

Vegetation Survey of Chauncey Marsh, Lawrence County, Illinois

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Introduction

Chauncey Marsh is an extensive wetlands in northwestern Lawrence County (Sec. 30 T5N R12W; Sec 25 and 36 T5N R13W) about four miles east of Chauncey, Illinois. This marsh, located on an old ox-bow of the Embarrass River, is the largest marsh remaining in the Illinois portion of the Wabash River basin. Though subjected to some disturbances, including drainage attempts, the marsh still contains a wide variety of plant and animal life, some of which has all but disappeared from the state. As a result the Illinois Department of Conservation has purchased most of the marsh and some of the surrounding floodplain forest. Present plans are to dedicate this area as a nature preserve.

During the present study a vegetation survey was undertaken in the three major vegetation zones of the marsh. Also, a list of the vascular plant species found in the marsh was obtained by making numerous trips to the area during the past four years.

Materials and Methods

The three major vegetation zones in the marsh were samples using plot 1/8m² in size. Using a random numbers table 80 circular plots were randomly located along compass lines through each zone. Each stem found was considered a separate individual (with grasses and grass-like plants each cluster of leaves was considered a stem), and the total number of individuals of each species in each plot was recorded. From these data the density (stems per m²), frequency, relative density, relative frequency, and importance value (IV) for each species was then determined. The relative values were calculated using the following formulas.

$$\text{Relative Density} = \frac{\text{Total individuals of a species}}{\text{Total individuals of all species}} \times 100$$

$$\text{Relative Frequency} = \frac{\text{Total plots of occurrence of a species}}{\text{Total plots of occurrence of all species}} \times 100$$

$$\text{Importance Value} = \text{Relative Density} + \text{Relative Frequency}$$

The nomenclature used follows Mohlenbrock (1975).

Results and Discussion

Chauncey Marsh is located in the Bottomlands Section of the Wabash Border Division (Schwegman, 1973). This section encompasses the bottomland forests, sloughs, marshes, and ox-bow lakes in the floodplains of the Wabash River, the Ohio River, and their major tributaries. The predominant vegetation of this section consists of bottomland forests, though wet prairies and marshes are sometimes associated with the sloughs and meander scars.

Due to the large size of the marsh (nearly 400 acres) only the least disturbed section was studied. The area studied is located on state owned land in the eastern part of the marsh (SW 1/4 Sec 30 T5N R12W). The vegetation in this area is relatively uniform, and can be divided into three fairly distinct zones. These zones, which

probably developed as a result of moisture gradients and shading, are discussed below.

Scirpus/Hibiscus Zone: This zone occurs in the wetter, open parts of the marsh. Standing water is common during spring and early summer, and some shallow depressions contain water year around. *Scirpus fluviatilis* (river bulrush) and *Hibiscus militaris* (halberd-leaved rose mallow) are the dominant taxa in this zone (Table 1), averaging 61 stems per m², and having a combined importance value of 142.4. Other common associated species include *Carex hyalinolepis*, *Lippia lanceolata*, *Acorus calamus*, and *Scirpus acutus*. Though 19 taxa were found in the plots, most have extremely low importance values (Table 1). Of these minor taxa,

TABLE 1. *Density, frequency, and relative values of the species in the Scirpus/Hibiscus zone of Chauncey Marsh, Lawrence County, Illinois.*

Species	Den. m ²	Freq. %	Rel. Den.	Rel. Freq.	I.V.
<i>Scirpus fluviatilis</i> (Torr.) Gray.	39.8	97.5	49.6	38.5	88.1
<i>Hibiscus militaris</i> Cav.	21.4	70.0	26.6	27.7	54.3
<i>Carex hyalinolepis</i> Steud.	4.1	13.8	5.1	5.4	10.5
<i>Lippia lanceolata</i> Michx.	2.2	13.8	2.7	5.4	8.1
<i>Acorus calamus</i> L.	3.4	5.0	4.2	2.0	6.2
<i>Scirpus acutus</i> Muhl.	2.7	5.0	3.4	2.0	5.4
<i>Myriophyllum heterophyllum</i> Michx.	.7	8.8	1.0	3.5	4.5
<i>Rumex verticillatus</i> L.	.9	7.5	1.1	3.0	4.1
<i>Polygonum coccineum</i> Muhl.	.6	7.5	.9	3.0	3.9
<i>Ludwigia polycarpa</i> Short & Peter.	1.3	3.8	1.6	1.5	3.1
<i>Peltandra virginica</i> (L.) Kunth.	.5	5.0	.6	2.0	2.6
<i>Proserpinaca palustris</i> L.	1.3	1.3	1.6	.5	2.1
<i>Asclepias incarnata</i> L.	.3	2.5	.3	1.0	1.3
<i>Sium suave</i> Walt.	.2	2.5	.2	1.0	1.2
<i>Cephalanthus occidentalis</i> L.	.2	2.5	.2	1.0	1.2
<i>Boltonia asteroides</i> (L.) L'Her.	.2	2.5	.2	1.0	1.2
<i>Iris shrevei</i> Small.	.4	1.3	.5	.5	1.0
<i>Saururus cernuus</i> L.	.1	1.3	.1	.5	.6
<i>Sagittaria brevirostra</i> Mack. & Bush	.1	1.3	.1	.5	.6
Totals	80.4		100.0	100.0	200.0

most are wet area species that would be expected in this habitat. Of this group *Cephalanthus occidentalis* is the only woody species present, while *Myriophyllum heterophyllum* and *Proserpinaca palustris* occur only in standing water.

Spartina/Carex Zone: This zone occurs in the drier, open parts of the marsh, and should probably be classified as wet prairie. This zone is rarely flooded, and is relatively dry most of the year. *Spartina pectinata*, *Carex hyalinolepis*, and *Carex stricta* dominate this zone, account for nearly 150 of the 157 per m², and have a combined importance value of 176.8 (Table 2). Only 8 other taxa were found in the plots of this zone, most of which also occurred in the *Scirpus/Hibiscus* zone.

Salix/Carex Zone: This zone is dominated by an overstory of various shrubs and trees. *Salix interior* is the dominant woody plant present, though other woody species are also common. These include *Salix nigra*, *Acer saccharinum*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Populus heterophylla*, *Amorpha fruticosa*, and *Morus rubra*. The herbaceous layer is more diverse here than in the other zones

TABLE 2. *Density, frequency, and relative values of the species in the Spartina/Carex zone of Chauncey Marsh, Lawrence County, Illinois.*

Species	Den. m ²	Freq. %	Rel. Den.	Rel. Freq.	I.V.
<i>Spartina pectinata</i> Link.	76.9	83.8	48.8	31.3	80.1
<i>Carex hyalinolepis</i> Steud.	39.7	73.8	25.2	27.4	52.6
<i>Carex stricta</i> Lam.	32.7	62.5	20.8	23.3	44.1
<i>Polygonum coccineum</i> Muhl.	3.4	27.5	2.2	10.2	12.4
<i>Scirpus acutus</i> Muhl.	2.8	5.0	1.7	1.9	3.6
<i>Cephalanthus occidentalis</i> L.	.4	5.0	.3	1.9	2.2
<i>Asclepias incarnata</i> L.	.6	3.8	.4	1.4	1.8
<i>Apocynum cannabinum</i> L.	.4	3.8	.3	1.4	1.7
<i>Lippia lanceolata</i> Michx.	.1	1.3	.1	.4	.5
<i>Rumex verticillatus</i> L.	.1	1.3	.1	.4	.5
<i>Boltonia asteroides</i> (L.) L'Her.	.1	1.3	.1	.4	.5
Totals	157.2		100.0	100.0	200.0

studied, with 24 taxa found in the plots. Of these species, *Carex stricta* is the most important, accounting for 39.1 stem per m² and having an importance value of 96.2 (Table 3). The other taxa found in this zone have extremely low densities and importance values.

A total of 165 taxa of vascular plants were found in and at the edge of Chauncey Marsh. These taxa are listed below with their collecting information. In

TABLE 3. *Density, frequency, and relative values of the herbaceous species in the Salix/Carex zone of Chauncey Marsh, Lawrence County, Illinois.*

Species	Den. m ²	Freq. %	Rel. Den.	Rel. Freq.	I.V.
<i>Carex stricta</i> Lam.	39.1	85.0	59.2	37.0	96.2
<i>Carex muskingumensis</i> Schwein.	4.1	21.3	6.2	9.2	15.4
<i>Aster ontarionis</i> Wieg.	2.8	15.0	4.2	6.5	10.7
<i>Boehmeria cylindrica</i> (L.) Sw.	2.8	12.5	4.2	5.4	9.6
<i>Apios americana</i> Medic.	1.5	16.3	2.3	7.1	9.4
<i>Elymus virginicus</i> L.	3.1	10.0	4.7	4.3	9.0
<i>Pilea pumila</i> (L.) Gray	2.9	7.5	4.4	3.3	7.7
<i>Polygonum coccineum</i> Muhl.	1.2	12.5	1.8	5.4	7.2
<i>Ambrosia trifida</i> L.	1.0	11.3	1.5	4.9	6.4
<i>Scutellaria lateriflora</i> L.	1.7	5.0	2.6	2.2	4.8
<i>Saururus cernuus</i> L.	1.3	3.8	2.0	1.6	3.6
<i>Lysimachia ciliata</i> L.	1.3	3.8	2.0	1.6	3.6
<i>Lippia lanceolata</i> Michx.	.6	5.0	.9	2.2	3.1
<i>Sium suave</i> Walt.	.8	2.5	1.2	1.0	2.2
<i>Leersia virginica</i> Willd.	.3	3.8	.5	1.6	2.1
<i>Lycopus rubellus</i> Moench.	.3	3.8	.5	1.6	2.1
<i>Hibiscus lasiocarpus</i> Cav.	.3	2.5	.5	1.0	1.5
<i>Rumex altissimus</i> Wood.	.3	1.3	.5	.6	1.1
<i>Iris shrevei</i> Small.	.2	1.3	.3	.6	.9
<i>Galium obtusum</i> Bigel.	.1	1.3	.1	.6	.7
<i>Lobelia cardinalis</i> L.	.1	1.3	.1	.6	.7
<i>Bidens aristosa</i> L.	.1	1.3	.1	.6	.7
<i>Asclepias incarnata</i> L.	.1	1.3	.1	.6	.7
<i>Peltandra virginica</i> (L.) Kunth.	.1	1.3	.1	.5	.6
Totals	66.1		100.0	100.0	200.0

this list the first number after the name is the authors collecting number, while the other numbers refer to the area or areas in which the species was found (1. *Scirpus/Hibiscus* Zone; 2. *Spartina/Carex* Zone; 3. *Salix/Carex* Zone; 4. Disturbed, open area; and 5. Edge of marsh in floodplain forest).

Alismaceae

Sagittaria brevirostra Mack. & Bush. 20820; 1,3,4.

Araceae

Acorus calamus L. Not collected; 1.

Peltandra virginica (L.) Kunth. 15719; 1,3,4,5.

Commelinaceae

Commelina virginica L. 17369; 4.

Tradescantia ohiensis Raf. 17239; 4.

Cyperaceae

Carex cruscovi Shuttlew. 17314; 5.

Carex davisii Schw. & Torr. 15710; 5.

Carex grayi Carey. 15708; 3,5.

Carex hyalinolepis Steud. 17266; 1,2.

Carex lupulina Muhl. 17315; 4,5.

Carex muskingumensis Schw. 17259; 3,5.

Carex squarrosa L. 17326; 5.

Carex stricta Lam. 17262; 2,3.

Carex vulpinoidea Michx. 17261; 4.

Cyperus acuminatus Torr. & Hook. 13473; 4.

Cyperus erythrorhizos Muhl. 13486; 4.

Cyperus esculentus L. 20788; 4.

Cyperus ferruginescens Boeckl. 20774; 4.

Cyperus strigosus L. 20778; 4.

Eleocharis acicularis (L.) R. & S. 15723; 4.

Eleocharis obtusa (Willd.) Schult. 17305; 4.

Scirpus acutus Muhl. 17304; 1,2.

Scirpus atrovirens Willd. 17306; 4.

Scirpus cyperinus (L.) Kunth. 20816; 2.

Scirpus fluviatilis (Torr.) Gray. 15724; 1.

Scirpus heterochaetus Chase. 13070; 4.

Dioscoreaceae

Dioscorea villosa L. 17334; 3,5.

Iridaceae

Iris shrevei Small. 17248; 1,3.

Juncaceae

Juncus acuminatus Michx. 17256; 2,4.

Juncus tenuis Willd. 17307; 4.

Lemnaceae

Spirodela polyrrhiza (L.) Schleid. 17395; 1.

Poaceae

Alopecurus carolinianus Walt. 17229; 4.

Calamagrostis canadensis (Michx.) Beauv. 17255; 2.

Chasmanthium latifolium (Michx.) Yates. 17329; 5.

Cinna arundinacea L. 13420; 5.

Digitaria ischaemum (Schreb.) Muhl. 13442; 4.

- Digitaria sanguinalis* (L.) Scop. 17370; 4.
Echinochloa crus-galli (L.) Beauv. 20785; 4.
Eleusine indica (L.) Gaertn. 17375; 4.
Elymus virginicus L. 13418; 3,5.
Eragrostis cilianensis (All.) Mosher. 17373; 4.
Eragrostis hyponides (Lam.) BSP. 17383; 4.
Eragrostis pectinacea (Michx.) Nees. 13429; 4.
Leersia lenticularis Michx. 17330; 2.
Leersia virginica Willd. 13412; 3,5.
Panicum capillare L. 13461; 4.
Panicum dichotomiflorum Michx. 13460; 4.
Panicum rigidulum Bosc. 13422; 4.
Panicum virgatum L. 20808; 2.
Setaria faberi Herrm. 17357; 4.
Setaria lutescens (Weigel) Hubb. 20765; 4.
Spartina pectinata Link. Not collected; 2.
Sporobolus vaginiflorus (Torr.) Wood. 17374; 4.

Acanthaceae

- Ruellia strepens* L. 15720; 4.

Amaranthaceae

- Amaranthus hybridus* L. 13477; 4.

Apocynaceae

- Amsonia tabernaemontana* Walt. 15702; 2.
Apocynum cannabinum L. 17228; 2,3,4.

Asclepiadaceae

- Asclepias incarnata* L. 13456; 1,2,3,4.
Asclepias perennis Walt. 13409; 5.
Cynanchum laeve (Michx.) Pers. 13478; 4.

Campanulaceae

- Lobelia cardinalis* L. 13431; 3,4,5.
Lobelia siphilitica L. 13430; 3,4.

Caprifoliaceae

- Sambucus canadensis* L. 17230; 3,4,5.

Compositae

- Ambrosia artemisiifolia* L. 20790; 4.
Ambrosia trifida L. 20769; 3,4.
Aster ontarionis Wieg. 20787; 3,5.
Aster simplex Willd. 17437; 5.
Bidens aristosa L. 13476; 3,4.
Bidens comosa (Gray) Wieg. 17366; 4.
Bidens frondosa L. 20775; 4.
Bidens vulgata Greene. 13457; 4.
Boltonia asteroides (L.) L'Her. 13391; 1,2,4.
Eclipta alba (L.) Hassk. 20773; 4.
Erechtites hieracifolia (L.) Raf. 20794; 3,5.
Eupatorium coelestinum L. 13419; 3,5.
Eupatorium serotinum Michx. 17322; 2,3.
Helenium autumnale L. 13427; 3,4.
Senecio glabellus Poir. 17241; 4.

- Silphium perfoliatum* L. 13448; 2,4,5.
Vernonia gigantea (Walt.) Trel. 13471; 2,4.
Vernonia fasciculata Michx. 13482; 2,3.
Xanthium strumarium L. 13451; 4.

Convolvulaceae

- Cuscuta gronovii* Willd. 17324; 2,4.
Ipomoea hederacea Jacq. 17379; 4.
Ipomoea lacunosa L. 20786; 4.
Ipomoea pandurata (L.) G. F. W. Mey. 13463; 4.

Cornaceae

- Cornus obliqua* Raf. 17244; 4.
Cornus racemosa Lam. 13465; 4.

Cruciferae

- Ammoracia aquatica* (A. Eaton) Wieg. 13067; 1.
Iodanthus pinnatifidus (Michx.) Steud. 15711; 5.
Rorippa islandica (Oeder) Borbas. 15722; 4.
Rorippa sessiliflora (Nutt.) Hitchc. 17246; 1.

Cucurbitaceae

- Sicyos angulatus* L. 13414; 5.

Euphorbiaceae

- Acalypha gracilens* Gray. 17352; 4.
Acalypha rhomboidea Raf. 13469; 4.
Chamaesyce maculata (L.) Small. 17351; 4.
Chamaesyce supina (Raf.) Moldenke. 17350; 4.
Phyllanthus carolinensis Walt. 13467; 4.

Haloragidaceae

- Myriophyllum heterophyllum* Michx. 17316; 1.
Proserpinaca palustris L. 15716; 1.

Hypericaceae

- Hypericum mutilum* L. 13454; 4.
Hypericum sphaerocarpum Michx. 17311; 2.

Labiatae

- Lycopus americanus* Muhl. 17394; 2,4.
Lycopus rebellus Moench. 20812; 3.
Mentha arvensis L. 20762; 3,4.
Physostegia speciosa Sweet. 13415; 5.
Scutellaria lateriflora L. 13424; 2,3,4.
Teucrium canadense L. 17337; 2,3,4.

Leguminosae

- Amorpha fruticosa* L. 13453; 3.
Apios americana Medic. 17393; 3.
Cassia marilandica L. 13428; 3,4.
Trifolium hybridum L. 20767; 4.

Lythraceae

- Ammannia coccinea* Rottb. 13440; 4.
Lythrum alatum Pursh. 17308; 4.

Malvaceae

- Hibiscus lasiocarpus* Cav. 13397; 1,3,4.

Hibiscus militaris Cav. 13447; 1,4.

Sida spinosa L. 13450; 4.

Moraceae

Morus rubra L. 17336; 3,5.

Oleaceae

Fraxinus pennsylvanica Marsh. 20793; 3.

Onagraceae

Ludwigia alternifolia L. 13484; 3,4.

Ludwigia palustris (L.) Ell. 13434; 4.

Ludwigia polycarpa Short. & Peter. 20802; 1.

Oenothera pilosella Raf. 13079; 2,4.

Oxalidaceae

Oxalis stricta L. 13410; 4.

Polygonaceae

Polygonum aviculare L. 17385; 4.

Polygonum coccineum Muhl. 13393; 1,2,3,4.

Polygonum erectum L. 13445; 4.

Polygonum hydropiper L. 13458; 4.

Polygonum hydropiperoides Michx. 17342; 4.

Polygonum lapathifolium L. 17359; 4.

Polygonum pensylvanicum L. 13394; 4.

Polygonum punctatum Ell. 20771; 4.

Polygonum scandens L. 13481; 4.

Rumex altissimus Wood. 17253; 3,4.

Rumex verticillatus L. 17250; 1,2.

Primulaceae

Lysimachia ciliata L. 20797; 2,3,4.

Samolus parviflorus L. 13071; 4.

Ranunculaceae

Anemone canadensis L. 15703; 4.

Clematis pitcheri Torr. & Gray. 13468; 3,4.

Rosaceae

Potentilla norvegica L. 13455; 4.

Rubus allegheniensis Porter. 17242; 3,4.

Spiraea alba DuRoi. 17312; 2.

Rubiaceae

Cephalanthus occidentalis L. 13401; 1,2.

Galium obtusum Bigel. 17243; 3,4.

Spermacoce glabra Michx. 17433; 4.

Salicaceae

Populus heterophylla L. 13452; 3,5.

Salix interior Rowlee. 17240; 3,4.

Salix nigra Marsh. 17252; 3,5.

Saxifragaceae

Penthorum sedoides L. 13435; 3,4,5.

Saururaceae

Saururus cernuus L. 13399; 1,3,4,5.

Scrophulariaceae

- Chelone obliqua* L. 13416; 5.
Conobea multifida (Michx.) Benth. 17377; 4.
Gratiola neglecta Torr. 15712; 4.
Gratiola virginiana L. 15705; 4.
Lindernia anagallidea (Michx.) Pennell. 13472; 4.
Mimulus alatus Ait. 17343; 3,4.
Mimulus ringens L. 13395; 4.

Solanaceae

- Physalis subglabrata* Mack. & Bush. 13406; 4.

Umbelliferae

- Sium suave* Walt. 20811; 1,3,5.

Urticaceae

- Boehmeria cylindrica* (L.) Sw. 13398; 3,5.
Pilea pumila (L.) Gray. 13432; 3,4,5.

Verbenaceae

- Lippia lanceolata* Michx. 13072; 1,2,3,4.

Violaceae

- Viola pratincola* Greene. 20760; 3,4,5.

Vitaceae

- Ampelopsis cordata* Michx. 13446; 4.
Vitis cinerea Engelm. 17392; 4,5.

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