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Vascular Flora of Chauncey Marsh Natural Area, Lawrence County, Illinois

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ABSTRACT

The vascular flora of the Chauncey Marsh Natural Area, Lawrence County, Illinois was studied during the 1994 to 1996 growing seasons. A total of 351 taxa were found: five fern and fern-allies, 101 monocots, and 245 dicots. The families with the largest number of taxa include the Poaceae with 48 taxa, the Asteraceae with 33 taxa, and the Cyperaceae with 30 taxa, of which 20 were members of the genus *Carex*. An overstory analysis of the second growth wet-mesic floodplain forest that occurs on the site was also undertaken. In this forest, tree density averaged 353 stems/ha, with an average basal area of 28.5 m^2/ha. *Carya laciniosa* (Michx.) Loud. (kingnut hickory) ranked first with an importance value (IV) of 44.9 (out of 200). Associated species included *Liquidambar styraciflua* L. (sweet gum), *Quercus palustris* Muenchh. (pin oak), *Acer saccharinum* L. (silver maple), and *Ulmus americana* L. (American elm), all with IV's >15.

INTRODUCTION

Chauncey Marsh is an extensive wetland about four miles east of Chauncey, Lawrence County, Illinois. The marsh is located on an old ox-bow of the Embarras River, and is the largest marsh remaining in the Illinois portion of the Wabash River basin. The site contains an outstanding example of marsh and bottomland forest that was typical of this region at the time of European settlement. Elevation is from 130-133 meters above sea level.

Chauncey Marsh is recognized by the Illinois Natural Areas Inventory of White and Madany (1978). It is located in the Chauncey Marsh Natural Area (CMNA) and is a dedicated Nature Preserve. Though subjected to some disturbance, including drainage attempts, the marsh still contains a relatively high diversity of plant and animal life. Ebinger (1982) found 165 taxa of vascular plants growing within the marsh community.

Within the CMNA five major plant communities occur. The cultural communities are represented by prairie plantings, successional fields, croplands, and roadsides. Four natural wetland communities are present: small, scattered shrub swamps, an extensive marsh, an extensive wet-mesic floodplain forest, and a small, wet floodplain forest. The present study was undertaken to document the vascular flora in these plant communities at the

CMNA, and to determine the composition and structure of the extensive wet-mesic floodplain forest.

MATERIALS AND METHODS

Field trips were made to the CMNA at various times in late 1994, every two weeks during the growing season of 1995 and in the summer of 1996. During each trip voucher specimens were collected, habitat data for each taxon were determined, and the plant communities were delineated. A few taxa were not collected as they were endangered or rarely encountered at the site. The material collected was identified and deposited in the herbarium of the Illinois Natural History Survey (ILLS), Champaign, Illinois. Criteria for designating native and non-native taxa followed Fernald (1950), Steyermark (1963), Mohlenbrock (1986), and Gleason and Cronquist (1991).

During the summer of 1995, a 5 ha section (100 m x 500 m) of the wet-mesic floodplain forest was divided into 80 quadrats 25 m on a side. In each quadrat all living and dead-standing tree individuals 6 cm dbh (diameter at breast height, 1.5 meter above the ground) and above were identified and their diameters recorded. From these data the density (stems/ha), basal area (m^2/ha), relative density, relative dominance, importance value (IV), and average diameter (cm) were calculated for each species. The determination of the IV follows the procedure used by McIntosh (1957), and is the sum of the relative density and relative dominance of a given species. The density (stems/ha) of the understory tree species was determined using 80 nested circular plots 0.0001, 0.001, and 0.01 ha in size randomly located along line transects through the study area. Two additional 0.0001 ha circular plots were located 6 m to the east and west of each center. In the 0.0001 ha plots seedlings (<50 cm tall) and all shrubs were counted, in the 0.001 ha circular plots small saplings (>50 cm tall and <2.5 cm dbh) were recorded, and in the 0.01 ha circular plots large saplings (2.5-5.9 cm dbh) were tallied. Nomenclature primarily follows Mohlenbrock (1986).

DESCRIPTION OF THE STUDY AREA

The CMNA is 393 acres (159 ha) in size, and contains the 128 acre (51.8 ha) Chauncey Marsh Nature Preserve (T5N, R12W, S30). Located in northwestern Lawrence County, Illinois, it is in the Bottomland Section of the Wabash Border Division (Schwegman et al. 1973). This section encompasses the bottomland forest, sloughs, marshes, and ox-bow lakes in the floodplain of the Wabash River, the Ohio River, and their major tributaries. The presettlement vegetation of this section was mostly bottomland forest, though wet prairies, marshes, upland forest and shrub swamps were commonly associated with the sloughs and ox-bow lakes.

The forest surveyed is located near the middle of a large tract of timber at the CMNA. This wet-mesic floodplain forest (White and Madany 1978) is situated on a terrace of the Embarras River. This terrace is 131 m above sea level, and about 4 m above the normal flow of the river. The forest is flooded for short periods of time in most years; for about eight days during the spring of 1995, and for two months during the spring of 1996.

Soils of the CMNA are alluvial deposits from the Embarras River. The soil of the wet-mesic floodplain forest is predominately Darwin clay which occurs extensively on the Embarras and Wabash river floodplain and has developed under very poor natural drainage (Fehrenbacher and Odell 1956). The soil of the wet floodplain forest, shrub forest, and marsh is Wabash silty clay which occurs in sloughs and old, partially filled channels. The black, plastic silty clay or clay is formed from fine-textured sediments deposited by slack water and from large accumulations of organic matter (Fehrenbacher and Odell 1956).

The climate of east-central Illinois is continental with cool winters, hot summers, and little or no water deficit at any season of the year (Page 1949, Fehrenbacher et al. 1967, Schwegman et al. 1973). Average annual precipitation is between 101 and 106 cm, with most occurring in the spring. In Palestine, Illinois, just 15 km to the north, the average precipitation is 104.5 cm, with the month of May having the highest rainfall. Mean average temperature in Palestine, Illinois is 12.7°C with the hottest month being July (average of 25.3°C), and the coldest month being January (average of -0.9°C). The average number of frost free days is between 180-190.

RESULTS AND DISCUSSION

Vascular Plant Species Present

The flora of CMNA consists of 351 species and subspecific taxa within 224 genera and 78 families. Of these taxa, 60 (17%) were not native to Illinois, and several taxa planted in a man-made prairie were probably not original components of this natural area. Only one Illinois endangered species, *Silene regia* Sims (royal catchfly) was encountered, and no state threatened species were observed (Herkert 1991). The royal catchfly was planted in the man-made prairie.

As expected, the fern and fern-allies were poorly represented at the CMNA accounting for only five taxa (1% of all taxa). Gymnosperms were not represented, the Angiosperms accounting for the remaining species. Among the Angiosperms, monocots accounted for 101 taxa (29% of all taxa) in 50 genera and 12 families, while dicots made-up the remainder, 245 taxa (70% of all taxa) in 170 genera and 62 families. The largest genera were *Carex* with 20 species and *Polygonum* with 10 species. The largest families were Poaceae (48), Asteraceae (33), Cyperaceae (30), Fabaceae (16), Rosaceae (15), and Polygonaceae (14). For a complete list of taxa see Appendix 1.

Habitat Types Present

Plant communities were designated using the Illinois Natural Areas Inventory (White and Madany 1978). The communities are influenced by periodic flooding of the Embarras River, management practices such as controlled burning and wildlife activities, particularly by white-tailed deer (*Odocoileus virginianus*). Below is a description of each plant community at the CMNA along with the indicator species.

1. Wet-mesic floodplain forests (110.1 ha) occur on poorly drained soils that are periodically flooded during a portion of the growing season and are characterized by a high diversity of deciduous tree species. More than 20 tree species made up the overstory, with *Carya laciniosa*, *Liquidambar styraciflua*, *Quercus palustris*, *Acer saccharinum*,

Ulmus americana, *Q. bicolor*, and *Celtis occidentalis* being the most common. Few woody species occur in the very open understory, although the woody vines *Campsis radicans*, *Toxicodendron radicans*, and *Vitis cinerea* are common. The herbaceous layer is dominated by *Aster lanceolatus*, *A. ontarionis*, *Cryptotaenia canadensis*, *Geum canadense*, *Laportea canadensis*, *Leersia virginica*, *Pilea pumila*, *Sicyos angulatus*, *Solidago gigantea*, and *Zizia aurea*.

2. Wet floodplain forests (9.0 ha) occur in areas frequently flooded during the growing season and are characterized by a low diversity of woody and herbaceous species. Dominant tree species include *Acer saccharinum*, *A. negundo*, *Populus deltoides*, and *Fraxinus pennsylvanica*. Few woody understory trees and shrubs occur in the very open understory, although the woody vines *Toxicodendron radicans* and *Campsis radicans* are common. Herbaceous species include *Boehmeria cylindrica*, *Carex hyalinolepis*, *Elymus virginicus*, *Laportea canadensis*, *Pilea pumila*, and *Ranunculus hispidus* var. *nitidus*.

3. Shrub swamps (0.4 ha) in flooded, usually small depressions, are found scattered around the edge of the bottomland forests and near the open marsh. *Cephalanthus occidentalis* dominates the shrub layer forming dense thickets around the edge and sometimes throughout the depression. The central part of the shrub swamp, which is commonly flooded most of the year, is dominated by a few herbaceous species including *Acalypha rhomboidea*, *Alisma triviale*, *Leersia lenticularis*, *Peltandra virginica*, *Polygonum amphibium*, *P. hydropiperoides*, and *Saururus cernuus*.

4. Emergent marshes (20.8 ha) are characterized by periodic flooding, poorly drained soils and an extremely diverse flora. The few woody species encountered included *Amorpha fruticosa*, *Cephalanthus occidentalis*, *Fraxinus pennsylvanica*, *Populus heterophylla*, *Salix exigua*, and *S. nigra*. The common herbaceous species include *Apios americana*, *Bidens aristosa*, *Hibiscus laevis*, *H. lasiocarpos*, *Polygonum amphibium*, and *P. punctatum*.

5. Cultural communities (18.7 ha) are created and maintained by human disturbance. Two small prairie plantings (1.9 ha) occur in the natural area, while successional fields (0.8 ha) are common along with some croplands (16 ha). A farm road extends through much of the CMNA. The common taxa encountered were introduced and native weedy species with *Achillea millefolium*, *Allium canadense*, *Amaranthus hybridus*, *Conyza canadensis*, *Daucus carota*, *Poa pratensis*, *Setaria faberi*, and *Stellaria media* being the most common.

Within the wet-mesic floodplain terrace forest, tree density averaged 353 stems/ha with a basal area of 28.5 m^2/ha. Tree species diversity was extremely high with 24 tree species present, 20 of which were capable of reaching the canopy (Table 1). Of these species, *Carya laciniosa* ranked first with an IV of 44.9 (possible 200) and accounted for 27% of the density but only 17% of the basal area. This species dominated all smaller diameter classes with 95% of the individuals <50 cm dbh (Table 2). In contrast, *Liquidambar styraciflua* and *Quercus palustris*, which ranked 2nd and 3rd in IV, had high densities in the larger diameter classes and average diameters >45 cm dbh (Table 1). In the future this forest community will probably contain more *C. laciniosa* and less *L. styraciflua* and

Q. palustris. Of the remaining species, individuals of *Acer saccharinum* were fairly well distributed throughout all diameter classes, while most other species dominated the smaller diameter classes. In particular, *Ulmus americana* and *Celtis occidentalis* had 14 or more individuals in the 6-9 cm diameter class, whereas *Quercus bicolor* and *Q. macrocarpa* had relatively high densities in the 6-9 and 10-19 cm diameter classes (5-7 stem/ha) and were also represented in the 80+ cm diameter class. Of the understory species, only *Cercis canadensis* was common with an IV of 4.9 and 15.6 stems/ha. The remaining understory species included *Acer negundo*, *Crataegus mollis*, and *Prunus hortulana*, all with IV's below 1.5 and very low densities.

Tree mortality was not very high, with dead-standing individuals averaging 17.2 stems/ha, having a basal area of 1.36 m^2/ha and an average diameter of 24.4 cm. *Ulmus americana*, with a mortality of 6.8 stems/ha and a basal area of 0.144 m^2/ha, ranked first in dead-standing individuals. *Quercus palustris*, with an average of 2.4 stems/ha, ranked second followed by *Fraxinus pennsylvanica* and *Q. bicolor*. Only a few coppice stems were found, and no cut stumps were observed.

The woody understory was very open; it was usually possible to have a relatively unobstructed view for 50-75 m. Seedling density was 4,044 stems/ha, and most were difficult to find in the dense herbaceous layer. *Carya laciniosa* and *Quercus palustris* seedlings were the most common, but *Fraxinus pennsylvanica*, *Celtis occidentalis*, and *Gleditsia triacanthos* were sometimes encountered (Table 3). The small sapling layer (>50 cm tall, <2.5 cm dbh) was dominated by *Carya laciniosa* (760 stems/ha) and *Fraxinus pennsylvanica* (388 stems/ha). Large saplings (2.5-10.0 cm dbh) were not very common, averaging 221 stems/ha, with *Carya laciniosa*, *Ulmus americana* and *Celtis occidentalis* the most common (Table 3).

The forests at the CMNA are similar to the wet-mesic floodplain forest described by Nÿboer and Ebinger (1976) in Clark County, Illinois. The Clark County forest, located in the northern part of the Embarras River drainage, has many of the same canopy species found at the CMNA. In both forests, *Carya laciniosa* was the leading dominant species with the highest IV and many individuals in the lower diameter classes. Other common components included *Acer saccharinum*, *Celtis occidentalis*, *Gleditsia triacanthos*, *Quercus bicolor*, *Q. macrocarpa*, and *Ulmus americana*. The Clark County site was drier, however, as some upland species were present, such as *Acer saccharum*, *Fraxinus americana*, *Quercus alba*, and *Q. rubra*. At Clark County, *Liquidambar styraciflua* and *Q. palustris*, second and third in IV at CMNA, were absent. Also, the increased importance of *Acer saccharinum* at CMNA (IV of 18.0 with 23.4 stems/ha) far exceeded its importance in the Clark County forest (IV of 5.3 and 4.0 stems/ha), which would be expected as the CMNA is wetter.

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APPENDIX 1

The vascular taxa encountered at the Chauncey Marsh Natural Area are listed below by major groups, Pteridophytes (fern and fern-allies) and Spermatophytes (flowering plants), the latter divided into Monocots and Dicots. The families, genera, and species are alphabetically arranged within each group. Taxa that are introduced in Illinois are indicated by an asterisk (*). After the binomial and authority, the communities where the species were commonly encountered is given (1 = wet-mesic floodplain forest, 2 = wet floodplain forest, 3 = shrub swamp, 4 = emergent marsh, 5 = cultural). Collecting numbers are those of Phillippe (P).

PTERIDOPHYTA

DRYOPTERIDACEAE

Onoclea sensibilis L.; 1; P 26197

ISOETACEAE

Isoëtes melanopoda Gay & Durieu; 1, 5; P 26418

OPHIOGLOSSACEAE

Botrychium dissectum Sprengel; 1; P 26878

Botrychium virginianum (L.) Swartz; 1; P 26146

OSMUNDACEAE

Osmunda regalis L.; 1; P 26307

SPERMATOPHYTA: ANGIOSPERMAE

MONOCOTS

ACORACEAE

**Acorus calamus* L.; 2, 4; P 26391

ALISMACEAE

Alisma triviale Pursh; 3, 4; P 26829

ARACEAE

Arisaema dracontium (L.) Schott; 1; P 26424

Peltandra virginica (L.) Schott; 2, 3, 4; P 26437

COMMELINACEAE

Commelina virginica L.; 1, 4; P 26742

Tradescantia ohiensis Raf.; 5; P 26321

Tradescantia subaspera Ker; 1; P 26410

CYPERACEAE

Carex annectens Bickn.; 5; P 26382

Carex bicknellii Britton; 5; P 26440

Carex brevior (Dewey) Mack.; 5; P 26324

Carex bushii Mack.; 5; P 26335

Carex caroliniana Schwein.; 2; P 26292A

Carex crus-corvi Shuttlew.; 2, 3; P 26445

Carex davisii Schwein. & Torrey; 1, 5; P 26423

Carex festucacea Willd.; 5; P 26323

Carex gracilescens Steudel; 1; P 26201

Carex granularis Willd.; 2; P 26292B

Carex grayi Carey; 1; P 26303

Carex grisea Wahlenb.; 1; P 26304

Carex hyalinolepis Steudel; 1, 2, 4; P 26291

Carex leavenworthii Dewey; 2, 5; P 26322

Carex lupulina Willd.; 1; P 26463

Carex muskingumensis Schwein.; 1, 2, 4; P 26306

Carex squarrosa L.; 1, 2; P 26305

Carex stipata Muhl.; 1, 4; P 26415

Carex typhina Michx.; 1; P 26411

Carex vulpinoidea Michx.; 5; P 26454

Cyperus aristatus Rottboell; 5; P 26738

Cyperus esculentus L.; 5; P 26814

Cyperus odoratus L.; 5; P 26835

Cyperus ovularis (Michx.) Torrey; 4, 5; P 26779

Cyperus strigosus L.; 5; P 26831

Eleocharis obtusa (Willd.) Schultes; 4, 5; P 26737

Scirpus acutus Muhl.; 4; P 26458

Scirpus atrovirens Willd.; 4; P 26453

Scirpus cyperinus (L.) Kunth; 4; P 26752

Scirpus fluviatilis (Torrey) Gray; 4; P 26457

DIOSCOREACEAE

Dioscorea villosa L.; 1, 4; P 26400

IRIDACEAE

Iris virginica L. var. *shrevei* (Small) E. Anderson; 2, 4, 5; P 26338

Sisyrinchium angustifolium Miller; 5; P 26339

JUNCACEAE

Juncus biflorus Ell.; 5; P 26385

Juncus interior Wiegand; 5; P 26828

Juncus tenuis Willd.; 5; P 26431

LEMNACEAE

Lemna minor L.; 3, 4; P 27039

Spirodela polyrhiza (L.) Schleiden; 3, 4; P 27038

LILIACEAE

Allium canadense L.; 5; P 26331
**Allium vineale* L.; 5; P 26442
**Ornithogalum umbellatum* L.; 5; P 26330
Polygonatum biflorum (Walter) Ell.; 1; P 26317
Uvularia sessilifolia L.; 1; P 26316

POACEAE

**Agropyron repens* (L.) Beauv.; 5; P 26442
Agrostis perennans (Walter) Tuck.; 5; P 26806
Alopecurus carolinianus Walter; 5; P 26169
Andropogon gerardii Vitman; 5; P 26788
**Bromus racemosus* L.; 5; P 26446
Chasmanthium latifolium (Michx.) Yates; 1; P 26762
Cinna arundinacea L.; 1, 2; P 26705
**Dactylis glomerata* L.; 5; P 26396
**Digitaria ischaemum* (Schreb.) Schreb. ex Muhl.; 5; P 26805
**Digitaria sanguinalis* (L.) Scopoli; 5; P 26709
Echinochloa muricata (Beauv.) Fern.; 5; P 26735
**Eleusine indica* (L.) Gaertner; 5; P 26733
Elymus canadensis L.; 5; P 26699
Elymus virginicus L.; 1, 2, 4, 5; P 26758
**Eragrostis cilianensis* (All.) Mosher; 5; P 26731
Eragrostis hypnoides (Lam.) BSP; 1; P 26858
Eragrostis pectinacea (Michx.) Nees; 5; P 26736
Festuca obtusa Biehler; 1; P 26318
**Festuca elatior* L.; 5; P 26298
Hordeum pusillum Nutt.; 5; P 26299
Leersia lenticularis Michx.; 1, 2, 3, 4; P 26847
Leersia oryzoides (L.) Swartz; 4; P 26874
Leersia virginica Willd.; 1, 2, 4; P 26769
Leptochloa fascicularis (Lam.) Gray; 5; P 26730
Muhlenbergia bushii Pohl; 1; P 27029
Muhlenbergia frondosa (Poiret) Fern.; 5; P 27041
Panicum clandestinum L.; 5; P 26452
Panicum dichotomiflorum Michx.; 5; P 26838
Panicum lanuginosum Ell. var. *lindheimeri* (Nash) Fern.; 5; P 26381
Panicum rigidulum Nees var. *rigidulum*; 1; P 26842
Panicum virgatum L.; 4, 5; P 26700
Paspalum ciliatifolium Michx.; 5; P 26778
Paspalum fluitans (Ell.) Dunth; 1, 3; P 26865
Paspalum laeve Michx.; 5; P 26725
Paspalum pubiflorum Rupr. *ex* Fourn.; 5; P 26780
**Phleum pratense* L.; 5; P 26395
Poa chapmaniana Scribner; 5; P 26168
**Poa pratensis* L.; 5; P 26300
Schizachyrium scoparium (Michx.) Nash; 5; P 26698
**Setaria faberi* Herrm.; 5; P 26710
**Setaria glauca* (L.) Beauv.; 5; P 26815
**Setaria viridis* (L.) Beauv. var. *viridis*; 1, 5; P 26869
**Setaria viridis* (L.) Beauv. var. *major* (Gaudin) Pospichal; 5; P 26836
Sorghastrum nutans (L.) Nash; 5; P 26702
Spartina pectinata Link.; 4; P 26753
Sphenopholis obtusata (Michx.) Scribner var. *major* (Torrey) Erdman; 1; P 26295
Tridens flavus (L.) Hitchcock; 5; P 26785
**Zea mays* L.; 5; P 26804

SMILACACEAE

Smilax ecirrhata Kunth; 1; P 26426
Smilax hispida Muhl.; 1; P 26312
Smilax lasioneuron Hooker; 1; P 26311

DICOTS

ACANTHACEAE

Ruellia strepens L.; 1; P 26761

ACERACEAE

Acer negundo L.; 1, 2; P 26859
Acer rubrum L. var. *drummondii* (Hooker & Arnott) Sargent; 1, 2, 4; P 26151
Acer saccharinum L.; 1, 2, 4; P 26182

AMARANTHACEAE

Amaranthus hybridus L.; 5; P 26839

ANACARDIACEAE

Toxicodendron radicans (L.) Kuntze; 1, 2, 5; P 26409

ANNONACEAE

Asimina triloba (L.) Dunal; 1; P 26187

APIACEAE

Chaerophyllum procumbens (L.) Crantz; 1; P 26186

Cryptotaenia canadensis (L.) DC.; 1, 2; P 26425

**Daucus carota* L.; 5; P 26712

Eryngium yuccifolium Michx.; 5; P 26723

Oxypolis rigidor (L.) Raf.; 1, 3, 4; P 26766

Sanicula canadensis L.; 1, 2; P 26380

Sanicula gregaria Bickn.; 1, 2; P 26192

Sium suave Walter; 2, 3, 4; P 26793

Zizia aurea (L.) Koch; 1, 2, 5; P 26852

APOCYNACEAE

Amsonia tabernaemontana Walter; 2, 4, 5; P 26290

Apocynum sibiricum Jacquin; 4, 5; P 26461

ARISTOLOCHIACEAE

Aristolochia serpentaria L.; 1; P 26383

ASCLEPIADACEAE

Asclepias incarnata L.; 4; P 26751

Asclepias perennis Walter; 2, 3; P 26771

Asclepias syriaca L.; 5; P 26444

Cynanchum laeve (Michx.) Persoon; 5; P 26724

ASTERACEAE

**Achillea millefolium* L.; 5; P 26332

Ambrosia artemisiifolia L.; 5; P 26786

Ambrosia trifida L.; 2, 4, 5; P 26792

Aster lanceolatus Willd.; 1, 2; P 27035

Aster ontarionis Wieg.; 1, 2, 4; P 27037

Aster pilosus Willd.; 5; P 27036

Bidens aristosa (Michx.) Britton; 4, 5; P 26787

Boltonia asteroides (L.) L'Héritier var. *recognita* (Fern. & Griscom) Cronquist; 4, 5; P 26840

Conyza canadensis (L.) Cronquist; 5; P 26837

Coreopsis tripteris L.; 5; 26701

Eclipta prostrata (L.) L.; 3, 4; P 26729

Erigeron annuus (L.) Persoon; 5; P 26403

Erigeron philadelphicus L.; 1, 2; P 26314

Eupatorium coelestinum L.; 1, 4; P 26772

Eupatorium rugosum Houttuyn; 1; P 26704

Eupatorium serotinum Michx.; 1, 4, 5; P 26782

Euthamia graminifolia (L.) Salisbury; 5; P 26822

Helenium autumnale L.; 4, 5; P 26868

Helianthus divaricatus L.; 5; 26706

Helianthus strumosus L.; 5; P 26818

Helianthus tuberosus L.; 5; P 26819

Lactuca canadensis L.; 5; P 26776

**Matricaria matricarioides* (Lessing) Porter; 5; P 26164

Mikania scandens (L.) Willd.; 2; P 26797

Rudbeckia laciniata L.; 1; P 26854

Senecio glabellus Poiret; 1; P 26177

Silphium perfoliatum L.; 1, 4; P 26851

Solidago canadensis L.; 5; P 27033

Solidago gigantea Ait.; 1; P 26872

**Taraxacum officinale* Weber; 5; P 26180

Vernonia fasciculata Michx.; 4; P 26754

Vernonia gigantea (Walter) Trelease; 1; P 26757

**Xanthium strumarium* L. var. *glabratum* (DC.) Cronquist; 5; P 26870

BETULACEAE

Betula nigra L.; 2; P 26871

BIGNONIACEAE

Campsis radicans (L.) Seemann; 1, 2, 5; P 26743

BORAGINACEAE

Myosotis macrosperma Engelm.; 5; P 26325

BRASSICACEAE

**Arabidopsis thaliana* (L.) Heynhold; 5; P 26174

Armoracia lacustris (A. Gray) Al-Shehbaz & V. Bates; 4; P 26456

**Barbarea vulgaris* R. Brown var. *arcuata* (Opiz) Fries; 5; P 26159

**Capsella bursa-pastoris* (L.) Medikus; 1, 5; P 26160

Cardamine bulbosa (Schreber) BSP.; 1; P 26189

Cardamine parviflora L. var. *arenicola* (Britton) O.E. Schultz; 5; P 26175

Draba brachycarpa Nutt.; 5; P 26165

**Draba verna* L.; 5; P 26166

Iodanthus pinnatifidus (Michx.) Steudel; 1; P 26422

Lepidium virginicum L.; 5; P 26161

Sibara virginica (L.) Rollins; 5; P 26171

CAMPANULACEAE

Lobelia cardinalis L.; 1, 2, 4, 5; P 26178

Triodanis perfoliata (L.) Nieuwland var. *perfoliata*; 5; P 26462

CAPRIFOLIACEAE

**Lonicera maackii* (Ruprecht) Maximowicz; 5; P 27275

Sambucus canadensis L.; 1, 2, 4; P 26432

CARYOPHYLLACEAE

**Arenaria serpyllifolia* L.; 5; P 26302

Cerastium nutans Raf.; 5; P 26178

**Cerastium vulgatum* L.; 5; P 26327

**Dianthus armeria* L.; 5; P 26341

Silene regia Sims; 5; not collected

Silene stellata (L.) Ait. f.; 1; P 26703

**Stellaria media* (L.) Cyrillo; 5; P 26179

CELASTRACEAE

Celastrus scandens L.; 1; P 27034

**Euonymus fortunei* (Turczaninow) Handel-Mazzetti; 1; P 26406

CHENOPODIACEAE

Chenopodium album L.; 5; P 26875

CLUSIACEAE

Hypericum mutilum L.; 1, 4, 5; P 26811

Hypericum sphaerocarpum Michx.; 5; P 26455

CONVOLVULACEAE

Calystegia sepium (L.) R. Brown; 5; P 26781

**Convolvulus arvensis* L.; 5; P 26867

**Ipomoea hederacea* (L.) Jacquin; 5; P 26789

Ipomoea lacunosa L.; 1, 2; P 26794

Ipomoea pandurata (L.) G.F.W. Meyer; 5; P 26744

CORNACEAE

Cornus drummondii C.A. Meyer; 5; P 26404

Cornus obliqua Raf.; 1, 2, 5; P 26405

CUCURBITACEAE

Sicyos angulatus L.; 1, 2, 3; P 26863

EBENACEAE

Diospyros virginiana L.; 1; P 26450

EUPHORBIACEAE

Acalypha rhomboidea Raf.; 1, 3; P 26810

Chamaesyce humistrata (Engelm.) Small; 5; P 26834

Chamaesyce maculata (L.) Small; 5; P 26801

Chamaesyce nutans (Lag.) Small; 5; P 26777

Croton glandulosus L. var. *septentrionalis* Mueller-Arg.; 5; P 26820

Euphorbia corollata L.; 5; P 26816

Phyllanthus caroliniensis Walter; 4, 5; P26846

FABACEAE

Amorpha fruticosa L.; 4, 5; P 26451

Amphicarpaea bracteata (L.) Fern.; 1; P 26861

Apios americana Medikus; 2, 4; P 26795

Cercis canadensis L.; 1; P 26193

Chamaecrista fasciculata (Michx.) Greene; 5; P 26716

Desmodium illinoense Gray; 5; P 26717

Desmodium paniculatum (L.) DC.; 5; P 26784

Gleditsia triacanthos L.; 1, 2; P 26309

**Glycine max* (L.) Merrill; 5; P 26833

**Kummerowia stipulacea* (Maximowicz) Makino; 5; P 26715

Lespedeza violacea (L.) Britton; 5; P 26783

**Melilotus alba* Medikus; 5; P 26460

Senna marilandica (L.) Link; 5; P 26746

**Trifolium campestre* Schreber; 5; P 26326

**Trifolium hybridum* L.; 5; P 26707

**Trifolium pratense* L.; 5; P 26297

FAGACEAE

Quercus bicolor Willd.; 1; P 27043

Quercus imbricaria Michx.; 5; P 26154

Quercus macrocarpa Michx.; 1; P 27042

Quercus palustris Muenchh.; 1, 2; P 26767

Quercus shumardii Buckley; 1; P 26856

GERANIACEAE

Geranium carolinianum L.; 5; P 26301

Geranium maculatum L.; 1; P 26155

HALORAGIDACEAE

Proserpinaca palustris L.; 4; P 26833

HAMAMELIDACEAE

Liquidambar styraciflua L.; 1; P 26853

JUGLANDACEAE

Carya cordiformis (Wang.) K. Koch; 1, 5; P 26714

Carya illinoinensis (Wang.) K. Koch; 1; p 26843

Carya laciniosa (Michx.) Loudon; 1; P 26855

Carya tomentosa (Poiret) Nutt.; 1; P 26800

Juglans nigra L.; 1; P 26860

LAMIACEAE

**Lamium amplexicaule* L.; 5; P 26158

**Lamium purpureum* L.; 5; P 26157

Lycopus rubellus Moench.; 1, 2; P 26848
Monarda fistulosa L.; 5; P 26745
Physostegia virginiana (L.) Benth.; 1; P 26877
**Prunella vulgaris* L.; 5; P 26711
Scutellaria lateriflora L.; 1, 4; P 26760
Stachys tenuifolia Willd. var. *tenuifolia*; 1; P 26763
Teucrium canadense L. var. *virginiana* (L.) Eaton; 1, 4, 5; P 26765

LAURACEAE

Lindera benzoin (L.) Blume; 1; P 26185
Sassafras albidum (Nutt.) Nees; 5; P 26153

LYTHRACEAE

Ammannia coccinea Rottboell; 4, 5; P 26827
Lythrum alatum Pursh; 5; P 26719

MALVACEAE

**Abutilon theophrasti* Medikus; 5; P 26802
Hibiscus laevis All.; 4; P 26755
Hibiscus lasiocarpos Cav.; 4; P 26826
**Sida spinosa* L.; 5; P 26790

MENISPERMACEAE

Menispermum canadense L.; 1; P 26421

MOLLUGINACEAE

**Mollugo verticillatus* L.; 5; P 26876

MORACEAE

**Maclura pomifera* (Raf.) Schneider; 1; P 26315
**Morus alba* L.; 5; P 26342
Morus rubra L.; 1; P 26319

NYSSACEAE

Nyssa sylvatica Marshall; 1; P 26319

OLEACEAE

Fraxinus pennsylvanica Marshall; 1, 2, 4; P 26378

ONAGRACEAE

Ludwigia alternifolia L.; 4; P 26749
Ludwigia palustris (L.) Ell.; 4; P 26850
Ludwigia polycarpa Short & Peter; 4; P 26726
Oenothera biennis L.; 5; P 26817
Oenothera laciniata Hill; 5; P 26447
Oenothera pilosella Raf.; 5; P 26435

OXALIDACEAE

Oxalis dillenii Jacquin; 5; P 26333

PHYTOLACCACEAE

Phytolacca americana L.; 1; P 26397

PLANTAGINACEAE

**Plantago lanceolata* L.; 5; P 26328
Plantago rugelii Dcne.; 5; P 26734
Plantago virginica L.; 5; P 26162

POLEMONIACEAE

Phlox divaricata L.; 1; P 26194

POLYGONACEAE

Polygonum amphibium L.; 3, 4, 5; P 26727
**Polygonum aviculare* L.; 5; P 26808
Polygonum buxiforme Small; 5; P 26807
**Polygonum caespitosum* Blume; 1, 4; P 26844
Polygonum hydropiperoides Michx.; 3, 4; P 26748
Polygonum pensylvanicum L.; 2, 4, 5; P 26796
Polygonum punctatum Ell.; 1, 4, 5; P 26799
Polygonum ramosissimum Michx.; 1, 5; P 26791
Polygonum scandens L.; 2, 5; P 26881
Polygonum virginianum L.; 1; P 26849
**Rumex acetosella* L.; 5; P 26443
Rumex altissimus Wood; 4, 5; P 26163
**Rumex crispus* L.; 1, 5; P 26427
Rumex verticillatus L.; 1, 2, 3, 4; P 26401

PORTULACACEAE

Claytonia virginica L.; 1; P 26188

PRIMULACEAE

Lysimachia ciliata L.; 1, 2, 4, 5; P 26441
Samolus valerandii L.; 2, 4; P 26728

RANUNCULACEAE

Anemone canadensis L.; 5; P 26334
Clematis pitcheri Torrey & Gray; 1; P 26438
Myosurus minimus L.; 5; P 26167
Ranunculus hispidus Michx. var. *nitidus* (Ell.) T. Duncan; 1, 2; P 26198
Ranunculus micranthus Nutt.; 1, 2; P 26196

ROSACEAE

Agrimonia pubescens Wallroth; 1; P 26708
Crataegus crus-galli L.; 1, 2; P 26413
Crataegus mollis (Torrey & Gray) Scheele; 1, 2; P 26195
Fragaria virginiana Duchesne; 5; P 26152
Geum canadense Jacq.; 1, 2; P 26412
Geum vernum (Raf.) Torrey & Gray; 1; P 26150
Potentilla norvegica L.; 1, 5; P 26879
**Potentilla recta* L.; 5; P 26394

Potentilla simplex Michx.; 5; P 26337
Prunus hortulana Bailey; 1; P 26190
Prunus serotina Ehrh.; 5; P 26156
Rosa carolina L.; 5; P 26434
Rosa setigera Michx.; 3, 4; P 26433
Rubus flagellaris Willd.; 5; P 26149
Rubus pensylvanicus Poiret; 1, 5; P 26313

RUBIACEAE

Cephalanthus occidentalis L.; 1, 2, 3, 4; P 26747
Galium aparine L.; 1, 5; P 26296
Galium obtusum Bigelow; 1, 4; P 26416
**Galium pedemontanum* (Bellardi) Allioni; 5; P 26393
Spermacoce glabra Michx.; 1, 3; P 26770

SALICACEAE

Populus deltoides Marshall; 1, 2; P 26183
Populus heterophylla L.; 4; P 26377
Salix exigua Nutt.; 2, 4, 5; P 26148
Salix nigra Marshall; 2, 3, 4, 5; P 26184

SAURURACEAE

Saururus cernuus L.; 1, 2, 3, 4; P 26756

SAXIFRAGACEAE

Penthorum sedoides L.; 1, 3, 4; P 26809

SCROPHULARIACEAE

Agalinis tenuifolia (Vahl) Raf.; 5; P 26841
Chelone obliqua L.; 1, 4; P 26873
Gratiola neglecta Torrey; 5; P 26417A
Leucospora multifida (Michx.) Nutt.; 4, 5; P 26732
Lindernia dubia (L.) Pennell var. *anagallidea* (Michx.) Cooperrider; 5; P 26417B
Mimulus alatus Ait.; 1, 4; P 26773
Penstemon digitalis Nutt.; 1, 5; P 26420
Penstemon laevigatus Ait.; 5; P 26340
**Veronica arvensis* L.; 5; P 26172
Veronica peregrina L.; 5; P 26173

SOLANACEAE

**Datura stramonium* L.; 5; P 26803
Physalis heterophylla Nees; 5; P 26459
Physalis longifolia Nutt. var. *subglabrata* (MacKenzie & Bush) Cronquist; 1; P 26862
**Solanum carolinense* L.; 5; P 27622
Solanum ptycanthum Dunal; 5; P 26880

ULMACEAE

Celtis laevigata Willd.; 1; P 27031
Celtis occidentalis L.; 1; P 26882
Ulmus americana L.; 1; P 26147

URTICACEAE

Boehmeria cylindrica (L.) Swartz; 1, 2, 4; P 26759
Laportea canadensis (L.) Weddell; 1, 2; P 26845
Parietaria pensylvanica Muhl.; 1; P 26320
Pilea pumila (L.) Gray; 1, 2, 4; P 26812

VALERIANACEAE

Valerianella radiata (L.) Dufresne; 5; P 26336

VERBENACEAE

Phyla lanceolata Loureiro; 4, 5; P 26379
Verbena urticifolia L.; 5; P 26823

VIOLACEAE

Viola missouriense Greene; 1, 4, 5; P 26329
**Viola rafinesquii* Greene; 5; P 26170

VITACEAE

Ampelopsis cordata Michx.; 1, 2; P 26798
Vitis cinerea Engelm.; 1; P 26436

Table 1. Density, basal area, relative density, relative dominance, importance value, and average diameters of the tree species encountered at the Chauncey Marsh Natural Area, Lawrence County, Illinois.

Species	Common Name	Density (#/ha)	Basal Area (m2/ha)	Rel. Den.	Rel. Dom.	I.V.	Av. Diam (cm)
Carya laciniosa	Kingnut Hickory	97.6	4.93	27.7	17.2	44.9	20.3
Liquidambar styraciflua	Sweet Gum	30.8	5.45	8.7	19.2	27.9	45.0
Quercus palustris	Pin Oak	21.6	6.13	6.1	21.5	27.6	56.6
Acer saccharinum	Silver Maple	23.4	3.24	6.6	11.4	18.0	34.2
Ulmus americana	American Elm	44.2	0.87	12.5	3.1	15.6	13.5
Quercus bicolor	Swamp White Oak	21.6	1.70	6.1	6.0	12.1	24.0
Celtis occidentalis	Hackberry	29.8	0.68	8.4	2.4	10.8	13.8
Fraxinus pennsylvanica	Green Ash	17.4	1.37	4.9	4.8	9.7	26.2
Quercus macrocarpa	Bur Oak	16.4	1.21	4.7	4.3	9.0	22.6
Gleditsia triacanthos	Honey Locust	4.8	1.02	1.4	3.6	5.0	49.1
Cercis canadensis	Redbud	15.6	0.14	4.4	0.5	4.9	9.9
Carya illinoinensis	Pecan	9.0	0.41	2.6	1.4	4.0	18.7
Acer rubrum	Red Maple	4.8	0.54	1.4	1.9	3.3	27.1
others*		16.2	0.77	4.5	2.7	7.2	--
	Totals	353.2	28.46	100.0	100.0	200.0	

* The other species, by decreasing IV, include *Carya cordiformis* (Bitternut Hickory), *Populus deltoides* (Cottonwood), *Celtis laevigata* (Sugarberry), *Diospyros virginiana* (Persimmon), *Acer negundo* (Box Elder), *Crataegus mollis* (Red Haw), *Platanus occidentalis* (Sycamore), *Juglans nigra* (Black Walnut), *Ulmus rubra* (Slippery Elm), *Prunus hortulana* (Wild Goose Plum), and *Quercus shumardii* (Shumard's Oak).

Table 2. Density (#/ha) by diameter classes of the tree species encountered at the Chauncey Marsh Natural Area, Lawrence County, Illinois.

	Diameter Class (cm)								
Species	6-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Carya laciniosa	39.2	21.0	9.2	13.0	10.2	3.8	1.0	0.2	--
Liquidambar styraciflua	0.8	1.6	2.0	6.4	7.0	7.8	4.6	0.2	0.4
Quercus palustris	0.8	0.6	0.4	1.8	3.4	5.2	4.4	2.8	2.2
Acer saccharinum	3.4	7.0	1.6	2.2	3.0	1.2	2.8	1.0	1.2
Ulmus americana	20.0	17.8	3.4	2.0	0.8	0.2	--	--	--
Quercus bicolor	6.8	6.2	3.0	1.6	1.2	1.2	0.6	0.2	0.8
Celtis occidentalis	14.0	11.6	1.6	1.2	0.8	0.6	--	--	--
Fraxinus pennsylvanica	4.8	3.6	2.4	1.8	3.2	0.8	0.6	--	0.2
Quercus macrocarpa	5.2	5.4	2.0	0.6	1.2	0.6	0.4	0.4	0.6
Gleditsia triacanthos	0.2	--	0.6	0.4	1.2	1.4	0.4	0.4	0.2
Cercis canadensis	10.4	5.0	0.2	--	--	--	--	--	--
Carya illinoinensis	4.2	2.0	0.6	0.6	1.2	0.4	--	--	--
Acer rubrum	2.0	1.2	--	0.2	0.4	0.2	0.4	--	0.4
others	6.4	6.4	1.2	0.2	0.8	0.2	0.8	--	0.2
Totals	118.2	89.4	28.2	32.0	34.4	23.6	16.0	5.2	6.2

Table 3. Density (#/ha) of seedlings (<50 cm tall), small saplings (>50 cm tall and <2.5 cm dbh), and large saplings (2.5-5.9 cm dbh) at the Chauncey Marsh Natural Area, Lawrence County, Illinois.

Species	Seedlings	Small Saplings	Large Saplings
Carya laciniosa	1377.8	760.0	86.7
Quercus palustris	1066.7	--	1.3
Fraxinus pennsylvanica	666.7	386.7	14.7
Celtis occidentalis	488.9	26.7	33.3
Gleditsia triacanthos	133.3	--	--
Ulmus americana	88.9	66.7	42.7
Crataegus mollis	88.9	40.0	--
Carya illinoinensis	44.4	--	12.0
Cercis canadensis	--	13.3	12.0
Quercus macrocarpa	--	--	12.0
others (5 species)	88.9	26.7	6.6
Totals	4044.5	1320.1	221.3