FORB	BALSAM GROUNDSEL
SILTER	5 Silphium terebinthinaceum	1	FAC-	N FORB	DOCK ROSIN-WEED
SISALB	4 Sisyrinchium albidum	3	FACU	N FORB	BLUE-EYED GRASS
SOLCAN	1 Solidago canadensis	3	FACU	N FORB	CANADA GOLDENROD
SOLGIG	3 Solidago gigantea	-3	FACW	N FORB	LATE GOLDENROD
SOLJUN	4 Solidago juncea	5	UPL	N FORB	EARLY GOLDENROD
SOLNEM	3 Solidago nemoralis	5	UPL	N FORB	DYERSWEED GOLDENROD
SOLRIG	4 Solidago rigida	4	FACU-	N FORB	RIGID GOLDENROD
SPAPEC	4 Spartina pectinata	-4	FACW+	N GRASS	FRESHWATER CORD GRASS
THADAD	5 Thalictrum dasycarpum	-2	FACW-	N FORB	PURPLE MEADOW RUE
TRIPRA	* TRIFOLIUM PRATENSE	2	FACU+	A FORB	RED CLOVER
ULMRUB	3 Ulmus rubra	0	FAC	N TREE	SLIPPERY ELM
VIBLEN	4 Viburnum lentago	-1	FAC+	N SHRUB	NANNYBERRY
VICAME	7 Vicia americana	5	UPL	N FORB	AMERICAN VETCH
VIOPEF	10 Viola pedatifida	4	FACU-	N FORB	PRAIRIE VIOLET
VITRIP	3 Vitis riparia	-2	FACW-	N VINE	RIVERBANK GRAPE
ZIZAPT	10 Zizia aptera	3	FACU	N FORB	HRT-LVD MEADOW PARSNIP

Appendix 7

SITE: Excess Parcel B Prairie
COUNTY: Lake
DATE: 1995-1996
BY: John Taft
FILE: lakexsb.prn

Table with 5 columns: FLORISTIC QUALITY DATA, NATIVE, ADVENTIVE, and percentages. Rows include: 82 NATIVE SPECIES (3 Tree, 3.5%), 87 Total Species (5 Shrub, 5.8%), 5.35 NATIVE MEAN (0 Vine, 0.0%), 5.05 W/Adventives (62 Forb, 71.3%), 48.45 NATIVE INDEX (11 Grass, 12.8%), 47.10 W/Adventives (1 Sedge, 1.2%), 1.7 NATIVE WETNESS (0 Fern, 0.0%), 1.8 W/Adventives (0 Fern, 0.0%), AVG: FAC. UPLAND (+)

Main table with 4 columns: ACRONYM, CC SCIENTIFIC NAME, CW WETNESS PHYSIOG, COMMON NAME. Lists various plant species like Agrimonia gryposepala, Agropyron trachycaulum unilaterale, Agrostis alba palustris, Allium cernuum, etc., with their wetness codes and common names.

ACRONYM	CC	SCIENTIFIC NAME	CW	WETNESS	PHYSIOG	COMMON NAME
LIAASP	7	<i>Liatris aspera</i>	5	UPL	N FORB	ROUGH BLAZING STAR
LIAPYC	6	<i>Liatris pycnostachya</i>	1	FAC-	N FORB	BUTTON SNAKEROOT
LIASPI	7	<i>Liatris spicata</i>	0	FAC	N FORB	BUTTON SNAKEROOT
LILMIC	6	<i>Lilium michiganense</i>	-1	FAC+	N FORB	MICHIGAN LILY
LITCAN	6	<i>Lithospermum canescens</i>	5	UPL	N FORB	HOARY PUCCOON
LOBSPI	5	<i>Lobelia spicata</i>	0	FAC	N FORB	SPIKED LOBELIA
LONTAT	*	LONICERA TATARICA	3	FACU	A SHRUB	TARTARIAN HONEYSUCKLE
LYSQUR	8	<i>Lysimachia quadriflora</i>	-5	OBL	N FORB	NARROW-LVD LOOSESTRIFE
LYTALA	5	<i>Lythrum alatum</i>	-5	OBL	N FORB	WINGED LOOSESTRIFE
MONFIS	4	<i>Monarda fistulosa</i>	3	FACU	N FORB	WILD BERGAMOT
OENPER	8	<i>Oenothera perennis</i>	0	FAC	N FORB	SMALL SUNDROPS
OXASTR	0	<i>Oxalis stricta</i>	3	FACU	N FORB	YELLOW WOOD SORREL
PANVIR	4	<i>Panicum virgatum</i>	-1	FAC+	N GRASS	PRAIRIE SWITCHGRASS
PARINT	7	<i>Parthenium integrifolium</i>	5	UPL	N FORB	AMERICAN FEVERFEW
PEDCAN	7	<i>Pedicularis canadensis</i>	2	FACU+	N FORB	LOUSEWORT
PHLPIP	7	<i>Phlox pilosa</i>	1	FAC-	N FORB	DOWNY PHLOX
PHYPUB	3	<i>Physalis pubescens</i>	5	UPL	N FORB	ANNUAL GROUND CHERRY
POAPRA	*	POA PRATENSIS	1	FAC-	A GRASS	KENTUCKY BLUEGRASS
POPTRE	3	<i>Populus tremuloides</i>	0	FAC	N TREE	QUAKING ASPEN
POTARU	10	<i>Potentilla arguta</i>	4	FACU-	N FORB	PRAIRIE CINQUEFOIL
POTSIM	3	<i>Potentilla simplex</i>	4	FACU-	N FORB	COMMON CINQUEFOIL
PRUVUE	1	<i>Prunella vulgaris elongata</i>	0	FAC	N FORB	SELF-HEAL
PYCVIR	5	<i>Pycnanthemum virginianum</i>	-4	FACW+	N FORB	COMMON MOUNTAIN MINT
RHACAT	*	RHAMNUS CATHARTICA	3	FACU	A SHRUB	COMMON BUCKTHORN
RHUCOP	2	<i>Rhus copallina</i>	5	UPL	N SHRUB	DWARF SUMAC
ROSCAR	4	<i>Rosa carolina</i>	4	FACU-	N SHRUB	PASTURE ROSE
RUDHIR	2	<i>Rudbeckia hirta</i>	3	FACU	N FORB	BLACK-EYED SUSAN
SCHSCO	5	<i>Schizachyrium scoparium</i>	4	FACU-	N GRASS	LITTLE BLUESTEM
SENPAU	4	<i>Senecio pauperculus</i>	-1	FAC+	N FORB	BALSAM GROUNDSEL
SILINT	5	<i>Silphium integrifolium</i>	5	UPL	N FORB	WHOLELEAF ROSINWEED
SILTER	5	<i>Silphium terebinthinaceum</i>	1	FAC-	N FORB	DOCK ROSIN-WEED
SISALB	4	<i>Sisyrinchium albidum</i>	3	FACU	N FORB	BLUE-EYED GRASS
SMISTE	5	<i>Smilacina stellata</i>	1	FAC-	N FORB	STAR.FALSE SOLOMON SEAL
SOLCAN	1	<i>Solidago canadensis</i>	3	FACU	N FORB	CANADA GOLDENROD
SOLJUN	4	<i>Solidago juncea</i>	5	UPL	N FORB	EARLY GOLDENROD
SOLRIG	4	<i>Solidago rigida</i>	4	FACU-	N FORB	RIGID GOLDENROD
SORNUT	4	<i>Sorghastrum nutans</i>	2	FACU+	N GRASS	INDIAN GRASS
SPIALB	6	<i>Spiraea alba</i>	-4	FACW+	N SHRUB	MEADOW-SWEET
SPIMAG	4	<i>Spiranthes cernua</i>	-2	FACW-	N FORB	NODDING LADIES' TRESSES
SPOHET	9	<i>Sporobolus heterolepis</i>	4	FACU-	N GRASS	NORTHERN DROP SEED
STATEH	5	<i>Stachys tenuifolia hispida</i>	-5	OBL	N FORB	HAIRY HEDGE NETTLE
TRAOHI	3	<i>Tradescantia ohioensis</i>	2	FACU+	N FORB	SPIDERWORT
VERVIM	6	<i>Veronicastrum virginicum</i>	0	FAC	N FORB	CULVER'S ROOT
VIOPED	10	<i>Viola pedatifida</i>	4	FACU-	N FORB	PRAIRIE VIOLET
ZIZAUR	6	<i>Zizia aurea</i>	-1	FAC+	N FORB	GOLDEN ALEXANDERS