ERIGENIA

Number 20
October 2004

Journal of the
Illinois Native Plant Society

ERIGENIA

Number 20, October 2004

The Illinois Native Plant Society Journal

The Illinois Native Plant Society is dedicated to the preservation, conservation, and study of the native plants and vegetation of Illinois.

COVER ILLUSTRATION
Drawing of *Tilia americana,* basswood, by Nancy Hart-Stieber of The Morton Arboretum, Lisle, Illinois. Copyright 1978 by The Morton Arboretum.

MEMBERSHIP
Yearly membership includes a subscription to *Erigenia* and the quarterly newsletter, *Harbinger*. For more information, visit our website at www.ilnps@aol.com or write to

Illinois Native Plant Society
Forest Glen Preserve
20301 East 900 North Road
Westville, Illinois 61883
e-mail: ilnps@aol.com

ERIGENIA is named for *Erigenia bulbosa* (Michx.) Nutt. (harbinger of spring), one of our earliest blooming woodland plants. The first issue was published in August, 1982.

(ISSN 8755-2004)

ERIGENIA

NUMBER 20, OCTOBER 2004

TABLE OF CONTENTS

About Our Authors

Roger Beadles is a naturalist and owner of Beadles Barrens Nature Preserve. His interests are in the response of natural areas and rare plant populations to applied management techniques.

Tiffany S. Bone is currently a graduate student in Plant Biology at University of Illinois at Champaign-Urbana, working under the direction of Dr. Steven Downie on the systematics of the Apiaceae. She received her B.A. in Plant Biology from Southern Illinois University at Carbondale, where she worked on bryophyte ecology and the molecular systematics of parasitic plants.

Matt S. Burmeister is an M.S. candidate in the Department of Biological Sciences at Eastern Illinois University under the direction of Dr. Scott Meiners. His research interests primarily focus on the integration of ecological principles into prairie restoration.

Janice M. Coons is a botany professor at Eastern Illinois University and is active in the Illinois State Academy of Science and the Botanical Society of America. She teaches botany classes including plant physiology and horticulture. Her research involves the reproductive biology of endangered and threatened plants as well as the use of native plants in landscaping.

Mary Cooprider worked for three years as a soil scientist with the Illinois Natural History Survey in Champaign, Illinois. She is currently a water quality specialist with National Park Service and is working in the San Francisco area.

Bob Edgin is a field representative for the Illinois Nature Preserves Commission. His research focuses on the structure and composition of forest and prairie communities and population dynamics of endangered plant species within Illinois nature preserves.

John E. Ebinger is emeritus professor of botany at Eastern Illinois University. His research focuses on the structure and composition of forest, glade, and sand prairie communities in Illinois as well as the tropical genus *Acacia*.

Brian J. Fischer, DDS, was working on a B.S. in zoology at Eastern Illinois University at the time of the *Silene regia* research. He then went to dental school at the University of Illinois in Chicago. He currently lives in Columbia, Missouri, and is the dental director of the Family Dental Center, a not-for-profit company.

Nicolette L. Flocca completed her B.S. in Natural Resources and Environmental Sciences at the University of Illinois, Urbana-Champaign, where her undergraduate experiences included rare plant germination, caddisfly diversity and abundance, effects of air pollution on lichens in northern Indiana, development of a snake reintroduction plan for the Chicago Botanic Garden, and participation in a boa constrictor tracking study in Ometepe, Nicaragua, documented by National Geographic. She is currently studying the effects of prairie habitat quality on snake populations in northern Illinois as she works towards her Ph.D. at Duke University.

David M. Ketzner is a botanist/ecologist in the Wetlands Group at the Illinois Natural History Survey. His responsibilities are wetland delineation, evaluation of potential wetland mitigation sites, and monitoring of created wetlands, primarily for Illinois Department of Transportation project sites. The vascular flora and lichens of Illinois are his primary research interests.

Scott Kobal is the plant ecologist with the Forest Preserve District of DuPage County, a position he has held since 1990. Scott obtained his B.S. and M.S. degrees in wildlife management from the University of Wisconsin-Stevens Point. He is responsible for assessing and inventorying Forest Preserve lands as well as conducting several long-term monitoring studies of local plant communities.

Vernon LaGesse, Jr., owner of LaGesse & Associates, Inc., has been conducting stewardship restorations for 14 years. Current projects include maintenance of landfill caps with native vegetation, controlled burns, and prairie, wetland and woodland restoration.

Wayne Lampa was raised in Wheaton, Illinois, and received a B.A. in Physical Geography from Northern Illinois University and an M.A. in Geomorphology from Louisiana State University. He worked for the Forest Preserve District of DuPage County for 25 years and currently works as an independent ecologist.

Richard Larimore is a wetland ecologist with the Illinois Natural History Survey in Champaign, Illinois. He is interested in fire ecology, particularly as fire relates to species composition in woodlands.

William E. McClain is an adjunct research associate in botany at the Illinois State Museum in Springfield, Illinois. His interests include forest and prairie ecology, exotic species, and rare plants.

Scott J. Meiners is an assistant professor in the Department of Biological Sciences at Eastern Illinois University. His research focuses on plant community ecology, particularly on the dynamics of successional systems and the causes and consequences of exotic plant invasions.

Andrew S. Methven is professor and chair in the Department of Biological Sciences at Eastern Illinois University. His research focuses on systematics and ecology of fleshy fungi and lichens.

Henry R. Owen has been a botany professor at Eastern Illinois University for the past ten years, teaching a wide range of courses for majors, non-majors, and M.S. students. His research areas include plant physiology, genetics, and tissue culture. He is also the national president of Phi Sigma, the biological sciences honor society.

Gordon C. Tucker, an associate professor at Eastern Illinois University, teaches courses in plant taxonomy, plant morphology, dendrology, aquatic plants and ethnobotany. He received his Ph.D. from Duke University and specializes in the taxonomy of grasses and sedges. He recently published a treatment of *Cyperus* and related genera for Flora of North America.

Brent Wachholder has a B.S. in Biological Sciences and is currently completing his M.S. at Eastern Illinois University. He is a lifelong Illinois native.

Jennifer Ward, native of Macon County, received her A.S. degree from Richland Community College, and her B.S. and M.S. from Eastern Illinois University. She has worked for several years as a naturalist at the Macon County Conservation District.

Erigenia, Number 20, October 2004, pp 3—8

Generalist Herbivore Preferences Between the Exotic *Lonicera maackii* (Rupr.) Maxim. and Selected Native Caprifoliaceae in Illinois

Tiffany S. Bone[1] and Scott J. Meiners[2]

Abstract: The exotic shrub *Lonicera maackii* (Rupr.) Maxim. (Amur honeysuckle) has become the dominant shrub in many forests of the midwestern United States. Decreased herbivory on exotic species relative to native species, often referred to as the enemy release hypothesis, has been used to explain the differential success of exotic species in many invaded plant communities. The goal of this research was to determine whether the increased dominance of *Lonicera maackii* in regional forests could be explained by selective herbivory by the land snail *Anguispira alternata* (Say), a generalist herbivore. To assess the importance of the enemy release hypothesis, we experimentally compared herbivore preferences among *Lonicera maackii* and three native shrubs, all belonging to the family Caprifoliaceae. *Lonicera maackii* had consistently low levels of herbivore damage and showed significantly less damage than two of the three native shrubs tested. These results are consistent with the enemy release hypothesis and suggest that differential herbivore pressure from generalist herbivores may contribute to the relative success of *L. maackii*, as well as other exotic plants, over their native relatives.

Introduction

The enemy release hypothesis is one of several mechanisms that has been proposed to explain the success of contemporary invasions in native plant communities. The hypothesis is based on the observation that exotic species often have fewer herbivores and natural enemies than native species (Blossey and Notzold 1995; Keane and Crawley 2002). This decrease in herbivore load is thought to occur because native organisms are not adapted to utilize the invading species and the natural predators of the exotic were not introduced from its native range. Lack of herbivory, therefore, results in increased success of the exotic species relative to native species, which are susceptible to their own natural enemies (Keane and Crawley 2002).

Invasive exotic plants are often noted as being more competitive than native species (Dillenburgh et al. 1993; Fogarty and Facelli 1999; Callaway and Aschehoug 2000). This competitive superiority may be partly explained by preferential herbivory. Herbivory can shift competitive outcomes from a competitively superior species to a competitively inferior species that is subjected to less herbivore damage (Louda 1989; Clay et al. 1993; Hulme 1996b). If exotic species are generally subjected to lower rates of herbivory than natives, they may show relatively greater competitive abilities.

Traditionally, the enemy release hypothesis has been invoked to explain the lack of herbivory on exotic plant species by specialist herbivores (Wolfe 2002; Keane and Crawley 2002). This hypothesis has been extended to include generalist herbivores (Keane and Crawley 2002). This extension proposes that exotic plants may be less palatable than native species to herbivores overall, not just because they lack specialist herbivores. Therefore, exotic species should show reduced herbivory by generalist herbivores when compared to their native counterparts. Because generalist herbivores occur in all habitats and often in large numbers, their preferences may be more important than specialist herbivores in structuring plant community composition.

[1]Department of Plant Biology, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801
[2]Department of Biological Sciences, Eastern Illinois University, Charleston, Illinois 61920, author for correspondence

Grazing by slugs and snails can be extremely important in determining community composition and dynamics (Weiner 1993; Hanley et al. 1995a; Hanley et al. 1996; Nystrand and Granström 1997; Scheidel and Bruelheide 1999). While terrestrial gastropods are generalist herbivores, they also show strong feeding preferences (Nystrand and Granström 1997; Fenner et al. 1999; Peters et al. 2000). Selective grazing on vulnerable seedlings may influence the number and proportions of the species present and is thought to shape plant community composition in many different ecosystems (Hanley et al. 1995a; Hulme 1996a; Fenner et al. 1999). Furthermore, selective herbivory by a generalist herbivore can shift competitive superiority from palatable to unpalatable species, leading to changes in dominance (Louda 1989; Hanley et al. 1995a; Hulme 1996b).

To date, relatively few studies have examined the importance of feeding preferences in facilitating exotic plant invasion into plant communities (Keane and Crawley 2002). The objective of this study was to test the enemy release hypothesis using a generalist snail herbivore. We experimentally compared feeding preferences by a generalist snail herbivore between an exotic shrub species and local confamilial relatives. The enemy release hypothesis, as put forward by Keane and Crawley (2002), predicts that the generalist herbivore should prefer the native species to the exotic.

MATERIALS AND METHODS

Study species

Lonicera maackii (Rupr.) Maxim (Amur honeysuckle), is a shade intolerant shrub that grows well on forest edges and open woodlands, especially those that have been subjected to human or animal disturbances (Luken and Goessling 1995; Hutchinson and Vankat 1998). Like many non-indigenous species, *Lonicera maackii* negatively impacts native species, presumably through competition for light, water, and nutrients (Trisel 1997; Hutchinson and Vankat 1997; Gould and Gorchov 2000).

We compared feeding preferences of a generalist snail herbivore among the exotic shrub *Lonicera maackii* and three species of native shrubs, *Sambucus canadensis* L., *Symphoricarpos orbiculatus* Moench, and *Viburnum dentatum* L. These species are members of the Caprifoliaceae, have bird-dispersed fruits, and commonly share wooded habitats of the region. Some local populations of *Sambucus canadensis* have been shown to have cyanogenic herbivore defenses, though this is quite variable (Buhrmester et al. 2000).

We used *Anguispira alternata* Say, the striped wood snail, as the generalist herbivore in our experiments. This species has been considered to be the most abundant land snail in Illinois, occurring over a large area and in a wide range of habitats, including forests (Baker 1939), suggesting that it is a generalist herbivore. In previous laboratory work, it has shown strong feeding preferences between plant species (S. Meiners, pers. obs.). The snails used in these experiments were from a laboratory culture of locally collected snails that had been maintained for approximately one year. Snail populations were maintained in 10-gallon terraria (25 cm × 50 cm × 30 cm high) with a 3 cm layer of cypress mulch that was kept moist at all times with deionized water. Snails were fed weekly with various types of lettuce and were provided with petri dishes filled with plaster of Paris to provide minerals for shell development. Cultures were cleaned and divided twice a year to maintain reasonable densities within the terraria. Under these conditions, *A. alternata* grew well and reproduced freely.

Experimental design

We tested herbivore preferences using paired-choice feeding trials within a lab setting. These types of studies are commonly used to assess relative palatability and tend to reflect patterns of herbivory seen in natural systems (Scheidel and Bruelheide 1999; Fritz et al. 2001; Fortin and Mauffette 2002). Feeding trials took place from 25 June to 3 July 2002 in four 10-gallon glass terraria. The bottom of each tank was covered with a layer of shredded cypress mulch approximately 3 cm thick. All material was kept moist with deionized water throughout the feeding trials. Separate trials were conducted for each of the three comparisons.

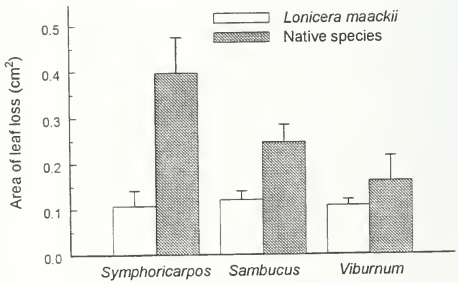


Fig. 1) Removal of leaf tissue by the snail *Anguispira alternata* in three preference trials. The exotic *Lonicera maackii* (unshaded bars) is compared to the paired native species (shaded bars). Statistical comparisons are made within each pair-wise trial only. Bars are mean ±1 standard error.

Table 1. ANOVA analyses of herbivore preferences between *L. maackii* and three native shrubs as measured by consumption of leaf tissue by the generalist herbivore *Anguispira alternata*. Block effect tests variation among test terraria.

Native test species	DF	MS	F	P	R^2
Symphoricarpus orbiculatus					
Species	1	1.67	13.84	0.001	0.52
Block	3	0.28	2.36	0.079	
Species x Block	3	0.57	4.72	0.005	
Error	72	0.12			
Sambucus canadensis					
Species	1	0.32	9.19	0.003	0.58
Block	3	0.07	2.08	0.110	
Species x Block	3	0.06	1.83	0.150	
Error	72	0.03			
Viburnum dentatum					
Species	1	0.32	0.81	0.370	0.37
Block	3	0.18	3.17	0.030	
Species x Block	3	0.14	2.37	0.078	
Error	71	4.06	0.06		

Within each of the four tanks, we placed ten individuals of *Anguispira alternata* of approximately the same size. Snails were not fed for 48 hours before each feeding trial. Immediately before each feeding trial, leaves of *L. maackii* and one of the native species were collected from local woodland populations in Coles County (Illinois). Leaves were selected to be of similar size and without previous herbivore damage. All leaves were kept in sealed plastic bags with deionized water to prevent desiccation until the herbivory trials began.

Ten leaves of each species (*L. maackii* and a native) were placed in each of the four tanks for each trial in two separate rows along the long axis of the aquaria. In the case of *Sambucus canadensis*, which has compound leaves, individual leaflets were used. Snails were introduced to the center of the tank and allowed to feed for a total of 72 hours. Leaf area was determined to the nearest 0.1 mm^2 for each leaf with a LI–3100 area meter (LICOR Inc., Lincoln, NE) before and after exposure to herbivory to determine the area removed by the herbivores. Tanks were misted with deionized water daily to prevent desiccation of the leaves and to maintain high humidity. ANOVA was used to compare the amount of leaf area removed between species in each trial and to control for the influence of individual tanks using SPSS (SPSS Inc., Version 11.0.1, Chicago, Illinois).

RESULTS

Across all three experimental feeding trials, *L. maackii* had consistently low amounts of leaf area removed by *A. alternata* (Fig. 1) with an average leaf loss of 0.11 cm^2 (1% of tissue removed). However, the native comparison species varied in their palatability to the native herbivores, with leaf area removal ranging from 0.40 cm^2 in *Symphoricarpos orbiculatus* to 0.16 cm^2 in *V. dentatum*. ANOVA analyses showed significant differences between *L. maackii* and two of the native shrub species, *Symphoricarpos orbiculatus* and *Sambucus canadensis* (Table 1). While showing slightly greater amounts of leaf removal than *L. maackii*, a significant difference between species was not observed in the *V. dentatum* trials. Two species, *Symphoricarpos orbiculatus* and *V. dentatum*, showed significant block, or species × block interaction effects. These effects can be attributed to tanks in which the herbivores did not feed on one or both species. The reason for lack of feeding in some tanks is not clear. In no case did the relative preference switch among tanks.

These results were qualitatively similar to those calculated from percent of leaf area removed. However, as initial leaf area was not significantly associated with amount of leaf tissue removed in any trial for either species (Spearman rank-sum correlations all $P > 0.05$) and because of the statistical problems associated with the analysis of proportions, we have chosen to present only absolute removal data.

DISCUSSION

The extension of the enemy release hypothesis to include the action of generalist herbivores is supported by this work (Keane and Crawley 2002). While a newly invading species would probably escape the specialist herbivores present within its original native range, generalist herbivores should be present in all habitats. Including generalist herbivores as a mechanism of invasion success makes herbivory a potentially important process in the successful invasion of many species, even those with no known specialist herbivores. It is not known, however, if generalist herbivores in the introduced range of a plant species react differently to the plant species than do generalist herbivores within its native range.

Our results indicated significant preference by *Anguispira alternata* for two of the three native taxa, *Symphoricarpos orbiculatus* and *Sambucus canadensis*, over *Lonicera maackii*. Similarly, Trisel (1997) found that woodland populations of *L. maackii* were subjected to less herbivore damage than co-occurring woody species. Our laboratory feeding trials suggest that relative palatability may be responsible for these differences in natural populations. Therefore, differential herbivore pressure may help to explain the relative success of this exotic species over native taxa.

This study was conducted using mature plant tissues. Because defensive chemistry often changes with the maturation of a plant, generalist herbivores often change their responses to seedlings and mature plants of the same species (Hanley et al. 1995b; Fenner et al. 1999). Because of their limited resources and small size, seedlings are also the demographic stage most susceptible to herbivore damage (Fenner 1987). Relatively small amounts of tissue removal from adult *L. maackii* plants may only result in minor reductions in reproductive output or in growth rates, whereas similar amounts of tissue removal in a seedling may result in dramatic decreases in survivorship or growth (Nystrand and Granström 1997). Therefore, if herbivore selectivity occurs at the seedling stage, it may be even more important in determining population dynamics than interactions between herbivores and mature plants.

Previous tests of the enemy release hypothesis have largely focused on quantifying rates of herbivory in native and introduced habitats (Wolfe 2002; Keane and Crawley 2002). While this is an important prediction of the hypothesis, it is not the only prediction relevant to understanding a species' success. The enemy release hypothesis also depends on herbivore pressure to fall predominantly on native species within the introduced range. As herbivore damage can result in decreased competitive ability, growth rates and fecundity (Lee and Bazzaz 1980; Louda 1984; Hendrix 1988; Ang et al. 1994), preferential herbivory on native species should lead to an increase in the relative performance of an invader. A change in herbivore pressure between native and introduced habitats alone does not automatically confer advantage to an exotic invader. Decreased herbivory on an invader must be coupled with herbivory on native plant populations for differential success to occur (Keane and Crawley 2002). Selective feeding by generalist herbivores may be one other mechanism leading to the success of exotic plant species in introduced habitats.

ACKNOWLEDGEMENTS

We thank Marybeth Brey and Brent Wachholder for assistance in the field and lab; R. U. Fischer and K. A. Yurkonis for comments on an earlier version of this manuscript. This research was funded by a Research Experiences for Undergraduates grant (NSF-0139028).

REFERENCES

Ang, B. N., L. T. Kok, G. I. Holtzman, and D. D. Wolf. 1994. Canada thistle (*Cirsium arvense*) response to simulated insect defoliation and plant competition. Weed Science 42:403—410.

Baker, F. C. 1939. Fieldbook of Illinois land snails. Illinois Natural History Survey Division, Manual 2, Urbana 166p.

Blossey B. and Notzold R. 1995. Evolution of increased competitive ability in invasive non indigenous plants: a hypothesis. Journal of Ecology 83:887—889.

Buhrmester, R. A., J. E. Ebinger and D. S. Seigler. 2000. Sambunigrin and cyanogenic variability in populations of *Sambucus canadensis* L. (Caprifoliaceae). Biochemical Systematics and Ecology 28:689—695.

Callaway, R. M. and E. T. Aschehoug. 2000. Invasive plants versus their new and old neighbors: a mechanism for exotic invasion. Science 290:521—523.

Clay, K., S. Marks, and G. P. Cheplick. 1993. Effects of insect herbivory and fungal endophyte infection on competitive interactions among grasses. Ecology 74:1767—1777.

Dillenburgh, L. R., D. F. Whigham, A. H. Teramura, and I. N. Forseth. 1993. Effects of vine competition on availability of light, water, and nitrogen to a tree host (*Liquidambar styraciflua*). American Journal of Botany 80:244—252.

Fenner, M. 1987. Seedlings. New Phytologist 106:35—47.

Fenner, M., M. E. Hanley, and R. Lawrence. 1999. Comparison of seedling and adult palatability in annual and perennial plants. Functional Ecology 13:546—551.

Fogarty, G. and J. M. Facelli. 1999. Growth and competition of *Cytisus scoparius*, an invasive shrub, and Australian native shrubs. Plant Ecology 144:27—35.

Fortin, M. and Y. Mauffette. 2002. The suitability of leaves from different canopy layers for a generalist herbivore (Lepidoptera: Lasiocampidae) foraging on sugar maple. Canadian Journal of Forest Research 32:379—389.

Fritz, R. S., C. G. Hochwender, D. A. Lewkiewicz, S. Bothwell and C. M. Orians. 2001. Seedling herbivory by slugs in a willow hybrid system: developmental changes in damage, chemical defenses, and plant performance. Oecologia 129:87—97.

Gould, A. M. A. and D. L. Gorchov. 2000. Effects of the exotic invasive shrub *Lonicera maackii* on the survival and fecundity of three species of native annuals. American Midland Naturalist 144:36—50.

Hanley, M. E., M. Fenner, and P. J. Edwards. 1995a. An experimental field study of the effects of mollusc grazing on seedling recruitment and survival in grassland. Journal of Ecology 83:621—627.

Hanley, M. E., M. Fenner, and P. J. Edwards. 1995b. The effect of seedling age on the likelihood of herbivory by the slug *Deroceras reticulatum*. Functional Ecology 9:754—759.

Hanley, M. E., M. Fenner, and P. J. Edwards. 1996. The effect of mollusc grazing on seeding recruitment in artificially created grassland gaps. Oecologia 106:240—246.

Hendrix, S. D. 1988. Herbivory and its impact on plant reproduction. p. 246—263. *In:* J. Lovett-Doust (ed.). Plant Reproductive Ecology Oxford University Press, New York.

Hulme, P. E. 1996a. Herbivores and the performance of grassland plants: a comparison of arthropod, mollusc and rodent herbivory. Journal of Ecology 84:43—51.

Hulme, P. E. 1996b. Herbivory, plant regeneration, and species coexistence. Journal of Ecology 84:609—615.

Hutchinson, T. F. and J. L. Vankat. 1997. Invasibility and effects of Amur honeysuckle in southwestern Ohio forests. Conservation Biology 11:1117—1124.

Hutchinson, T. F. and J. L. Vankat. 1998. Landscape structure and spread of the exotic shrub *Lonicera maackii* (Amur honeysuckle) in southwestern Ohio forests. American Midland Naturalist 139:383—390.

Keane, R. M and M. J. Crawley. 2002. Exotic plant invasions and the enemy release hypothesis. Trends in Ecology and Evolution 17:164—170.

Lee, T. D. and F. A. Bazzaz. 1980. Effects of defoliation and competition on growth and reproduction in the annual plant *Abutilon theophrasti*. Journal of Ecology 68:813—821.

Louda, S. M. 1984. Herbivore effect on stature, fruiting, and leaf dynamics of a native crucifer. Ecology 65:1379—1386.

Louda, S. M. 1989. Differential predation pressure: a general mechanism for structuring plant communities along complex environmental gradients. Trends in Ecology and Evolution 4:158—159.

Luken, J. O. and N. Goessling. 1995. Seedling distribution and potential persistence of the exotic shrub *Lonicera maackii* in fragmented forests. American Midland Naturalist 133:124—130.

Nystrand, O. and A. Granström. 1997. Forest floor moisture controls predator activity on juvenile seedlings of *Pinus sylvestris*. Canadian Journal of Forest Research 27:1746—1752.

Peters, H. A., B. Baur, F. A. Bazzaz, and C. Körner. 2000. Consumption rates and food preferences of slugs in a calcareous grassland under current and future CO_2. Oecologia 125:72—81.

Scheidel, U. and H. Bruelheide. 1999. Selective slug grazing on montane meadow plants. Journal of Ecology 87:828—838.

Trisel, D. E. 1997. The invasive shrub, *Lonicera maackii* (Rupr.) Herder (Caprifoliaceae): factors contributing to its success and its effect on native species (*Acer saccharum, Fraxinus americana, Quercus rubra, Prunus serotina*). Ph.D. Thesis, Miami University, Oxford. 200 p.

Weiner, J. 1993. Competition, herbivory and plant size variability: *Hypochaeris radicata* grazed by snails (*Helix aspera*). Functional Ecology 7:47—53.

Wolfe, R. W. 2002. Why alien invaders succeed: support for the escape-from-enemy hypothesis. American Naturalist 160:705—711.

ERIGENIA, Number 20, October 2004, pp 8—14

GERMINATION OF *Silene regia* SEEDS FROM FOUR SITES IN LAWRENCE COUNTY, ILLINOIS, FOLLOWING SCARIFICATION OR STRATIFICATION

Nicolette L. Flocca[1], Janice M. Coons[2], Henry R. Owen[2],
Brian J. Fischer[2], and Bob E. Edgin[3]

ABSTRACT: *Silene regia* Sims is an endangered prairie forb in Illinois where small isolated colonies are scattered. In Lawrence County, two sites (Allison Prairie and Chauncey Marsh) have fewer plants (6—23) than two other sites (County Road and Cemetery) with 26—45 plants. Information on seed germination in these isolated colonies is needed. Our goal was to evaluate seed germination of *S. regia* from colonies in Lawrence County, Illinois. *S. regia* fruits were collected from these four sites on August 9 and 19, 1999. Seeds were scarified by cutting the seed coat, or they were stratified at 2 C for 12 or 15 weeks. Seeds from Chauncey Marsh weighed less than those from other sites. With the exception of seeds from Chauncey Marsh, scarification increased germination within each site. When significant germination differences occurred due to site, they were apparent on stratified seed, where frequently Allison Prairie was highest and Chauncey Marsh was lowest. Germination differences between stratified and control seeds were inconsistent, although stratified seeds had up to 67% higher germination than control seeds when significant differences occurred. These increases in seed germination were most evident in seeds collected on August 9th and stratified for 12 weeks. Seed that was neither scarified nor stratified germinated after storage, indicating that scarification and stratification are not absolute germination requirements with after-ripened seeds. Seed germination at different sites did not correspond directly with population sizes, and multiple mechanisms were present for breaking seed dormancy in *S. regia*.

INTRODUCTION

Silene regia Sims (commonly known as royal catchfly) is an endangered prairie forb found sparingly in mesic prairies and oak savannas from southeastern Kansas to northeastern Illinois (Ladd 1995). Menges (1995) cites lack of fire and decreased pollinator visitation (ruby-throated hummingbirds in particular) as reasons for the diminished success of *S. regia*. More generally, habitat fragmentation and a severe decline in prairie habitats throughout the midwestern states also have contributed to the endangered status of this species. According to Menges (1995), fire and soil disturbance have a positive effect on seed germination, since seeds require light to germinate. Menges (1991) also indicated that inbreeding due to small population sizes of *S. regia* has a negative effect on seed germination. Western populations of *S. regia* were more genetically diverse than eastern populations, based on the Shannon-Weaver Index (Dolan 1994). Unlike the western populations of this species, genetic variation of *S. regia* was correlated positively with population size in the east (Dolan 1994).

Seed dormancy is reported in seeds of *S. regia*. Seeds of *S. regia* did not after-ripen during the summer (Baskin and Baskin 1988), but seed dormancy of *S. regia* was overcome by cold stratification (Baskin and Baskin 1988; Menges 1991, Menges 1995, Baskin and Baskin 1998). Studies focused on whether or not mechanical scarification

[1]Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, Illinois 61801 (Present address: Nicholas School of the Environment and Earth Sciences, Duke University, Durham, North Carolina 27708)
[2]Department of Biological Sciences, Eastern Illinois University, Charleston, Illinois 61920, author for correspondence.
[3]Illinois Nature Preserves Commission, Springfield, Illinois 62701

was required for germination of *S. regia* were not found, although seeds of *Saponaria officinalis* L. (bouncingbet), also in Caryophyllaceae, responded to scarification. Lubke and Cavers (1969) found that 100% of *S. officinalis* seeds germinated when scarified by nicking the seed coat with a razor. Moreover, scarification by shaking seeds for two days with limestone gravel and water from the Thames River in Canada, where the seeds were collected, yielded significantly higher germination of *S. officinalis* than no scarification, one day of scarification, or 3 to 5 days of scarification (Lubke and Cavers 1969). *S. regia* and *S. officinalis* also share a physical resemblance in the vegetative portions of their shoots, both having an opposite leaf arrangement and lanceolate leaves with entire margins. However, their success in the midwest is radically different, with the former being endangered and the latter being an invasive species originating from Europe.

S. regia originally was reported in eleven counties of Illinois, although currently it only remains in four (Herkert and Ebinger 2002). In counties where it remains, colonies are small and fragmented. At four sites where it is still found in Lawrence County, Illinois, population sizes (number of individual plants) in 1997, 1998 and 1999, respectively, were 6, 11 and 13 for Allison Prairie; 35, 45 and 32 for County Road; 26, 30 and 38 for Cemetery; and 12, 23 and 11 for Chauncey Marsh (B. Edgin, personal observations). For Allison Prairie, multiple stems were present on each plant (Edgin et al. 2003). Allison Prairie and Chauncey Marsh plants are the remnants of 25 plants that were introduced to each site in October 1993. The transplants had been grown from seed collected from the Cemetery the previous year. Plants at the County Road and the Cemetery are naturally occurring. It is unknown whether these small population sizes have resulted in inbreeding and reduced seed germination, as reported by Menges (1991) for other populations. The goal of this study was to evaluate the seed germination of *S. regia* from isolated colonies in Lawrence County, Illinois, and to compare how scarification and stratification affect their germination.

MATERIALS AND METHODS

Silene regia Sims fruits containing seeds were collected at four sites in Lawrence County, Illinois. These sites are within 32 kilometers of each other and have been labeled as Allison Prairie, County Road, Cemetery and Chauncey Marsh. Dried fruits were selected randomly from different plants with less than 10% of available fruits on each plant being removed. *Saponaria officinalis* L. seeds also were collected from the Cemetery site for a comparison in scarification studies. Fruits for *S. regia* were collected on August 9 and August 19, 1999, whereas those for *S. officinalis* were collected only on August 19, 1999. Seeds were removed from fruits by hand. Average seed masses were determined using three replications of 50 seeds each. Until the summer of 2000, seeds were stored at room temperature; and then they were moved to a seed storage chamber (4 C, 50% relative humidity).

Scarification studies

In fall 2000, 60 seeds of *Silene regia* from each of the four sites were randomly chosen, as well as 60 seeds of *Saponaria officinalis* from the August 19, 1999, collection. Thirty of the 60 seeds were scarified using a razor blade to break the seed coat. All seeds were dusted with thiram (tetramethylthiuram disulfide, 50% active ingredient) to decrease fungal contamination that might affect germination. Seeds were segregated by species, site, and scarification treatment. Each treatment of 30 seeds was divided into groups of ten for three replications. Low seed numbers were used due to limited seed availability. Seeds were placed into a 90 x 15 mm polystyrene Petri dish containing 5 ml of distilled water and two Whatman #1 filter paper disks. Petri dishes were sealed with Parafilm to maintain moisture within the dish. Dishes were placed into three 41.2 x 28.5 x 17.5 cm clear Rubbermaid® tubs with each tub containing a separate replication. Tubs were placed into a growth chamber at 25 C. The light intensity was 268 $\mu mol\ m^{-2}\ s^{-1}$ for 14 h daily. Germinated seeds and moldy seeds were counted daily for 16 days with germination defined as the time when the radicle could be seen emerging from the seed. No further tests were done on ungerminated seeds.

Stratification studies

Seeds of *Silene regia* from both collection dates were stratified by placing seeds in moist paper towels within plastic bags and storing at 2 C. Stratification began on two different dates, October 19, 1999, and November 19, 1999. After 12 and 15 weeks of stratification, seeds from each site and collection date were removed. Thus, four stratification treatments were used: started in October for 12 weeks, started in October for 15 weeks, started in November for 12 weeks, and started in November for 15 weeks. Control seeds were stored in glass jars at room temperature (23 C) during the stratification of the other seeds. Five seeds per dish were dusted with thiram and then placed into each of three 90 x 15 mm glass Petri dishes with two disks of Whatman #1 filter paper and 5 ml of distilled water. Low seed numbers were used due to limited seed availability. Petri dishes were placed into 41.2 x 28.5 x 17.5 cm clear Rubbermaid® tubs in a seed germinator at 25 C with an average light intensity of 46 $\mu mol\ m^{-2}\ s^{-1}$ for 16 h daily. Germinated seeds and moldy seeds were counted daily for 16 days with germination defined as the time when the radicle could be seen emerging from the seed. No further tests were done on ungerminated seeds.

Statistical analyses

The statistics program, Costat, was used to analyze the data by analysis of variance with a randomized complete block design, followed by mean separations using Duncan's multiple range test at the 5% level. Means and standard deviations also were calculated.

RESULTS

Seed characteristics

Table 1 shows the average masses of 50 *Silene regia* seeds harvested on August 9 and August 19, 1999. Seeds collected at Allison Prairie and County Road on August 9 were significantly heavier than those collected at the Cemetery and Chauncey Marsh on the same date. Seeds collected on August 19 from the County Road were significantly heavier than those from any other collection site. By comparison, the average mass of 50 *Saponaria officinalis* seeds was 77 ± 4 mg.

Seed coats of *Silene regia* seeds collected from all sites on August 9 were tan and dark brown, excluding those seeds from the Cemetery site, which were only tan. Seeds collected from Allison Prairie on August 19 were tan and maroon, while those collected from the Cemetery were gray and dark brown. The rest of the seeds collected on August 19 were tan and dark brown. Thus, differences in seed color were present.

Scarification

Table 2 shows scarification effects. A significant scarification effect for *Silene regia* was noted, with higher germination in scarified seeds than non-scarified seeds within each site, excluding Chauncey Marsh. *Saponaria officinalis* also demonstrated a significant scarification effect with 100% germination when scarified and no germination when not scarified. All of the scarified *S. regia* seed had less germination than that of the *S. officinalis*. Also, non-scarified *S. officinalis* seeds had the lowest germination of all the treatments (0%).

Table 1. Masses (mg) of 50 *Silene regia* seeds from four sites in Lawrence County, Illinois, on two harvest dates.

Site	August 9, 1999	August 19, 1999
Allison Prairie	41 ± 2 a[1]	36 ± 7 bc
County Road	46 ± 2 a	60 ± 5 a
Cemetery	34 ± 4 b	45 ± 3 b
Chauncey Marsh	31 ± 3 b	34 ± 6 c

[1] Mean ± standard deviation. Means followed by different letters within a column are significantly different (Duncan's multiple range test, 5% level).

Table 2. Scarification effects on germination percentages of *Silene regia* and *Saponaria officinalis* seeds collected from different sites in Lawrence County, Illinois.

	S. regia		*S. officinalis*	
Site	scarified	non-scarified	scarified	non-scarified
Allison Prairie	80 ± 20 ab[1,2]	23 ± 15 b		
County Road	83 ± 15 a	23 ± 25 b		
Cemetery	80 ± 17 ab	70 ± 17 a		
Chauncey Marsh	50 ± 10 b	30 ± 10 b	100 ± 0	0 ± 0

[1] Mean ± standard deviation. Means followed by different letters within a column are significantly different (Duncan's multiple range test, 5% level).

[2] All means within a site (scarified vs. non-scarified) were significantly different with the exception of the Chauncey Marsh site for *S. regia*.

Table 3. Germination percentages for *Silene regia* seeds collected from four sites on two harvest dates when stratified for 12 weeks.

	Stratification began 10/19/99		Control	
Site	Aug 9	Aug 19	Aug 9	Aug 19
Allison Prairie	100 ± 0 a [1,2]	60 ± 35 a	33 ± 23 a	13 ± 23 a
County Road	93 ± 12 a	53 ± 12 a	47 ± 31 a	33 ± 31 a
Cemetery	53 ± 31 b	87 ± 23 a	27 ± 31 a	47 ± 12 a
Chauncey Marsh	27 ± 23 b	47 ± 31 a	7 ± 12 a	40 ± 35 a

	Stratification began 11/19/99		Control	
Site	Aug 9	Aug 19	Aug 9	Aug 19
Allison Prairie	87 ± 12 a [3]	73 ± 23 a [4]	67 ± 12 a	20 ± 20 a
County Road	73 ± 23 a	40 ± 20 b	73 ± 23 a	47 ± 12 a
Cemetery	47 ± 12 a	73 ± 12 a	33 ± 12 a	53 ± 23 a
Chauncey Marsh	53 ± 31 a	47 ± 12 ab	60 ± 35 a	40 ± 20 a

[1] Mean ± standard deviation. Means for October initiation followed by different letters within a column are significantly different (Duncan's multiple range test, 5% level).

[2] Means for October initiation of stratified seeds were significantly higher than control seeds within a collection date and stratification date based upon two-way analysis of variance at 5% level.

[3] For seed collected on August 9, means for November initiation of stratified seed were significantly higher than control seeds at all sites, excluding County Road, based upon one-way analysis of variance at 5% level, which was conducted due to a significant interaction between site and stratification treatment.

[4] For seed collected on August 19, means for November initiation of stratified seed were not significantly different than for control seeds based upon two-way analysis of variance at 5% level.

Table 4. Germination percentages for *Silene regia* seeds collected from four sites on two harvest dates when stratified for 15 weeks.

	Stratification began 10/19/99		Control	
Site	Aug 9	Aug 19	Aug 9	Aug 19
Allison Prairie	100 ± 0 a [1,2]	60 ± 20 a [3]	53 ± 42 a	7 ± 12 a
County Road	67 ± 23 b	60 ± 0 a	67 ± 12 a	40 ± 20 a
Cemetery	73 ± 12 b	73 ± 12 a	13 ± 23 a	40 ± 20 a
Chauncey Marsh	7 ± 12 c	33 ± 23 a	13 ± 12 a	13 ± 12 a

	Stratification began 11/19/99		Control	
Site	Aug 9	Aug 19	Aug 9	Aug 19
Allison Prairie	93 ± 12 a [4]	53 ± 23 a [5]	47 ± 12 b	33 ± 12 a
County Road	60 ± 0 b	47 ± 12 a	87 ± 23 a	33 ± 12 a
Cemetery	60 ± 0 b	33 ± 12 ab	40 ± 0 b	67 ± 31 a
Chauncey Marsh	20 ± 20 c	20 ± 0 b	60 ± 0 b	27 ± 12 a

[1] Mean ± standard deviation. Means for October initiation followed by different letters within a column are significantly different (Duncan's multiple range test, 5% level).

[2] For seed collected on August 9, means for October initiation of stratified seed were significantly higher than control seeds only at the Cemetery site, based upon one-way analysis of variance at 5% level, which was conducted due to a significant interaction between site and stratification treatment.

[3] For seed collected on August 19, means for October initiation of stratified seed were significantly higher than for control seeds based upon two-way analysis of variance at 5% level.

[4] For seed collected on August 9, means for November initiation of stratified seed were not significantly different than control seeds based upon two-way analysis of variance at 5% level.

[5] For seed collected on August 19, means for November initiation of stratified seed were significantly higher than control seeds, based upon two-way analysis of variance at 5% level.

Table 2 reveals a significant site effect for scarified seeds of *S. regia*, in that Chauncey Marsh seeds had lower percent germination than seeds from the County Road site. A significant location effect also was revealed in the non-scarified seeds where germination of seeds for the Cemetery site was higher than all other sites.

Stratification

Tables 3 and 4 demonstrate that *Silene regia* seeds collected on August 9 and August 19 had variable final germination percentages following stratification for twelve weeks or fifteen weeks with different stratification start dates. Some sites yielded higher percent germination within a stratification treatment, yet few consistent patterns occurred across sites, except for frequently lower germination of seeds from Chauncey Marsh as well as higher germination of seeds from Allison Prairie within many stratification treatments. These site differences were more notable in stratified than control seeds. Differences between control and stratified seed germination within a site also were inconsistent; however, when they were different, stratified seed had a higher germination than control seed. Moreover, no apparent differences were observed in germination of *S. regia* seed related to stratification start date or duration.

DISCUSSION

Silene regia seeds showed dormancy that was partially broken by several factors, including scarification, stratification and after-ripening, although 100% germination rarely was achieved. None of these factors were an absolute requirement for germination. Rather, each of these techniques enhanced germination to varying degrees. These findings do not agree with literature on seed germination of *S. regia* in nature (Baskin and Baskin 1988, Menges 1991, Menges 1995, Baskin and Baskin 1998) that suggest stratification is required to break dormancy. Previous reports do not address the influence of scarification on these seeds. In the present study, germination occurred for seeds that were scarified, but were not stratified. In addition, in the present study, control seeds germinated when after-ripened even without stratification, unlike previous studies (Baskin and Baskin 1988). When the seed initially was collected, twenty seeds were used in a trial germination study in early fall 1999. None of the seeds germinated within two weeks. Further investigation is needed to document this effect more completely, since the present study was not designed to test after-ripening. These results suggest that the growth potential of freshly matured seed is insufficient to germinate without additional maturation, or elimination of the mechanical restriction of the seed coat. Since these various techniques all enhanced germination, the dormancy of these seeds may be related to both mechanical (seed coat) and physiological (embryo) factors.

Dormancy in seed of *S. regia* was more complex than for seed of *S. officinalis*, as dormancy of *S. officinalis* was broken completely by scarification, suggesting dormancy is controlled primarily by the seed coat. These results are consistent with the preliminary germination tests of Lubke and Cavers (1969), who found that scarification of *S. officinalis* by nicking the seed coat yielded 100% germination. For *S. regia*, both seed coat and embryo factors likely were involved, whereas for *S. officinalis*, only seed coat factors likely were involved. However, other seed factors such as seed set, distribution, longevity, and herbivory (Menges 1995, Edgin et al. 2003) also may influence the success of these two species.

Factors other than dormancy also may be affecting the germination of *Silene regia* seeds. One factor may be the location where the plants were grown. Although considerable variation occurred, germination usually was lowest for seed from Chauncey Marsh and highest for seed from Allison Prairie as compared to County Road and Cemetery. Both Chauncey Marsh and Allison Prairie had smaller population sizes in comparison to County Road and Cemetery, so seed germination was not related to population size. Seed from Chauncey Marsh had the lowest seed masses, suggesting a correlation with germination percentage and seed mass. Plants at Allison Prairie are in a gravel prairie restoration dominated by sparse clump-forming grasses. Cemetery and County Road plants are along roadsides. These three sites all receive strong direct sunlight throughout the day and have relatively little competition. Plants at Chauncey Marsh are in a dense stand of big blue stem (*Andropogon gerardii*) which may increase shading, reduce nutrient availability, and inhibit successful location of the plants by pollinators.

Another factor is the date that the seeds were collected. Germination of *Silene regia* seed showed no consistent pattern relative to these dates; i.e., seed from one date did not always have higher germination than seed from another date. However, significant differences between dates were observed. Seed color also varied on different collection dates and sites. Seeds collected on different dates may represent different maturities, and seed maturity affects germination (Baskin and Baskin 1998).

ACKNOWLEDGMENTS

Council on Faculty Research, Eastern Illinois University; Illinois Wildlife Preservation Fund, Illinois Department of Natural Resources; and Undergraduate Research Council, Eastern Illinois University.

LITERATURE CITED

Baskin, C. C. and J. M. Baskin. 1988. Germination ecophysiology of herbaceous plant species in a temperate region. *Am. J. Bot.*, 75:286—305.

Baskin, C. C. and J. M. Baskin. 1998. Seeds: ecology, biogeography, and evolution of dormancy and germination. Academic Press, San Diego, California. 666 p.

Dolan, R. W. 1994. Patterns of isozyme variation in relation to population size, isolation, and phytogeographic history in royal catchfly (*Silene regia*; Caryophyllaceae). *Am. J. Bot.*, 81:965—972.

Edgin, B., B. Garrard, G. C. Tucker, and J. E. Ebinger. 2003. Vegetation of Allison Prairie—A gravel prairie reconstruction in Lawrence County, Illinois. *Erigenia*,19:52—59.

Herkert, J. R. and J. E. Ebinger (editors). 2002. Endangered and threatened species of Illinois: Status and distribution, Volume 1 – Plants. Illinois Endangered Species Protection Board, Springfield, Illinois. 161 p.

Ladd, D. 1995. Tallgrass prairie wildflowers: a field guide. Falcon Publishing, Inc., Helena, Montana. 262 p.

Lubke, M. and P. Cavers. 1969. The germination ecology of *Saponaria officinalis* from riverside gravel banks. *Can. J. Bot.*, 47:529—535.

Menges, E. S. 1991. Seed germination percentage increases with population size in a fragmented prairie species. *Conserv. Biol.*, 5 (2):158—164.

Menges, E. S. 1995. Factors limiting fecundity and germination in small populations of *Silene regia* (Caryophyllaceae), a rare hummingbird-pollinated prairie forb. *Am. Midl. Nat.*, 133:242—55.

ERIGENIA, Number 20, October 2004, pp. 15—21

GROUND LAYER VEGETATION OF PIN OAK / SWAMP WHITE OAK FLATWOODS IN ILLINOIS

William E. McClain[1], Bob Edgin[2] and John E. Ebinger[3]

ABSTRACT: Flatwoods with an overstory dominated by *Quercus palustris* Muenchh. (pin oak) and *Q. bicolor* Willd. (swamp white oak) are rare in Illinois. Usually occurring as small inclusions within post oak flatwoods, these wet-mesic forests are small, usually less than a few ha in size and are commonly flooded for extended periods of time in winter, spring, and early summer. *Carex squarrosa* L. and *C. tribuloides* Wahlenb. dominate the ground layer in these forests along with numerous other Cyperaceae. The woody vine *Toxicodendron radicans* (L.) Kuntze (poison ivy) is usually plentiful, while *Cinna arundinacea* L. (stout wood reed) is a prominent summer component. A total of 139 plant species, representing 48 families, were encountered in these flatwoods.

INTRODUCTION

Flatwood forests dominated by *Quercus stellata* Wangh. (post oak) are common throughout much of the midwest (Braun 1950). This community, referred to as Southern Flatwoods (White and Madany 1978), is especially abundant in the southern half of Illinois and has been studied extensively (Braun 1950, Fralish 1988, Coates et al. 1992, Taft et al. 1995). Occasionally associated with these flatwoods are extremely wet sites where *Q. palustris* Muenchh. (pin oak) and *Q. bicolor* Willd. (swamp white oak) dominate the overstory. A dense soil or claypan at or near the surface in combination with the flat topography allows for the impoundment of water for extended periods of time during the growing season. This cover type is usually called the "*Quercus palustris-(Quercus bicolor*) Seasonally Flooded Forest Alliance" (Drake and Faber-Langendoen 1997), and shows similarities to the SAF type 65, Pin Oak-Sweet Gum forest (Eyre 1980). These closed canopy forests have an open understory characterized by few woody individuals, and a ground layer dominated by species of the Cyperaceae, with a few forbs and woody vines also being important components. The present study was undertaken to determine the structure and composition of ground layer vegetation in three pin oak/swamp white oak flatwoods in central and southern Illinois.

METHODS

The flatwoods were visited throughout the growing seasons of 1998 to 2001. Voucher specimens were collected, identified, and deposited in the Stover-Ebinger Herbarium of Eastern Illinois University, Charleston, Illinois (EIU). Criteria for designating native and non-native taxa followed Fernald (1950), Mohlenbrock (1986), and Gleason and Cronquist (1991). All vascular plant species are listed in Appendix 1 along with the author's (JEE) collecting number.

Ground layer vegetation was analyzed in late July of 2001 using m^2 plots located at one meter intervals along four 25 m transects placed near the center line of each woods (n = 25/transect). Odd-numbered quadrats were located on the right side of the transect line, even-numbered quadrats were located on the left side. A random numbers table (single digit) was used to determine the number of meters the quadrat was located from the transect line. Cover of each species was determined by using the Daubenmire cover class system (Daubenmire 1959) as modified by Bailey and Poulton (1968). Only plants rooted within the frame of the quadrat were recorded. Frequency (%), relative frequency, cover, relative cover, and importance value (IV) for each species were determined. As used here, the IV is the sum of the relative frequency and relative cover. Nomenclature follows Mohlenbrock (1986).

[1] Adjunct Research Associate in Botany, Illinois State Museum, Springfield, Illinois 62706
[2] Illinois Nature Preserves Commission, 1 Natural Resources Way, Springfield, Illinois 62702
[3] Center for Biodiversity, Illinois Natural History Survey, Champaign, Illinois 61820, author for correspondence

DESCRIPTION OF THE STUDY AREAS

The forests studied are located in the Effingham Plain Section of the Southern Till Plain Natural Division of Illinois (Schwegman 1973). These sites appeared to be relatively undisturbed and had no signs of recent timber harvest, although unsuccessful attempts had been made to drain the sites. The overstories of all sites were studied within the last few years (Tecic et al. 2001, Edgin et al. 2003). Pin oak dominated all sites, accounting for more than 50% of the IV, while swamp white oak accounted for at least 25% of the remaining IV. A few individuals of post oak, *Diospyros virginiana* L. (persimmon), *Ulmus americana* L. (American elm), *Carya ovata* (Mill.) K. Koch (shagbark hickory), and *Fraxinus pennsylvanica* Marsh. (green ash) were occasionally present. In these forests, woody seedling density varied from 1,000 to 6,880 stems/ha, while saplings ranged from 346 to 1,164 stems/ha, indicating a very open understory.

The three woods studied ranged from 2 to 4 ha in size, and were located on areas of extremely level topography. The soils were impervious silty clay loams to silt loams that had a claypan at or near the surface (Bramstedt et al. 1992). The soils were seasonally wet with pooled water during winter, spring, and early summer, but were relatively dry in late summer and fall. The surface and subsoil layers were acidic with the pH ranging from 3.5—5.0.

Venedy Flatwoods

Located near Mud Lake Road, this flatwoods is on the broad floodplain of the Kaskaskia River about 2.5 km north of Venedy, Washington County, Illinois (NE1/4 S22 T1S R5W). The overstory was examined by Tecic et al.(2001), and is surrounded by a post oak flatwoods community on three sides, with an open field to the west.

Eversgerd Flatwoods

This site, located on a broad terrace of Shoal Creek, about 4 km northeast of its confluence with the Kaskaskia River, and about 5 km south of Germantown, Clinton County, Illinois (NW1/4 S28 T1N R4W). Surrounded on all sides by a good quality post oak flatwoods, the overstory of both the post oak/swamp white oak and the pin oak communities were examined in detail by Edgin et al. (2003).

Island Grove Flatwoods

This flatwoods is located in the headwater region between Dietrick and Island creeks, 5 km NW of Wheeler, Jasper County, Illinois (SE1/4S 3 T8N R8E). Surrounded on the north and west by mesic forest and cultivated fields on the south and east, the overstory of this forest was examined by Tecic et al. (2001).

RESULTS AND DISCUSSION

The flora of these pin oak/swamp white oak communities consisted of 139 taxa, representing 93 genera and 48 families (Appendix I). Pteridophyta were poorly represented, accounting for only one species. Of the remaining taxa, 39 were monocots in seven families, and 99 were dicots in 40 families. Exotic species accounted for eight taxa, and 26 woody species were identified. The state endangered *Hypericum adpressum* Bart. (shore St. John's-wort) was found in the Venedy flatwoods in Washington County (Herkert and Ebinger 2002).

Members of the Cyperaceae dominated the ground layer, with *Carex squarrosa* L., *C. tribuloides* Wahlenb., and *Scirpus georgianus* Harper being among the top five herbaceous species on most sites (Table 1). These three species were extremely common, in many areas being the only species present, as indicated by their high relative covers and importance values. Though 13 *Carex* species were found in the study sites, most were not common, being restricted to a few small clumps on one or two sites, or were found near forest boundaries.

The only grass common to all three sites was *Cinna arundinacea* L. (stout wood reed), though *Leersia virginica* Willd. (white grass) and *Agrostis perennans* (Walt.) Tuckerm. (upland bent grass) were sometimes found in plots along with the non-native *Poa pratensis* L. (Kentucky bluegrass). Forbs were not particularly important; *Galium obtusum* Bigel. (wild madder) was the only forb present in plots at all three sites. Many other forbs were present, but were restricted to localized areas and usually occurred in low numbers.

Overall, woody vines were an important component of the ground layer with poison ivy and *Parthenocissus quinquefolia* (L.) Planch. (Virginia creeper) among the top five species at two sites. Tree seedlings were abundant, with pin oak and swamp white oak being fairly common along with occasional seedlings of persimmon, green ash, and American elm.

Of the 139 taxa recorded in the study sites, only 31 (22%) were present in the plots (Table 1). Most species were associated with the forest margins, or found in disturbed sites. Most were rare, and in a few instances, only one or a few individuals, were encountered. Also, at the forest edges, some species more commonly associated with post oak forests were found, with only incidental occurrences in the pin oak/swamp white oak forests. Of eight exotic species encountered, only Kentucky bluegrass was found in plots, the remaining usually occurred as scattered individuals, or associated with areas of disturbance or along forest margins.

Of the three flatwoods examined, Island Grove was the largest at 4 ha in size, and had the highest species diversity. This diversity was probably due to its proximity to open

fields and a high number of canopy openings. Dead-standing trees at Island Grove averaged 52 stems/ha, compared to less than 20 stems/ha at the other sites (Tecic et al. 2001). The open canopy created favorable conditions for higher species diversity and cover in the ground layer, with bare ground having an average cover of 57% at Island Grove. In contrast, bare ground averaged 85—88% at the other two sites.

ACKNOWLEDGMENTS

The authors would like to thank Gordon Tucker, Eastern Illinois University, and Tony Reznicek, University of Michigan, for help in identifying species of Cyperaceae, and Terry Esker, Illinois Department of Natural Resources, for help in the studies at the Island Grove site.

LITERATURE CITED

Bailey, A. W. and C. E. Poulton. 1968. Plant communities and environmental relationships in a portion of the Tillamook burn, northwestern Oregon. Ecology 49:1—13.

Bramstedt, M. W., W. R. Kreznor, B. C. Fitch, R. T. Risley and B. S. Simcox. 1992. Soil survey of Jasper County. United States Department of Agriculture, Soil Conservation Service, and Illinois Agricultural Experiment Station. U. S. Government Printing Office, Washington, D.C. 157 pp + maps.

Braun, E. L. 1950. Deciduous forests of eastern North America. Hafner Publishing Company, New York. xiv + 596 pp.

Coates, D. T., K. L. Lyman and J. E. Ebinger. 1992. Woody vegetation structure of a post oak flatwoods in Illinois. Castanea 57:196—201.

Daubenmire, R. 1959. A canopy coverage method of vegetation analysis. Northwest Science 33:43—64.

Drake, J. and D. Faber-Langendoen. 1997. An alliance level classification of the vegetation of the midwestern United States. The Nature Conservancy, Minneapolis, Minnesota. 397 pp.

Edgin, B., W. E. McClain, B. Gillespie and J. E. Ebinger. 2003. Vegetation composition and structure of Eversgerd post oak flatwoods, Clinton County, Illinois. Northeastern Naturalist 10:111—118.

Eyre, F. H. 1980. (editor). Forest cover types of the United States and Canada. Society of American Foresters, Washington, D.C. 148 pp + maps.

Fernald, M. L. 1950. Gray's Manual of Botany. 8th ed. American Book Company, New York. lxiv + 1632 pp.

Fralish, J. S. 1988. Diameter-height biomass relationships for *Quercus* and *Carya* in Posen Woods Nature Preserve. Transactions of the Illinois State Academy of Science 81:31—38.

Gleason, H. A. and A. Cronquist. 1991. Manual of the Vascular Flora of Northeastern United States and Adjacent Canada. 2nd ed. The New York Botanical Garden, Bronx. lxxv + 910 pp.

Herkert, J. R. and J. E. Ebinger 2002. (editors) Endangered and threatened species of Illinois: status and distribution, Volume 1 - Plants. Illinois Endangered Species Protection Board, Springfield, Illinois. 161 pp.

Mohlenbrock, R. H. 1986. Guide to the Vascular Flora of Illinois, revised and enlarged edition, Southern Illinois University Press, Carbondale, Illinois. vii + 507 pp.

Schwegman, J. E. 1973. Comprehensive plan for the Illinois Nature Preserves system. Part 2. The natural divisions of Illinois. Illinois Nature Preserves Commission, Rockford, Illinois. 32 pp + map.

Taft, J. B., M. W. Schwartz and R. L. Phillippe. 1995. Vegetation ecology of flatwoods on the Illinois till plain. Journal of Vegetation Science 6:647—666.

Tecic, D., W. E. McClain, D. E. Greuel and J. E. Ebinger. 2001. Structure and composition of pin oak/swamp white oak flatwood forests in Illinois. Transactions of the Illinois State Academy of Science 94:19—26.

White, J. and M. N. Madany. 1978. Classification of natural communities in Illinois. Pages 309—405. *In* J. White (editor). Illinois Natural Areas Inventory, Technical Report. Illinois Natural Areas Inventory, Urbana, Illinois. xix + 426 pp.

Table 1. Relative frequency, relative cover, and importance values of ground layer species in three pin oak/swamp white oak flatwoods in central and southern Illinois. Only species with an I.V. greater than 1 are included.

	Venedy			Eversgerd			Island Grove		
	Rel. Freq.	Rel. Cover	I.V.	Rel. Freq.	Rel. Cover	I.V.	Rel. Freq.	Rel. Cover	I.V.
Carex squarrosa	42.6	76.0	118.6	16.5	62.5	79.0	7.7	4.8	12.5
Carex tribuloides	21.6	4.5	26.1	21.6	5.7	27.3	17.3	21.0	38.3
Galium obtusum	8.8	1.5	10.3	10.2	1.5	11.7	0.3	0.0	0.3
Toxicodendron radicans	2.9	6.4	9.3	2.3	1.2	3.5	10.4	16.0	26.4
Cinna arundinacea	6.8	1.6	8.4	13.6	2.5	16.1	1.1	0.1	1.2
Parthenocissus quinquefolia	6.4	1.8	8.2	8.5	7.6	16.1	--	--	--
Scirpus georgianus	3.4	1.8	5.2	1.7	3.6	5.3	19.6	38.8	58.4
Impatiens capensis	2.0	0.9	2.9	--	--	--	14.7	5.4	20.1
Campsis radicans	0.5	2.0	2.5	--	--	--	--	--	--
Quercus bicolor	0.5	2.0	2.5	1.1	2.7	3.8	0.8	0.3	1.1
Poa pratensis	1.0	0.4	1.4	2.3	0.8	3.1	--	--	--
Aster lateriflorus	1.0	0.4	1.4	--	--	--	--	--	--
Quercus palustris	1.0	0.1	1.1	--	--	--	13.6	5.7	19.3
Diospyros virginiana	--	--	--	3.4	3.9	7.3	--	--	--
Leersia virginica	--	--	--	4.5	2.0	6.5	--	--	--
Eleocharis verrucosa	--	--	--	5.1	0.8	5.9	--	--	--
Aster vimineus	--	--	--	4.0	1.0	5.0	--	--	--
Polygonum punctatum	--	--	--	0.6	2.6	3.2	0.8	0.1	0.9
Rubus flagellaris	--	--	--	1.1	0.6	1.7	--	--	--
Boehmeria cylindrica	--	--	--	1.1	0.2	1.3	0.8	0.1	0.9
Bidens vulgata	--	--	--	0.6	0.5	1.1	--	--	--
Ranunculus septentrionalis	--	--	--	--	--	--	6.7	3.8	10.5
Scutellaria lateriflora	--	--	--	--	--	--	4.8	3.3	8.1
Others	1.5	0.6	2.1	1.8	0.3	2.1	1.4	0.6	2.0
Totals	100.0	100.0	200.0	100.0	100.0	200.0	100.0	100.0	200.0

APPENDIX I. The vascular species collected in pin oak/swamp white oak flatwoods listed alphabetically in major taxonomic groups. An asterisk indicates non-native species (*). Although most species were collected more than once, only one collecting number (JEE) is listed for each.

FERN AND FERN-ALLIES
Isoetaceae
Isoetes melanopoda Gay & Dur. 27604

DICOTS
ANACARDIACEAE
Toxicodendron radicans (L.) Kuntze 27575

APIACEAE
Cicuta maculata L. 27953
Cryptotaenia canadensis (L.) DC. 27938
Sanicula canadensis L. 30220

APOCYNACEAE
Apocynum cannabinum L. 27973

AQUIFOLIACEAE
Ilex decidua Walt. 27569

ASCLEPADACEAE
Asclepias incarnata L. 30226

ASTERACEAE
Aster lateriflorus (L.) Britt. 28176
Aster ontarionis Wieg. 28175
Aster pilosus Willd. 30446
Aster vimineus Lam. 29262
Bidens aristosa (Michx.) Britt. 30280
Bidens discoidea (T. & G.) Britt. 30275
Bidens frondosa L. 30449
Bidens vulgata Greene 30142
Boltonia asteroides (L.) L'Hér. 28177
Erechtites hieracifolia (L.) Raf. 30287
Eupatorium perfoliatum L. 30279
Eupatorium rugosum Houtt. 30447
Eupatorium serotinum Michx. 30227
Euthamia graminifolia (L.) Salisb. 30145
Helianthus divaricatus L. 30156
Helianthus mollis Lam. 30151
Lactuca floridana (L.) Gaertn. 30221
Liatris pycnostachya Michx. 30149
Parthenium integrifolium L. 30144
Rudbeckia subtomentosa Pursh 30289
Senecio glabellus Poir. 28316
Solidago canadensis L. 30425
Solidago missouriensis Nutt. 30148
Solidago nemoralis Ait. 30281
Vernonia gigantea (Walt.) Trel. 28167

BALSAMINACEAE
Impatiens capensis Meerb. 27578

BERBERIDACEAE
Podophyllum peltatum L. 27573

BIGNONIACEAE
Campsis radicans (L.) Seem. 27565

BRASSICACEAE
Cardamine bulbosa (Schreb.) BSP. 28276

CALLITRICHACEAE
Callitriche heterophylla Pursh 29515
Callitriche terrestris Raf. 27591

CAMPANULACEAE
Lobelia cardinalis L. 30228
Lobelia inflata L. 30147

CAPRIFOLIACEAE
**Lonicera japonica* Thunb. 30153
Symphoricarpos orbiculatus Moench. 27564
Viburnum prunifolium L. 27941
Viburnum recognitum Fern. 27948

CARYOPHYLLACEAE
Paronychia fastigiata (Raf.) Fern. 30285

CORNACEAE
Cornus racemosa Lam. 27952

EBENACEAE
Diospyros virginiana L. 27586

EUPHORBIACEAE
Acalypha rhomboidea Raf. 30450
Acalypha virginica L. 30283

FABACEAE
Amorpha fruticosa L. 30152

FAGACEAE
Quercus bicolor Willd. 27581
Quercus palustris Muenchh. 27951

HYPERICACEAE
Hypericum adpressum Bart. 30150
Hypericum punctatum Lam. 27970

JUGLANDACEAE
Carya ovata (Mill.) K. Koch 27577
Carya texana Buckl. 27571
Carya tomentosa (Poir.) Nutt. 27572

LAMIACEAE
Hedeoma pulegioides (L.) Pers. 30282
Lycopus virginicus L. 28170
Pycnanthemum tenuifolium Schrad. 27579
Scutellaria lateriflora L. 28172
Teucrium canadense L. 30229

LAURACEAE
Sassafras albidum (Nutt.) Nees 27576

OLEACEAE
Fraxinus pennsylvanica Marsh. 27585

ONAGRACEAE
Circaea lutetiana Aschers. & Magnus 27960
Ludwigia alternifolia L. 27967
Oenothera pilosella Raf. 27561

OXALIDACEAE
Oxalis stricta L. 27593

PHYTOLACCACEAE
Phytolacca americana L. 27592

POLEMONIACEAE
Phlox glaberrima L. 30146

POLYGALACEAE
Polygala sanguinea L. 27969

POLYGONACEAE
**Polygonum persicaria* L. 30309
Polygonum punctatum Ell. 30223
Polygonum virginianum L. 28168
**Rumex acetosella* L. 27580
Rumex verticillatus L. 27556

PRIMULACEAE
Lysimachia lanceolata Walt. 27563

RANUNCULACEAE
Ranunculus ambigens Wats. 29514
Ranunculus septentrionalis Poir. 28317

ROSACEAE
Geum canadense Jacq. 27950
Potentilla simplex Michx. 29513
Prunus serotina Ehrh. 27574
**Rosa multiflora* Thunb. 27583
Rosa setigera Michx. 27602
Rubus flagellaris Willd. 27589
Rubus pensylvanicus Poir. 27588

RUBIACEAE
Cephalanthus occidentalis L. 29802
Galium aparine L. 28315
Galium obtusum Bigel. 27587

SAXIFRAGACEAE
Penthorum sedoides L. 28171

SCROPHULARIACEAE
Gratiola neglecta Torr. 27597
Mimulus alatus Ait. 28165
Penstemon digitalis Nutt. 27582

ULMACEAE
Celtis occidentalis Willd. 27590
Ulmus americana L. 27600

URTICACEAE
Boehmeria cylindrica (L.) Sw. 27954
Pilea pumila (L.) Gray 28166

VIOLACEAE
Viola pratincola Greene 28275

VITACEAE
Parthenocissus quinquefolia (L.) Planch. 27584

MONOCOTS

ALISMACEAE
Alisma plantago-aquatica L. 29086

CYPERACACEAE
Carex annectens Bickn. 27945
Carex brevior (Dewey) Mack. 27566
Carex bushii Mack. 27972
Carex caroliniana Schwein. 27606
Carex cristatella Britt. & Brown 27605
Carex lanuginosa Michx. 29803
Carex lupulina Willd. 27562
Carex meadii Dewey 29552
Carex muskingumensis Schwein. 29805
Carex squarrosa L. 27601
Carex tribuloides Wahlenb. 30222
Carex vulpinoidea Michx. 27963
Eleocharis verrucosa (Svens.) Harms 27557
Eleocharis wolfii Gray 30154
Scirpus cyperinus (L.) Kunth 30451
Scirpus georgianus Harper 27599

IRIDACEAE
Iris shrevei Small 27937

JUNCACEAE
Juncus acuminatus Michx. 27603
Juncus brachycarpus Engelm. 27964
Juncus interior Wieg. 27568
Juncus marginatus Rostk. 27965
Juncus tenuis Willd. 27966

LILIACEAE
**Allium vineale* L. 27968

ORCHIDACEAE
Platanthera peramoema (Gray) Gray 30224

POACEAE
Agrostis perennans (Walt.) Tuckerm. 30284
Andropogon gerardii Vitman 30292
**Bromus racemosus* L. 27595
Calamagrostis canadensis (Michx.) Beauv. 30225
Cinna arundinacea L. 27559
Dichanthelium acuminatum (Sw.) Gould & Clark 27609
Elymus virginicus L. 27946
Festuca paradoxa Desv. 27961
Glyceria striata (Lam.) Hitchcock 27558
Leersia lenticularis Michx. 28173
Leersia virginica Willd. 28174
**Poa compressa* L. 27594
**Poa pratensis* L. 27607

Erigenia, Number 20, October 2004, pp. 22—28

Vegetation and Soils of the Oliver's Grove Region, Livingston County, Illinois

Mary A. Cooprider[1], Richard L. Larimore[1], John E. Ebinger[1,2], William E. McClain[3] and Vernon L. LaGesse[4]

Abstract: During the growing seasons of 1999 and 2000, soils were examined and woody vegetation surveyed in Oliver's Grove, just south of Chatsworth, Illinois. The topography of the region is a result of glacial activity that occurred around 17,000 years ago during the late Wisconsin glaciation. Glacial plains, moraines, and a large erosional channel characterize the landscape. *Quercus macrocarpa* Michx. (bur oak) probably dominated Oliver's Grove at the time of European settlement. Three remnants of this grove were examined during the present study. One woodlot was almost exclusively bur oak, another was dominated by bur oak with *Carya ovata* (Mill.) K. Koch (shagbark hickory) fairly common, while the third, found in a lowland area protected from past prairie fires, was dominated by *Tilia americana* L. (basswood) and *Celtis occidentalis* L. (hackberry). We compared General Land Office survey maps and past aerial photographs, and observed that much of the original forest and savanna were greatly decreased in size by the late 1900s, mostly due to land-use practices. In general, soils were not useful in determining the extent of this grove.

Introduction

Two types of groves historically occurred in the Grand Prairie Division of Illinois: (1) stream-side groves associated with well-developed water courses, and (2) isolated prairie groves on morainal ridges that were somewhat protected from fires by sloughs and ponds. The stream-side groves were usually extensive, extending for many kilometers along streams and rivers, occasionally broken where topography and increased fire frequency allowed fires to cross the waterways (Gleason 1913). These groves supported a great diversity of tree species (many being thin-barked and fire-sensitive) such as *Ulmus americana* L. (American elm), *Juglans nigra* L. (black walnut), *Tilia americana* L. (basswood), *Aesculus glabra* L. (Ohio buckeye), and *Celtis occidentalis* L. (hackberry) (Bogess and Bailey 1964, Boggess and Geis 1966, Schwegman et al. 1973). Fires fanned by the prevailing westerly winds commonly impacted the fire-sensitive trees located along the western margins of these large groves (Gleason 1913).

In contrast, the isolated prairie groves on morainal ridges were smaller, rarely exceeding a few square kilometers in size, with little tree diversity, being dominated by *Quercus macrocarpa* Michx (bur oak) and a few other fire resistant species (Gleason 1913, LaGesse et al. 1998, McClain et al. 1998). These groves occurred occasionally through the Grand Prairie Division of Illinois at the time of European settlement (Schwegman et al. 1973), but were particularly common in southern Ford and Livingston counties where a few remnants of these groves still exist. Most have been lost, however, and the remnants have been greatly modified by grazing, timber harvest, and fire suppression (LaGesse et al. 1998, McClain et al. 1998).

Oliver's Grove, located in the southeastern corner of Livingston County, Illinois, was about 2.4 km across and originally had a high diversity of woody species (Figure 1). Associated with morainal ridges and sloughs, this grove has characteristics of both an isolated prairie grove and a stream-side grove. During this study, the soils and the remnant forest communities of Oliver's Grove were examined to better understand the relationship between soil and vegetation in this grove.

Materials and Methods

Within Oliver's Grove, three forest remnants were selected as study sites. In 1999, a one ha study site (50 x 200 m) was located in the Turtle Pond Woodlot, while 0.5 ha study sites (50 x 100 m) were established in Gerth's Farm and Oliver's Grove Farm woodlots in 2000. Each study site was divided into quadrats 25 m on a side for ease

[1] Illinois Natural History Survey, 607 East Peabody Drive, Champaign, Illinois 61820
[2] Author for correspondence
[3] Illinois State Museum, Springfield, Illinois 62706
[4] 1619 South Pasfield, Springfield, Illinois 62701

of sampling. At each site, all living and dead-standing trees 10 cm dbh (diameter breast height) and above were identified and their diameters recorded. From the living tree 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. Determination of the IV follows the procedure used by McIntosh (1957), and is the sum of the relative density and the relative dominance of a given species.

In the Turtle Pond Woodlot, the only study site that is not presently heavily grazed, the density (stems/ha) of woody understory species was determined using nested circular plots 0.0001, 0.001, and 0.01 ha in size randomly located along a line transect through the study area. Four additional 0.0001 ha circular plots were located 6 m from each center along the cardinal compass directions. In the 0.0001 ha plots, tree seedlings (<50 cm tall) and all shrubs were counted; in the 0.001 ha plots, small saplings (>50 cm tall and <2.5 cm dbh) were counted; and in the 0.01 ha plots, large saplings (2.5—9.9 cm dbh) were counted. Nomenclature follows Mohlenbrock (1986).

Soils were sampled to a depth of at least 61 cm using a soil probe. Determining the presence or absence of a mollic epipedon was the primary focus during soil sampling. Soil cores were examined at 25 m intervals along line transects through the study areas.

Due to heavy compaction by cattle, some soils could not be adequately sampled and were assumed to be similar to adjacent soils in the same landscape position.

DESCRIPTION OF THE STUDY AREA

The study area is located within a region 3—7 km south of Chatsworth in Livingston County, Illinois (Sections 20, 21, 22, 27, 28, 29, 33, and 34 T26N R8E). The study sites were located at: Gerth's Farm Woodlot (SW1/4 Sec 21), Oliver's Grove Farm Woodlot (NE1/4 Sec 33), and Turtle Pond Woodlot (SW1/4 Sec 34). The South Fork of the Vermilion River (a tributary of the Illinois River) flows through the project area and was channelized in the late 1800s to early 1900s to drain this large wetland for agriculture. According to the General Land Office (GLO) survey records, the original position of the South Fork of the Vermilion River was mostly to the west side of the grove, and extended through an extensive marsh, sedge meadow, and lake (Figure 1). The elevation of the grove is approximately 225 m above mean sea level.

Deep glacial drift deposits are characteristic of this part of Illinois. The Woodfordian substage of the Wisconsin glaciation (the most recent glacial episode) left glacial drift ranging from 61—91 m thick in the study area (Illinois Department of Natural Resources, 2000). This drift is overlain and tempered with about 0.6 m of loess (Wascher et al. 1949). Glacial moraines in or near the study area include the Paxton, Chatsworth, and Gifford moraines that were formed during the Woodfordian substage of glacial advance of the Wisconsinan stage of the Pleistocene Series (Reinertsen et al. 1988, King 1990).

Much of the land surrounding the Oliver's Grove area was dominated by tallgrass prairie, a large portion of which was wet. Sloughs, sedge meadows, marshes, and glacial lakes are common features of the GLO survey records for this region. Pollen from core samples of two glacial lakes near Oliver's Grove has been studied to determine post-glacial climatic and vegetation trends in central Illinois since the last glacial episode. Voss (1937) and King (1981, 1986) characterized the pollen profile of Chatsworth Bog, located 3 km west of Oliver's Grove, while Griffin (1951) characterized the pollen profile of Turtle Pond just south of Oliver's Grove (Figure 1).

Oliver's Grove, at the time of European settlement, was home to the Pottawatomie and Kickapoo Indians, as it was an attractive place with timber and abundant game. The first permanent European settler, Franklin Oliver, moved his family into Kickapoo Grove (which later bore his name) in 1832; they maintained good relations with the Indians. Until the 1850s, Mr. Oliver and his family were the only white settlers in the township (Stoutemeyer 1991). At one time, Mr. Oliver owned as much as 4,000 acres of land including the large parcel of timber, as well as prairie and "swamp" (Haberkorn, no date).

RESULTS

Gerth's Farm Woodlot

The overstory of this upland forest remnant was dominated by bur oak with 33 stems/ha and an average diameter of 64.2 cm dbh. *Carya ovata* (Mill.) K. Koch (shagbark hickory), the only other tree species present, averaged 25.5 stems/ha with an average diameter of 42.8 cm dbh (Table 1). Due to excessive grazing, no woody understory was present, while ground layer vegetation was dominated by cool-season, introduced grasses.

The dominant soil type mapped in the area was a somewhat poorly drained alfisol (forest soil) (Higgins 1996). However, field evaluation of the soil revealed a very dark gray silt loam surface layer (a 30 cm mollic epipedon). This soil was compacted, heavily eroded, and moderately well drained.

Just northeast of Gerth's Farm Woodlot, a large erosional channel exists (Jokulhlaup channel) that was probably formed by water bursting forth from beneath the Chatsworth glacier (Leon Follmer, personal communication). This long, relatively linear wetland contained deep organic soils. This organic soil was mapped as "muck" by Wascher et al. (1949), but is now mapped as Thapto-Histic Fluvaquent (Higgins, 1996), a floodplain soil with a buried organic soil. Up to 0.9 m of mineral soil was overlaying the organic soil, suggesting that eroded sediment from surrounding land had covered the muck. This channel was originally the extensive wetland (shown as a lake in Figure 1) which protected much of Oliver's Grove from recurring prairie fires.

Oliver's Grove Farm Woodlot

The overstory of this lowland forest/savanna remnant was dominated by *Tilia americana* L. (basswood) with 36 stems/ha and an average diameter of 53.1 cm dbh. The other common overstory tree was hackberry with 26 stems/ha, though a few large *Quercus rubra* L. (red oak), some bur oaks and shagbark hickories were present. The large diameters of the red and bur oaks (85.9 and 79.1 cm dbh, respectively) indicate that these species were common components of this forest in the early 1800s, and were probably present in presettlement times. The remaining trees were mostly understory, thorny species (Table 1). Due to excessive grazing, few woody seedlings and saplings were present, while cool-season, introduced grasses dominated the ground layer vegetation.

The soils at this site were mapped as mollisols that ranged from poorly drained to well-drained (Higgins 1996). Field observation of a typical soil core showed a surface layer that was 15 cm of very dark gray and very dark grayish brown silt loam. Therefore, at this smaller scale of evaluation, these soils do not meet the criteria of a mollisol (prairie soil). It is possible that this soil could once have fit the criteria of a mollisol, but erosion resulted in the loss of the thick topsoil (mollic epipedon). Hydric soils were also present in part of this site. The typical soil core of these poorly drained soils had a thick, very dark gray surface. This thick surface layer was probably formed when a small pond or sedge meadow developed in a cut-off meander of the small stream that traverses the study area.

Turtle Pond Woodlot

This woodlot, on a north-facing slope, south of Turtle Pond, was dominated by bur oak with 131 stems/ha and an average diameter of 48.9 cm dbh (Table 1). Many small diameter understory trees were also present. These included *Crataegus mollis* (T. & G.) Scheele (red haw), *Ulmus rubra* Muhl. (slippery elm), *Prunus serotina* Ehrh. (wild black cherry) , and *Maclura pomifera* (Raf.) Schneider (Osage orange), with diameters between 12 and 20 cm dbh. The present owner indicated that the woods was heavily grazed until mid 1950s. This is probably the reason for the presence of the thorny understory trees, as well as the large number of thorny shrubs (Table 2). A few bur oak seedlings were recorded in the woods, but no saplings were encountered. Like most prairie groves, canopy closure due to fire suppression has resulted in many mesic species becoming common, while past grazing has promoted the increase in thorny species.

The dominant soil type mapped at this site was a somewhat poorly drained alfisol (Higgins 1996). Field observations revealed a moderately well drained soil lacking a mollic epipedon. This may have been the result of extensive erosion due to past grazing and agriculture. At mid-slope, the soil surface was a very dark gray to very dark grayish brown silt loam and ranged from 12.7—20.3 cm deep. Further down slope, a very dark gray to dark grayish brown mollic epipedon was present. In the lowland surrounding the pond was an organic soil (histosol) identified as Houghton muck (Higgins 1996).

DISCUSSION

Natural and historical information suggests the Oliver's Grove has significantly decreased in size since the region was settled. The original grove, as shown in the GLO survey maps, was relatively extensive, being 2.4 km across. Topography and wetlands protected the grove until early settlement times when fire frequency decreased. Aerial photographs from the mid to late 1900s show a continual decrease in the number and extent of trees resulting from land-use changes during that time period.

In 1833, the GLO surveyors described a large area east and south of Gerth's Farm Woodlot at various times as lake/marsh/pond/wet area; this and the South Fork of the Vermilion protected much of this region from major fires (Figure 1). In Oliver's Grove, the GLO surveyors encountered a diverse assemblage of many fire-sensitive woody species including black walnut, basswood, elm, and Ohio buckeye. To the west of the wetland, fires were more extreme and fire-tolerant bur oaks dominated.

A cross-section of a 160 year-old bur oak just northeast of Gerth's Woodlot revealed a fire scar from 1871, the year of the Chicago fire. A woman from the area, Mrs. Jane Patton, referred to that time in 1871: "The last days of September, Mr. Patton and I went to Indiana, and came home the first week of October, I think the driest time I ever saw, and a great fire at Chicago the 9th of October made us all feel sad; and forest fires filled the air so full of smoke that you could not see very far." (Gardner 1908).

Prior to European agriculture, fire was a major force determining species distribution. Fire-tolerant bur oak and shagbark hickory dominated the less protected Gerth's Woodlot, while fire-sensitive basswood and hackberry dominated the Oliver's Grove Farm Woodlot, which was protected from fire by an extensive wetland, a small stream, and a low bluff.

The soils of the Oliver's Grove region, like those of most of the prairie peninsula of central Illinois, are predominantly mollisols. These soils mostly developed under grass vegetation that dies back every year, the roots decomposing to form extensive organic matter creating a mollic epipedon. The mollisols found at the Gerth's Farm Woodlot correlated with the present vegetation. Soil-vegetation correlations at Oliver's Grove Farm Woodlot were inconclusive; either the vegetation was grassland and the mollic epipedon had been eroded or the historic vegetation was savanna/forest. At the Turtle Pond Woodlot, in contrast, the absence of a mollic epipedon in part of the area could suggest that the soil is an alfisol and the former vegetation was forest. However, factors other than vegetation can cause the lack of a thick, dark surface horizon. These factors include topography (i.e., a steep slope resulting in surface erosion), and time (i.e., grassland vegetation has just recently been established).

Mollisols usually form beneath grassland vegetation, but may develop during intermixed periods of forest/grassland dominance (Schaetzl, 1991). Therefore, the presence of mollisols does not preclude the existence of former forest vegetation and certainly does not preclude the presence of savanna. Furthermore, Buol et al., (1980) suggest that some well-drained forest soils may have mollic epipedons. That may be the case at the Oliver's Grove Farm Woodlot, where the soils were mapped as well-drained mollisols. Although some speculation may be accurate, direct correlations between soils and vegetation, for the purposes of determining previous vegetation in the Oliver's Grove region, are unreliable. In this study, soils were very useful for estimating former hydrologic characteristics of the region, but could not be used to determine the extent of the pre-settlement grove.

ACKNOWLEDGMENTS

We wish to thank the personnel of the Chatsworth Township Library for their help with historical information about the area; Dwayne Dassow, Hubert Gerth, Kenneth Kurtenbach, Loyd Kemnetz (local farmers) for historical information and access to their land; Leon Follmer (Illinois State Geological Survey) for help with geology, Dave Boomgarden (Natural Resources and Conservation Service) for help with geology, soils, and history; Dan Busemeyer, Dennis Keene, Jesse Kurylo, Loy R. Phillippe and Scott Wiesbrook for reviewing the manuscript.

LITERATURE CITED

Boggess, W. R. and L. W. Bailey. 1964. Brownfield Woods, Illinois: woody vegetation and change since 1925. American Midland Naturalist 71:392—401.

Boggess, W. R. and J. W. Geis. 1966. The Funk Forest Natural Area, McLean County, Illinois: woody vegetation and ecological trends. Transactions of the Illinois State Academy of Science 59:123—33.

Buol, S. W., F. D. Hole, and R. J. McCracken. 1980. Soil Genesis and Classification. Iowa State University Press, Ames. 404 pp.

Gardner, E. A. 1908. History of Ford County, Illinois. The S. J. Clarke Publishing Co., Chicago, Illinois.

Gleason, H. A. 1913. The relation of forest distribution and prairie fires in the middle west. Torreya 13:173—81.

Griffin, C. D. 1951. Pollen analysis of a peat deposit in Livingston County, Illinois. Butler University Botanical Studies 10:90—99.

Haberkorn, L. J. no date. History of Chatsworth, Illinois. Self published, Chatsworth, Illinois.

Higgins, S. K. 1996. Soil Survey of Livingston County, Illinois. USDA Natural Resources Conservation Service in cooperation with the Illinois Agricultural Experiment Station. Soil Report No. 156. 241 pp. + maps.

Illinois Department of Natural Resources, Office of Scientific Research and Analysis. 2000. Vermilion River (Illinois River basin) Assessment Area. Volume 1: Geological Resources. Illinois State Geological Survey, Champaign, Illinois. 81 pp., appendix.

King, J. E., 1981. Late quaternary vegetational history of Illinois. Ecological Monographs 51(1). pp. 43—62.

King, J. E. 1986. Chatsworth Bog: A Woodfordian Kettle. p. 71—75. *In* Follmer, L. R., D. P. McKenna, and J. E. King, (ed.) Quaternary records of central and northern Illinois. Ninth Biennial Meeting, American Quaternary Association, University of Illinois at Urbana-Champaign. Illinois State Geological Survey Guidebook 20. Illinois State Geological Survey, Champaign, Illinois.

King, J. E. 1990. Quaternary records of central and northern Illinois. ISGS Guidebook 20.

LaGesse, V. L., W. E. McClain and J. E. Ebinger 1998. Woody vegetation survey of Sibley Burr Oak Grove Nature Preserve, Ford County, Illinois. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 86: 129—135.

McClain, W. E., V. L. LaGesse, R. L. Larimore, and J. E. Ebinger. 1998. Black soil prairie groves of the headwaters region of east-central Illinois. Transactions of the Wisconsin Academy of Sciences, Arts, and Letters 86: 129—135.

McIntosh, R. P. 1957. The York Woods. A case history of forest succession in southern Wisconsin. Ecology 38:29—37.

Mohlenbrock, R. H. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale, Illinois. viii+507 pages.

Reinertsen, D. L., L. R. Follmer, J. M. Masters, and P. C. Reed. 1988. A guide to the geology of the Forrest area, Livingston County. Illinois State Geological Survey Field Trip Guidebook 1988-C, 27 pp., appendix.

Schaetzl, R. J. 1991. Factors affecting the formation of dark, thick epipedons beneath forest vegetation, Michigan, USA. Journal of Soil Science. 42: 501—512.

Schwegman, J. E., M. Hutchison, G. Paulson, G. B. Fell, W. M. Shepherd, and J. White. 1973. Comprehensive plan for the Illinois nature preserves system. Part 2, The natural divisions of Illinois. Illinois Nature Preserves Commission, Rockford. 32 pp. + map.

Stoutemeyer, H. L., 1991. Sands of Time. 150 years around Chatsworth, Illinois. HLPS Publishing, Chatsworth, Illinois. 319 pp.

Voss, J. 1937. Comparative study of bog on Cary and Tazewell drift in Illinois. Ecology 18:119-135.

Wascher, H. L., R. S. Smith, and R. T. Odell. 1949. Livingston County Soils. Univ. of Illinois Agricultural Experiment Station Soil Report 72. 56 pp. + maps.

Table 1. Densities (stems/ha), diameter classes, basal areas (m^2/ha), relative values, importance values and average diameters of the woody species in three woodlots of the Oliver's Grove Region, Livingston County, Illinois.

Species	Diameter Classes (cm) 10-19	20-29	30-39	40-49	50-59	60-70	70+	Total #/ha	Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Ave. Diam. (cm)
Gerth's Farm Woodlot													
Quercus macrocarpa	--	--	0.5	6.5	8.5	6.0	11.5	33.0	11.4	56.4	74.8	131.2	64.2
Carya ovata	--	3.0	5.5	13.5	3.0	0.5	--	25.5	3.8	43.6	25.2	68.8	42.8
Total	--	3.0	6.0	20.0	11.5	6.5	11.5	58.5	15.2	100.0	100.0	200.0	
Oliver's Farm Woodlot													
Tilia americana	0.5	2.0	4.0	8.0	12.0	4.5	5.0	36.0	8.667	24.6	41.3	65.9	53.1
Celtis occidentalis	5.0	5.5	5.0	2.5	1.5	1.0	5.5	26.0	4.995	17.7	23.8	41.5	42.6
Crategus mollis	37.5	5.0	--	--	--	--	--	42.5	0.727	29.0	3.5	32.5	14.2
Quercus rubra	--	--	--	--	--	0.5	3.5	4.0	2.351	2.8	11.2	14.0	85.9
Maclura pomifera	7.5	6.0	1.5	0.5	--	--	--	15.5	0.641	10.6	3.1	13.7	21.9
Quercus macrocarpa	--	--	--	0.5	--	0.5	2.0	3.0	1.559	2.0	7.4	9.4	79.1
Carya ovata	0.5	1.0	4.0	0.5	--	--	--	6.0	0.501	4.1	2.4	6.5	31.8
Juglans nigra	--	--	2.0	1.0	0.5	--	0.5	4.0	0.702	2.8	3.3	6.1	45.3
Gleditsia triacanthos	3.0	0.5	0.5	--	--	0.5	--	4.5	0.293	3.1	1.4	4.5	23.3
Others (6)	--	2.0	0.5	1.0	--	1.0	0.5	--	5.0	0.575	3.3	2.6	5.9
Total	56.0	20.5	18.0	13.0	15.0	7.5	16.5	146.5	21.01	100.0	100.0	200.0	
Turtle Pond Woodlot													
Quercus macrocarpa	3.0	5.0	21.0	47.0	36.0	9.0	10.0	131.0	26.558	40.1	82.8	122.9	48.9
Crataegus mollis	102.0	9.0	--	--	--	--	--	111.0	1.890	33.9	5.9	39.8	14.3
Ulmus rubra	29.0	1.0	--	--	--	--	--	30.0	0.390	9.2	1.2	10.4	12.4
Prunus serotina	18.0	2.0	--	--	--	--	--	20.0	0.363	6.1	1.1	7.2	14.6
Celtis occidentalis	5.0	1.0	2.0	1.0	1.0	--	1.0	11.0	1.173	3.4	3.7	7.1	30.7
Maclura pomifera	9.0	3.0	--	--	--	--	--	12.0	0.310	3.7	1.0	4.7	17.6
Juglans nigra	1.0	--	1.0	3.0	1.0	--	--	6.0	0.789	1.8	2.5	4.3	39.4
Quercus rubra	1.0	1.0	--	--	--	--	1.0	3.0	0.552	0.9	1.8	2.7	41.3
Others (3)	3.0	--	--	--	--	--	--	3.0	0.034	0.9	0.0	0.9	
Total	171.0	22.0	24.0	51.0	38.0	9.0	12.0	327.0	32.059	100.0	100.0	200.0	

Table 2. Densities (stems/ha) of the shrubs, woody vine and tree seedlings (<50 cm tall), small saplings (>50 cm tall <2.5 cm dbh), and large saplings (2.5—9.9 cm dbh) at Turtle Pond Woodlot, Livingston County, Illinois.

Species	Seedlings	Small Saplings	Large Saplings
Tree species			
Prunus serotina	900	850	325
Celtis occidentalis	600	--	--
Quercus macrocarpa	100	--	--
Viburnum prunifolium	300	--	--
Crataegus mollis	--	--	305
Crataegus pruinosa	--	--	100
Maclura pomifera	--	--	5
Zanthoxylum americanum	--	450	--
Ulmus rubra	--	250	190
Totals	1900	1550	925
Shrubs and vines			
Ribes missouriense	1300		
Rosa multiflora	700		
Rubus pensylvanicus	500		
Toxicodendron radicans	400		
Celastrus scandens	200		
Rubus occidentalis	100		
Totals	3200		

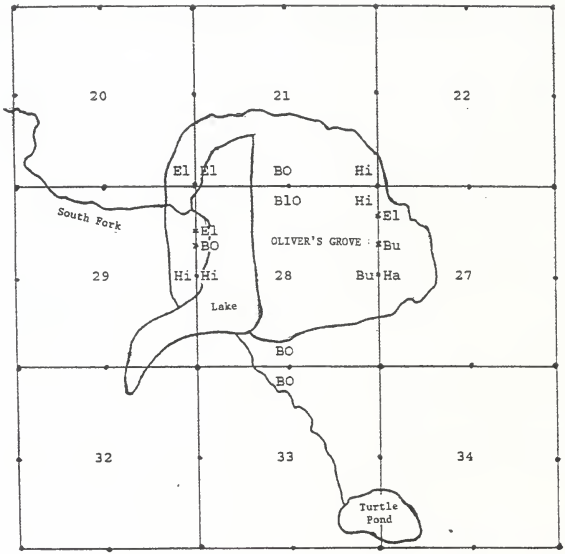


Figure 1. A portion of the plat for T26N R8E that includes Oliver's Grove, just south of Chatsworth, Livingston County, Illinois. The survey of the county was started 13 October 1833 and completed on 22 May 1834 by James Dunn, William Phillips and Washington Atchinson. (BO = bur oak, Blo = black oak, Bu = buckeye, El = elm, Ha = hackberry, Hi – hickory.)

Erigenia, Number 20, October 2004, pp. 29—36

Biotic and Abiotic Effects on Lichen Community Structure in an Illinois Cemetery

Brent Wachholder[1], Matt S. Burmeister[1], Andrew S. Methven[1,2] and Scott J. Meiners[1]

Abstract: The effects of abiotic factors and interspecific interactions on lichen communities were examined on twenty-five dolomitic marble gravestones within Shiloh Cemetery, Coles County, Illinois. Stone height positively associated with species richness and total lichen cover, while proximity to a wooded stream was associated with increased cover of several species. A positive association between *Xanthoria fulva* and *Physcia adscendens* is believed to a true biotic interaction, possibly due to a cooler post-colonization microclimate or photobiont availability. Competition between lichen species appears to be largely mediated by abiotic factors, such as air pollution, humidity, and proximity to sources of colonizing lichens.

Introduction

Lichen community structure and dynamics are driven by many of the same processes that control larger vascular plant communities, including herbivory, dispersal, competition, and facilitation (John 1989, Lawrey 1991, Hestmark et al. 1997, Meier et al. 2002). However, saxicolous lichen community interactions are not as well understood, as research is hindered by their slow growth and complex holosymbiotic nature (Lawrey 1991, Ahmadjian 1993). While the importance of abiotic environmental factors, such as air pollution and substrate aspect, is well established, there is little direct field evidence for biotic interactions such as competitive exclusion within saxicolous lichen communities (Ferry et al. 1973, Armstrong 1991, Lawry 1991). This study examines the impacts and interactions between biotic and abiotic factors on lichen cover and community composition in an Illinois cemetery.

In Illinois, where exposed stone is geographically rare, cemeteries can be important habitats for saxicolous lichens and grave markers provide the primary substrate for saxicolous lichen species (Hyerczyk 1996; Hyerczyk 1997). Cemeteries also offer several advantages as study sites for lichen community succession; 1) the presence of numerous similar substrates allows replicated sampling; and 2) dates of death on monuments provide a putative date when the stone was first exposed to colonization. Hill (1994) found that lichen communities on calcareous tombstones are colonized within 20 years by four or five aggressive pioneer species and that additional species accumulate at a rate of two per century. However, unlike many plant communities where ruderals are replaced by later successional species, pioneer species typically persist as the community matures. Woolhouse et al. (1985) found that lichen richness and diversity on five natural stone faces increased with age, while cover increased for all but the oldest site where

[1] Department of Biological Sciences, Eastern Illinois University, Charleston, Illinois 61920
[2] Corresponding author, e-mail: asmethven@eiu.edu

senescence of lichens reduced cover. It has been suggested that this persistence is due to recolonization by pioneer species as established lichens fall from the substrate, opening new areas for colonization (Lawry 1991, Hill 1994). Armstrong (1991) determined that competitive interactions between species varied with aspect (direction in which a substrate is facing), another abiotic factor which affects the distribution and abundance of lichen species (Weber and Budel 2001).

In this study, we examined the effects of a number of abiotic factors that alter microclimate conditions and nutrient availability, including aspect, total height of monuments, stone color, placement of monuments beneath overhanging trees, distance from southern and eastern edges of sampling area, and relative elevation. The effect of total stone height was considered because dolomitic rock can buffer acidic precipitation (Saunders and Wood 1973). We investigated stone color because darker colored stones should have a hotter, drier microclimate. Placement of stones beneath overhanging trees could increase availability of nitrogen and other nutrients, especially from increased bird droppings. Position of stones relative to landscape features within the cemetery was considered because distance from roads, streams, and wooded areas can alter microclimate and colonization rates. Elevation was included in the study because higher, more exposed stones will have a drier, hotter microclimate.

Biotic factors considered in the study included interactions between cover of individual species and community descriptors such as total cover and richness, in addition to interactions between pairs of individual species. We hypothesized that lichen cover and richness on dolomitic marble monuments at Shiloh Cemetery would increase with age and that community composition would vary between stones of different color, height, and aspect.

STUDY AREA

Shiloh Cemetery (39°23'24"N, 88°14'08"S; Sec.19 T11N R9E) is located in Coles County, Illinois, approximately 12 km southwest of Charleston. Best known as the burial place of Abraham Lincoln's father and stepmother, it contains granitic and dolomitic marble monuments dating from its establishment in the 1830s to the present day. The cemetery extends to the north and west from Shiloh Church, sloping downhill toward a small creek surrounded by trees and brush (Fig. 1). It is bordered by the Lincoln Heritage Trail to the south and surrounded by a matrix of row crop fields, rural residences, pastures and feedlots. Cemetery monuments to the north of Shiloh Church are primarily polished granitic stones impervious to colonization by lichens; therefore our study was limited to the older, western section dominated by dolomitic marble monuments.

METHODS

We examined lichen communities on twenty-five dolomitic marble gravestones within Shiloh Cemetery. A 10 cm by 20 cm transparent sample grid, divided into two hundred 1-cm^2 squares, was placed 1 meter above the ground on the north- and south-facing sides of each gravestone. The longer axis of the grid was vertically oriented and placed in the center of the stone. All stones sampled were obelisks no more than a few centimeters wider than the sampling grid. Lichen species found within the sampling area were recorded as present on that aspect as a measure of frequency.

The number of 1 cm^2 squares occupied by each lichen species in the sample grid was recorded as a measure of cover. Relative cover was calculated as the fraction of total lichen cover (14,339 cm^2) contributed by a particular species. Relative frequency was calculated as the number of times a species was recorded as present divided by the total number of observations (i.e., fifty different stone faces were sampled, so if five species had observed, and all five were found within every sampling area, the total number of records would be (5 x 50) = 250, and the relative frequency of each species would be (50 / 250) = 0.20). To minimize confounding effects, stones containing carvings or inscriptions within the sampling area were not considered. Stones with angled sides were also rejected. Name of decedent, date of death (carved putative date), stone color (light or dark), and location were recorded. Stones too weathered to be read were identified and dated by consulting records (Coles County Historical Society 1984). Relative elevation for each stone was determined with a surveyor's transit and height pole. Lichens were identified using both morphological characters and chemical tests according to Brodo et al (2001) and Hale (1979). Nomenclature follows Esslinger (1997). Voucher specimens were deposited in the Cryptogamic Herbarium of Eastern Illinois University (EIU).

We statistically examined the effects of aspect, stone color, and location beneath overhanging trees on lichen cover, species richness, and community composition using ANOVA. We used Pearson's product-moment correlation to examine relationships between normally distributed variables, including relative elevation, stone height, stone age, location on north-south axis, and cover of three lichen species. Non-parametric Spearman rank correlations were used for correlations involving all other variables due to non-normal data distributions. Note that this study does not constitute a complete lichen flora of Shiloh Cemetery, as several additional lichen species were observed outside of the sampling areas.

RESULTS

Age of stones ranged from 87 to 124 years, with a mean of 112.2 years. A total of seven foliose species and one crustose species were observed within sampling areas (Table 1), with *Xanthoria fulva*, *Lecanora dispersa*, and *Physciella chloantha* being the dominant species in both relative cover and frequency (Fig. 2).

Abiotic effects

There was no difference in total cover or cover of any individual species between north and south aspects, stones of different colors, or stones with overhanging trees (ANOVA; all $P \geq 0.05$). Spearman rank-sum correlation found no significant relationship between stone age or relative elevation and species richness, total lichen cover or cover of any individual species (all $P \geq 0.05$). There was a positive relationship between distance from the road at the southern edge of the cemetery and total cover ($R = 0.341$, $P = 0.016$), cover of *Physcia adscendens* ($R = 0.467$, $P = 0.001$), cover of *Myelochroa galbina* ($R = 0.320$, $P = 0.023$), and total species richness ($R = 0.381$, $P = 0.006$); see Table 2. Changes in the cover of two species were also associated with location of stones along the east-west axis of the cemetery; cover of *X. fulva* increased on stones to the west ($R = 0.288$, $P = 0.012$), while *P. chloantha* showed the opposite effect ($R = -0.413$, $P = 0.003$). There was also a positive correlation between stone height and total lichen cover ($R = 0.580$, $P < 0.001$). No significant effects were noted for any other abiotic factors.

Biotic effects

Spearman rank-sum correlation found a positive correlation between two pairs of species: *X. fulva* and *P. adscendens* ($R = 0.386$, $P = 0.006$) and *M. galbina* and *P. adscendens* ($R = 0.355$, $P = 0.011$); see Table 3. There was also a negative relationship between *P. adscendens* and *P. chloantha* ($R = -0.461$, $P = 0.001$). *Physcia adscendens* was also positively correlated with stones that had higher total cover ($R = 0.480$, $P < 0.001$), while *P. chloantha* was positively correlated with stone with lower total cover ($R = -0.354$, $P < 0.012$).

DISCUSSION

All lichen communities were in essentially the same seral stage, having an age range of only 37 years. The slow growth rate of saxicolous lichens, relatively even age of stones, and lack of modern dolomitic monuments precluded direct successional interpretations. According to Hill's (1994) observations, however, older stone should have gained one or two additional species, producing some measurable variation in richness or cover due to age. The fact that age was a poor indicator of cover and community structure suggests either a depauperate lichen flora due to historic atmospheric pollution or a historical cleaning of monuments.

The dominance of common, pollution-tolerant lichens and the association between increased lichen cover and stone height suggests that sulfur dioxide or other forms of acid deposition are limiting growth. Increased height of calcareous stone above the sampling area reduces the negative effects of acid deposition, as basic substrates increase the pH of runoff and remove harmful ions from solution (Saunders and Wood 1973). McCune (1988) found that differences in atmospheric sulfur dioxide, a major component of acid precipitation, accounted for 60 to 80 percent of the variability in lichen community structure in Indianapolis, Indiana, USA, where mean annual sulfur dioxide concentrations at seven sites ranged from 23 to 40 $\mu g/m^3$. Levels of sulfur dioxide as low as 5—10 $\mu g/m^3$ can damage sensitive lichens (Will-Wolf 1980b) and changes in lichen community structure have been noted with levels as low as 4 $\mu g/m^3$ (Will-Wolf 1980a).

Atmospheric concentrations of sulfur dioxide have declined throughout central Illinois for the last thirty years due to improved industrial practices and reduced reliance on high-sulfur coal (Illinois Environmental Protection Agency 1974—2002; see Fig. 3). Champaign, Illinois, the nearest state EPA monitoring site (approximately 27 km to the north) reported a mean annual sulfur dioxide concentration of 13.1 $\mu g/m^3$ in 1983, the first year for which data are available (Illinois Environmental Protection Agency 1984). By 2000, the annual mean sulfur dioxide concentration had fallen to 5.2 $\mu g/m^3$, although a level of 10.5 $\mu g/m^3$ was reported as recently as 1997 (Illinois Environmental Protection Agency 1998, 2001).

Lecanora dispersa is one of the most pollution-tolerant lichens and is often a component of lichen communities immediately outside urban "lichen deserts" created by sulfur dioxide pollution (Farkas et al 1985, Brodo 2001). A European congener, *L. conizaeoides* Nyl. ex Crombie, actually increased in abundance in areas of the United Kingdom with high levels of sulfur dioxide pollution (Hawksworth et al 1973). The competitive advantage conferred by its extreme pollution tolerance is so pronounced that *L. conizaeoides* has been erroneously described as sulfur dioxide-requiring (Seaward 1990). We believe that the high frequency of *L. dispersa* is partly attributable to competitive release, as historic high levels of pollution eliminated other lichens from the pool of available species, and to a broad abiotically-facilitated competitive advantage, as current low to moderate levels of pollution continue to favor *L. dispersa*.

Increased cover of *X. fulva* was associated with increased cover of *P. adscendens*. This effect could be due to increased photobiont availability. Lichens reproduce via fragments, isidia, or soredia, which contain both mycobiont and photobiont cells, or through fungal spores which must encounter cells of a suitable photobiont to create a lichen thallus. Since *X. fulva* often produces conidia and both species probably use *Trebouxia* species as their photobiont (Brodo 2001, Dahlkild et al 2001), the presence of *P.*

adscendens may provide a vital reservoir of potential photobiont cells for conidia of *X. fulva*.

Lichen communities can also show biotic threshold effects, where increasing lichen cover changes abiotic conditions and subsequent community structure. Such a biotically facilitated threshold effect may explain the positive correlations between *P. adscendens* and total cover, and cover of both *X. fulva* and *M. galbina*. Hestmark et al. (1997) measured photosynthetic rates across lichen thalli and found that, during periods of heat stress, the center of the thallus often remains photosynthetically active while the outer edges of the thallus are forced into physiological dormancy. Increasing thallus diameter results in lower temperatures and reduced water loss, resulting in greater photosynthetic activity; therefore, contact between the thalli of individual lichens can increase the fitness of both by favorably improving microclimate. We believe that this mechanism, rather than photobiont compatibility, satisfactorily explains the positive correlations between these foliose species, since all of the lichens found share *Trebouxia* as their photobiont.

This same effect may also explain the negative association between *P. chloantha* and total cover and the positive association between *P. adscendens* and total cover. *Physciella chloantha* is well adapted to xeric conditions (McCune et al. 1998). This may make it a superior competitor on dry, exposed stones which *P. adscendens* cannot tolerate, as it is limited to cooler, more heavily colonized areas.

Distance of a monument from the southern and eastern edges of the cemetery was the other significant abiotic factor. We initially suspected this was due to either nitrogen enrichment from nearby agricultural activities, or caused by pollution from the Lincoln Heritage Trail bordering Shiloh Cemetery to the south. Nitrogen enrichment can profoundly alter species composition (Sochting 1995, de Bakker 1989). Since both *P. adscendens* and *Xanthoria* species are pollution-tolerant and highly nitrophytic (Hawksworth 1973, Stringer and Stringer 1974, Armstrong 1991, Richardson 1991, Fenn et al. 2003, Gaio-Oliveira et al. 2004), we hypothesized that cover of these species would increase on stones closer to the road and cattle farm. This was not the case; *P. adscendens* cover increased with distance from the road while *X. fulva* cover was unaffected by location on a north-south axis. Increased richness and cover of lichens to the south, and increased cover of *X. fulva* to the west, may be due to increased humidity from the nearby wooded stream, which aids growth and establishment.

Most of the species observed on gravestones, with the notable exception of *L. dispersa*, are primarily corticolous lichens (Brodo 2001) and none are considered uncommon or rare. The relatively long distance to other significant rock substrates and the proximity of mesic woodlands, combined with decades of moderately high atmospheric sulfur dioxide pollution, has resulted in a facultative saxicolous lichen community dominated by common, pollution-tolerant corticolous lichens. Occasional disturbance of lichen communities (e.g., headstone cleaning) may eliminate species that arrive via infrequent, long-distance or random dispersal events, and thus favor species that can readily recolonize stones from established populations on nearby trees. High relative frequencies and low cover of the five least common species suggests they may be rebounding from intense pollution-facilitated competition as sulfur dioxide levels decrease, although local agricultural inputs may continue to favor nitrophytic lichens. It is also possible that this colonization effect, where the wooded stream served as a reservoir for the primarily lignicolous lichens observed, accounts for the positive relationship between northern and western placement of stones and total cover and species richness. However, the negative relationship between the rather xerophytic *P. chloantha* and proximity to the stream argues that humidity, rather than proximity to source populations, influenced the distribution of this species.

CONCLUSIONS

Air pollution and humidity appear to be the primary factors shaping lichen community structure at Shiloh Cemetery. All of the significant abiotic variables (stone height and distance from the northern and western edges) can be related to air quality. Our results did suggest that biotic interactions, such as facilitation of *P. adscendens* by *X. fulva*, can play an important, though secondary, role. These biotic effects can only be confirmed by additional comparative studies over a much longer period of time.

Human environmental disturbance occurs on a much shorter time scale than lichen growth and succession and, therefore, anthropogenic alterations seem to favor the fastest-growing, weediest species, a development parallel to that seen in agricultural and aquatic systems subject to human disturbance and eutrophication (Fenn et al. 2003). Lichenologists still need to determine whether improved overall air quality will lead to increased richness and diversity or if historic and current pollution and nitrogen enrichment will stall changes in species composition.

ACKNOWLEDGMENTS

The authors wish to thank Chris DeLine, Lynze Greenwood-DeLine, Jennifer Kimmey, Krystal Schrage, and Jamie Jordan for assistance with data collection. We are also very grateful to two anonymous reviewers for their illuminating comments.

LITERATURE CITED

Ahmadjian, V. 1993. *The Lichen Symbiosis.* Hoboken, NJ: Wiley.

Armstrong, R.A. 1991. Competitive interactions between four foliose lichens on north and south facing rock surfaces. *Environmental and Experimental Biology* **31**:51—58.

de Bakker, A. J. 1989. Effects of ammonia emission on epiphytic lichen vegetation. *Acta Botanica Neerlandica* **38**:337—342.

Brodo, I.M., S. Duran-Sharnoff, & S. Sharnoff. 2001. *Lichens of North America.* New Haven, CT: Yale.

Coles County Genealogical Society. 1984. *The Prairie Sleeps: Cemeteries of Coles County, Illinois.* Charleston, IL: Coles County Genealogical Society.

Dahlkild, Å., M. Källersjö, K. Lohtander, & A. Tehlerd. 2001. Photobiont Diversity in the Physciaceae (Lecanorales). *The Bryologist* **104**:527—536.

Esslinger, T. L. 1997. A cumulative checklist for the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. North Dakota State University: http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chcklst7.htm (First Posted 1 December 1997, most recent update 17 July 2002), Fargo, North Dakota.

Farkas, E., Lokos, L., & Verseghy, K. 1985. Lichens as indicators of air pollution in the Budapest agglomeration. *Acta Botanica Hungarica* **31**:45—68.

Fenn, M. E., Baron, J. S., Allen, E. B., Rueth, H. M., Nydick, K. R., Geiser, L., Bowman, W. D., Sickman, J. O., Meixner, T., Johnson, D. W., Neitlich, P. 2003 Ecological Effects of Nitrogen Deposition in the Western United States. *Bioscience* **53**:404—421.

Ferry, B. W., Baddeley, M.S., & Hawksworth, D.L. 1973. *Air Pollution and Lichens,* Athlone: London.

Gaio-Oliveira, G., L. Dahlman K. Palmqvist and C. Maguas. 2004. Ammonium uptake in the nitrophytic lichen *Xanthoria parietina* and its effects on vitality and balance between symbionts. *The Lichenologist* 36(1):75–86.

Hale, M. E. Jr. 1979. *How to know the lichens.* 2nd ed. Dubuque, IA: Wm. C. Brown.

Hawksworth, D. L. 1973. Mapping studies. pp. 38-76 in *Air Pollution and Lichens,* Ferry, B.W., Baddeley, M. S., & Hawksworth, D. L., eds. Athlone: London.

Hestmark, G., B. Schroeter & L. Kappen. 1997. Intrathalline and size-dependent patterns of activity in *Lasallia pustulata* and their possible consequences for competitive interactions. *Functional Ecology* **11**:318-322.

Hill, D. J. 1994. The succession of lichens on gravestones: a preliminary investigation. *Cryptogamic Botany* **4**:179-186.

Hyerczyk, R. D. 1996. The lichen flora of Putnam County, Illinois. *Transactions of the Illinois State Academy of Science* **89**:143—156.

Hyerczyk, R. D. 1997. The lichen flora of Livingston County, Illinois. *Transactions of the Illinois State Academy of Science* **90**:91—101.

Illinois Environmental Protection Agency. 1974—2002. *Illinois Annual Air Quality Report.* Springfield, IL: Illinois Environmental Protection Agency Bureau of Air, Division of Air Pollution Control, Ambient Air Monitoring Section.

John, E. A. 1989. An assessment of the role of biotic interactions and dynamic processes in the organization of species in a saxicolous lichen community. *Canadian Journal of Botany* **67**:2025-2037.

Lawrey, J.D. 1991. Biotic interactions in lichen community development: a review. *The Lichenologist* **23**:205—214.

McCune, B. 1988. Lichen communities along O_3 and SO_2 gradients in Indianapolis. *The Bryologist* 91:223—228.

McCune, B., P. Rogers, A. Ruchty, and B. Ryan. 1998. *Lichen Communities for Forest Health Monitoring in Colorado, USA.* USDA Forest Service Report. fia.fs.fed.us/lichen/pdf%20files/co98_report.pdf.

Meier, F. A., S. Scherrer, & R. Honegger. 2002. Faecal pellets of lichenivorous mites contain viable cells of the lichen-forming ascomycete *Xanthoria parietina* and its green algal photobiont, *Trebouxia arboricola. Biological Journal of the Linnaean Society* **76**:259–268.

Richardson, D. H. S. 1991. *Pollution monitoring with lichens.* Slough, U.K.: Richmond.

Saunders, P. J. W., and C. M. Wood. 1973. Sulfur dioxide in the environment: Its production, dispersal and fate. pp. 6—37 in *Air Pollution and Lichens,* Ferry, B. W., Baddeley, M. S., & Hawksworth, D. L., eds. Athlone: London.

Seaward, M. R. D. 1990. The lichen flora of industrial Teesside. *Naturalist* **115**:73—79.

Sochting, U. 1995. Lichens as monitors of nitrogen deposition. *Cryptogamic Botany* **5**:264—269.

Stringer, P. W., and Stringer, M. H. L. 1974. Air pollution and the distribution of epiphytic lichens and bryophytes in Winnipeg, Manitoba. *Bryologist* 77:405—426.

Weber, B., and B. Büdel. 2001. Mapping and analysis of distribution patterns of lichens on rural medieval churches in north-eastern Germany. *The Lichenologist* **33**:231—248.

Will-Wolf, S. 1980a. Structure of corticolous lichen communities before and after exposure to emissions from a "clean" coal-fired generating station. *The Bryologist* **83**:281—295.

Will-Wolf, S. 1980b. Effects of a "clean" coal-fired generating station on four common Wisconsin lichens. *The Bryologist* **83**:296—300.

Woolhouse, M. E. J., R. Harmsen, and L. Fahrig. 1985. On succession in a saxicolous lichen community. *The Lichenologist* **17**:167—172.

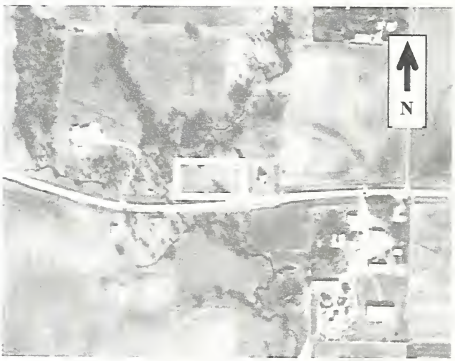


Figure 1. An aerial photograph of Shiloh Cemetery, Coles Co., Illinois. The study area is represented by the white box in the center; Shiloh Church is immediately to the east. A wooded stream bank borders the sampling area to the north and west. The Lincoln Heritage Trail runs from east to west along the southern edge of Shiloh Cemetery.

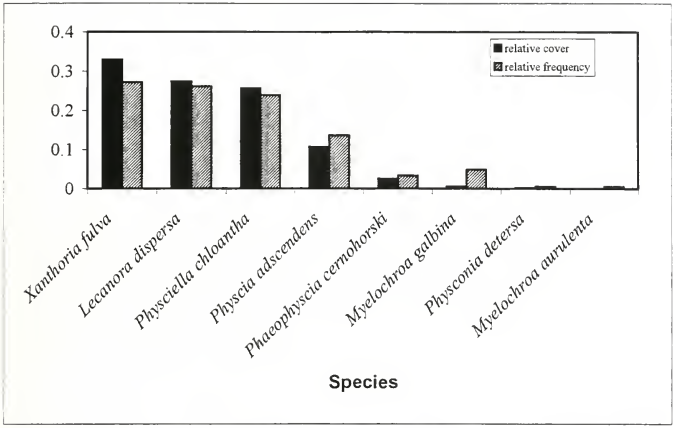


Figure 2: Relative cover and frequency of eight lichen species at Shiloh Cemetery.

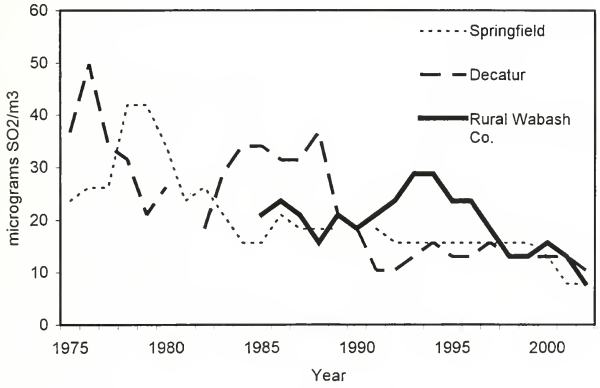


Figure 3: Recent trends in sulfur dioxide emissions at three sites in Illinois. Decatur is 32 km northwest. Springfield is 50 km northwest, and Rural Wabash Co. is 45 km to southeast of Shiloh Cemetery.

Table 1: Lichen species sampled at Shiloh Cemetery, Coles County, Illinois.

Species	Growth form	Percent Frequency
Lecanora dispersa (Pers.) Sommerf.	crustose	96
Myelochroa aurulenta (Tuck.) Elix & Hale	foliose	2
Myelochroa galbina (Ach.) Elix & Hale	foliose	18
Phaeophyscia cernohorskyi (Nádv.) Essl.	foliose	12
Physcia adscendens (Fr.) H. Olivier	foliose	50
Physciella chloantha (Ach.) Essl.	foliose	88
Physconia detersa (Nyl.) Poelt	foliose	2
Xanthoria fulva (Hoffm.) Poelt & Petutschnig	foliose	100

Table 2: Correlations between abiotic factors and community descriptors (species richness and total cover) and between abiotic factors and cover of individual lichen species.

Species/descriptor	Distance from southern edge	Distance from eastern edge	Stone Height
Richness	++	0	0
Total cover	+	0	++
Xanthoria fulva	0	+	0
Lecanora dispersa	0	0	0
Physciella chloantha	0	--	0
Physcia adscendens	++	0	0
Myelochroa galbina	+	0	0

(0) no significant correlation
(+) positive correlation significant at $P < 0.05$
(++) positive correlation significant at $P < 0.01$
(-) negative correlation significant at $P < 0.05$
(--) negative correlation significant at $P < 0.01$

Table 3: Correlations between cover of each major lichen species, total cover, and cover of other major lichen species.

Species	Total cover	pc	pa	mg	xf
Lecanora dispersa	0	0	0	0	0
Xanthoria fulva (xf)	0	0	++	0	
Myelochroa galbina (mg)	0	0	+		
Physcia adscendens (pa)	++	--			
Physciella chloantha (pc)	-				

(0) no significant correlation.
(+) positive correlation significant at $P < 0.05$
(++) positive correlation significant at $P < 0.01$
(-) negative correlation significant at $P < 0.05$
(--) negative correlation significant at $P < 0.01$

ERIGENIA, Number 20, October 2004, pp 37—52

ANALYSIS OF PRAIRIE RESTORATIONS AT ROCK SPRINGS ENVIRONMENTAL CENTER, DECATUR, ILLINOIS

Jennifer A. Ward[1,2], Gordon C. Tucker[1,3], and John E. Ebinger[4]

ABSTRACT: The vegetation of five prairie restorations at Rock Springs Environmental Center was examined during the 1999 to 2001 growing seasons. At this site, five tracts, totaling 12.1 ha, were developed as prairie restorations of varying ages on former farmland starting in 1977. Within these five restorations, 164 plant species were documented, 133 of which were native to Illinois. *Andropogon gerardii* had the highest importance value for all tracts combined with a total of 42.7 (out of 200) followed by *Schizachyrium scoparium* (31.8), *Solidago* spp. (26.4), *Sorghastrum nutans* (16.9), *Chamaechrista fasciculata* (14.5) and *Securigera varia* (12.7). Sorensen's Index of Similarity between the tracts ranged from 53.97 to 72.97, while the Floristic Quality Index (FQI) ranged from 18.6 to 25.8; the overall FQI for all tracts combined was 32.3. An analysis of invasive species showed that *Securigera varia* had a significant negative impact on both species richness and diversity. According to Sorensen's Index of Similarity and cluster diagrams, the tracts are becoming more similar. In addition, based on the FQI, the quality of the flora in the prairie restorations increases with the tract age.

INTRODUCTION

Tallgrass, "black soil" prairie was once common throughout the central United States and adjacent Canada. Although prairies originally covered 61.2% of Illinois, less than 0.01% remains today (Iverson et al. 1991, Ebinger & McClain 1991, Steinauer and Collins 1996). This loss is primarily due to the advent of the self-cleaning steel plow in 1837, and the subsequent conversion of most native vegetation to agricultural usage (Old 1969, McClain 1997). The elimination of fire and the incursion of woody species, particularly non-native exotics, are also factors in the demise of the prairies (McClain 1997, 2003).

Because of increased public interest, prairie restorations and reconstructions are becoming popular and widespread across the midwest (McClain 1997, 2003; Packard and Mutel 1997). Such efforts to restore prairies in Illinois are being hampered by invasive exotic species, especially legumes. Presently, over 960 plant species reported for the Illinois flora (31%) are non-native (Henry and Scott 1980, Harty 1993, Mohlenbrock 2002). Invasion by exotic species is second only to habitat loss as a threat to biodiversity (Zalba et al. 2000).

Our observations indicated that *Securigera varia* (crown vetch, synonym: *Coronilla varia*) is having a significant impact on the prairie restorations at Rock Springs Environmental Center, Macon County, Illinois (RSEC). This species is an invasive herbaceous legume from Europe, northern Africa, and western Asia that was introduced to control soil erosion and as an ornamental ground cover. Presently, it is becoming widely naturalized in Illinois (Mohlenbrock 2002). Because prairie restorations have been undertaken at the RSEC since 1977, and since invasive exotics are a problem here, we decided to analyze the quality and structure of the different age prairie restorations at the RSEC, and determine the impact of crown vetch on species diversity in these restorations.

[1]Department of Biological Sciences, Eastern Illinois University, Charleston, Illinois 61920
[2]Present address: Macon County Conservation District, 3939 Nearing Lane, Decatur, Illinois 62521
[3]Author for correspondence and reprints: gctucker@eiu.edu
[4]Emeritus Professor of Botany, Eastern Illinois University, Charleston, Illinois 61920

DESCRIPTION OF THE STUDY AREA

The Macon County Conservation District acquired the Rock Springs Environmental Center (RSEC) in 1969. This center presently occupies 543.5 ha on the southwest edge of the city of Decatur (Sec 19 T16N R2E; 39° 49.188' N 89° 00.626'W) in Macon County. Before being purchased, most of the upland was farmed, and the surrounding forest degraded by cutting and fire suppression (Ebinger and McClain 1991, McClain and Elzinga 1994, McClain 1997, Davit 1999). The Homestead Prairie Farm, which utilizes prairie restorations as part of their program to educate school children and the general public about early settlement life of central Illinois (Figure 1), is located within the RSEC.

We examined Government Land Office (GLO) survey records to infer the presettlement vegetation of the RSEC region (Gleason and Cronquist 1964; Hutchison 1988). The RSEC and the area for about 2 km in all directions were vegetated by open forests with various species of *Carya* (hickory) and *Quercus* (oak) dominating the uplands while *Acer* (maples and box elder), *Aesculus* (buckeye), and *Ulmus* (elms) were important along the Sangamon River (Figure 2). The closest expanse of prairie was located more than 2 km from the RSEC.

The topography of the RSEC is mostly level to gently rolling uplands with a lowland area at the northwestern edge where the Sangamon River traverses the property. Located on the terminal moraine of Wisconsinan glaciation, the RSEC is in the Grand Prairie Natural Division of Illinois (Schwegman 1973). Most of the vegetation of this division was dry to wet "black soil" prairie found on nearly level ground, while on the more dissected moraines, river valleys, and other hilly areas, the vegetation was dominated by forest (Ebinger and McClain 1991, Anderson 1991). The soil survey of Macon County indicates that the soils of the prairie restorations are of the Miami-Birkbeck-Russell association (Doll 1990). This association is a silt loam, medium color soil that occurs on gently sloping, moderately well-drained areas and indicates prior domination by forest vegetation.

Climate at the RSEC is continental with warm summers and cold winters. Based on the weather data from downtown Decatur (39°51'N 88° 57'W, ca. 4 km to the ENE), the mean annual precipitation is 100.9 cm, with the month of July having the highest rainfall (11.53 cm) and February the lowest, 4.95cm. Mean annual temperature is 11.6 C, with the hottest month being July with a mean of 24.3C, and the coldest January, with a mean of -3.4 C. The lowest temperature ever recorded was -31.3C (13 Feb 1905) and the highest 40.7C (9 Aug 1934). Frost-free days range from 136 to 204 with the mean being 171 (Burroughs 2002; Illinois State Climatologist Office 2002).

Starting in 1977, several prairie restorations, now totaling 12.1 ha, were established on former farmland at the RSEC (Ward 2001). The 1977 restoration totaled 1.6 ha, while subsequent plantings in 1979 (1.6 ha), 1981 (2 ha), 1983 (2 ha), and 1986 (4.9 ha) added to the total (Figure 2). Restorations in 1977 and 1979 were planted mostly in *Schizachyrium scoparium* (little bluestem) and *Bouteloua curtipendula* (side oats grama). Restorations in 1981, 1983, and 1986 were planted mainly in *Andropogon gerardii* (big bluestem) and *Sorghastrum nutans* (Indian grass). Unfortunately, detailed planting records were not kept, so the exact planting location and original species composition are unknown. The only management undertaken was occasional burns. The 1979, 1981, 1983, and 1986 restorations were last burned in 2001 while the 1977 restoration was last burned in 1997.

METHODS

During the growing season of 1999—2001, five study sites at the RSEC were established and monitored. These study sites were located in five different-aged prairie restorations, and based on the years of establishment, are referred to as: 1977 tract, 1979 tract, 1981 tract, 1983 tract, and 1986 tract. In 1999, all tracts—except the 1977 tract—were analyzed using 1/4 m^2 quadrats along 25 m long transects located randomly in an east/west orientation throughout each tract. Along each transect, the quadrats were located at 1 meter intervals (n = 25/transect). Odd-numbered quadrats were located on the right side of the transects while even-numbered quadrats were located on the left side. A random numbers table was used to determine the number of meters (0 to 9) a quadrat was located from the transect line. Cover was determined by using the Daubenmire canopy cover class system (Daubenmire 1959; Bailey and Poulton 1968; Gotelli and Simberloff 1987), in which class 1 = 0—1%, class 2 = 1—5%, class 3 = 5—25%, class 4 = 25—50%, class 5 = 50—75%, class 6 = 75—95%, and class 7 = 95—100%. In 2000, the same survey procedures were used, except the quadrat was increased in size to 1 m^2.

In 2001, permanent 1 m^2 quadrats were established in each tract by finding a landmark from which a baseline was run. Four parallel 25 m transects were established perpendicular from each baseline, and a random numbers table was used to position six quadrats along each transect. Exact coordinates were obtained for all quadrats using a hand-held GPS unit. Quadrats 1 to 24 are within the 1977 tract, quadrats 25 to 48 are within the 1979 tract, quadrats 49 to 72 are within the 1981 tract, quadrats 73 to 96 are within the 1983 tract, and quadrats 97 to 120 are within the 1986 tract. The transects were sampled once a month from May to September and the all species rooted within the quadrats were identified and their cover determined using the modified Daubenmire canopy cover classes noted above. Specimens were collected while sampling the transects. In addition, all parts of the prairies outside the transects were checked and additional specimens collected to provide a complete species list (Appendix 1). Nomenclature follows Mohlenbrock (2002) while the

determination of non-native taxa was based on Taft et al. (1997) and Mohlenbrock (2002).

From the data obtained, the importance value (IV) for all ground layer species was determined by summing relative cover and relative frequency (total IV = 200). In addition, the Sorensen's Index of Similarity (ISs) was used to determine the degree of similarity among the five tracts (Mueller-Dombois and Ellenberg 1974). As used here, the ISs is calculated by multiplying two times the number of species in common (C) divided by the sum of the species of the two sites being compared (A+B) multiplied by 100 [ISs = 2C/(A+B) x 100].

Also, the Floristic Quality Index (FQI) was determined for each tract using the coefficient of conservatism (CC) assigned to each species by Taft et al. (1997). The CC for each species in the Illinois flora was determined by assigning an integer from 0 to 10 for each species based on its tolerance to disturbance and its fidelity to habitat integrity. As used here, the FQI is a weighted index of species richness (N = number of species present on a tract), and is the arithmetic product of the average coefficient of conservatism (C-Value = the average of all species CC's) multiplied by the square root of the species richness ($\sqrt{N}$) of a tract [FQI = C-Value ($\sqrt{N}$)]. Thus, the FQI indicates the level of habitat degradation and provides an assessment of the quality of each tract based on the taxa present (Masters 1997).

The effects of crown vetch on community structure were summarized using PC-ORD, Version 4 (MjM Software Design, Gleneden Beach, Oregon). Peak abundance data for each species from the 2001 growing season was used and values were computed for species richness, Shannon-Weaver Diversity, and Simpson's Diversity Index. Shannon-Weaver Diversity reflects the variability of a community (Bazzaz 1975, Barbour et al. 1987) and the Simpson's Diversity Index reflects the dominance of abundant species (Barbour et al. 1987). A cluster diagram was also formulated to compare vegetation similarity of individual plots within all of the tracts. This diagram was clustered using Sorensen's Index of Similarity in PC-ORD.

RESULTS

Of the 164 species collected during this project, 56 were encountered within the sampling quadrats. Of the 31 introduced species collected, 10 were present within the sampling transects. The tracts were summarized for an overall comparison. The greatest number of species in a tract (36 out of 56) was found in the 1983 tract and species numbers decreased as follows: the 1981 tract had 35 species, the 1979 tract had 32 species, the 1986 tract had 26 species, and the 1977 tract had 25 species. The highest importance value for any species was 42.6 (out of 200) for *Andropogon gerardii*, a graminoid (grasses, sedges, and rushes) (Table 1). *Solidago* species had the highest importance value (26.4) of all forbs. Sorensen's Index of Similarity between tracts ranged from 53.97 to 72.97 (Table 2). The 1977 and 1981 tracts are the least similar (53.97) and the 1981 and 1983 are the most similar (72.97). The average coefficient of conservatism ranged from 3.42 to 4.56 and the Floristic Quality Index ranged from 18.6 to 25.8. The older sites had higher values (Table 3). The entire site had an average CC of 2.634 for all species, 3.248 for native species only, and FQI of 33.73.

During the 2001 growing season, the 1981 tract had the highest species richness (6.04) and the 1986 tract had the lowest (4.13) (Fig. 3). The effect of *Securigera varia* on community structure was also analyzed, using plots 25 to 120. The 1977 tract was excluded due to the absence of *S. varia*. According to the Pearson correlation, the presence of *S. varia* had a significantly negative effect on species richness: R = -0.262; P = 0.010 (Fig. 4). The Shannon-Weaver Diversity Index (Fig. 5) and the Simpson's Diversity Index (Fig. 6) also revealed a significant decline in species diversity (R = -0.279; P = 0.006 and R =-0.261; P = 0.010, respectively) as a result of *S. varia*. Cluster diagrams in PC-ORD illustrated the separation of 1977 and 1979 tracts and the clustering of the 1981, 1983, and 1986 tracts (Fig. 7).

DISCUSSION

The top five graminoid species are all native prairie grasses, with *Andropogon gerardii* and *Schizachyrium scoparium* having greater importance values than the top forb, *Solidago*. Higher importance values of the graminoids are related to the spring burn regime. Typically, spring burning increases the dominance of warm-season grasses and decreases species richness (Steinauer and Collins 1996). Coefficients of conservatism for the graminoids ranged from 3 to 5. *Andropogon gerardii* and *S. scoparium* both have coefficients of conservatism of 5 and *Sporobolus compositus* (prairie dropseed) has a coefficient of conservatism of 3. A trend in the top five forb species reveals that three are legumes, with *Securigera varia* being an exotic, invasive species. Coefficients of conservatism for the forbs ranged between 0 and 4, with *Solidago* spp. and *Lespedeza capitata* (bush clover) having coefficients of conservatism of 4, *Chamaechrista fasciculata* (partridge pea) and *Calystegia sepium* (bindweed) have coefficients of conservatism of 1, and *S. varia*, 0. The coefficients for the top forb species are much lower than those of the top graminoid species, which indicates that higher-quality forb species are limited when competing with species that can adapt to all habitat conditions. Thinning of the top forb species with coefficients of 1 and 0 could increase the FQIs among all tracts by decreasing competition with conservative species (species that have specialized growth requirements).

Sorensen's Index of Similarity indicates that the tracts are becoming more similar over time. The 1977 tract

stands out as least similar to the other tracts; this could be the result of its isolation from the other plots and the initial difference in graminoids species planted (Table 2). The remaining tracts are adjacent to each other, which resulted in more similarity over time. This could indicate that the tracts are approaching community equilibrium as a result of the movement of species throughout the community and seeding of adjacent tracts.

The cluster diagram (Fig. 7) illustrates the independence of the 1977 and 1979 tracts from the remaining tracts. This separation can be contributed to the type of graminoids planted, with the 1977 and 1979 tracts consisting of shorter graminoids species. The 1977 tract is the most distinct of all the tracts due to the isolation from the remaining tracts. Although the 1979 tract is clustered together, it is more closely related to the 1981, 1983, and 1986 tracts. In addition, the cluster diagram supports the theory of movement of species between tracts with the clustering of the 1981, 1983, and 1986 tracts.

Cumulative results indicate that the tracts are blending together and that, based on the Floristic Quality Index, quality increases with tract age (Fig. 8). The 1977 tract is an exception to the overall trend, since it was sampled one year instead of three years. Using only 2001 FQI data shows a different trend; individual data shows that the 1977 tract has a higher FQI relative to the remaining tracts (Fig. 9). In addition, the 2001 data support the decreasing FQI trend in association with tract age (Table 3). Research has shown that plots with a high fire frequency increase in FQI over time and that plots that are less frequently burned decrease in FQI over time (Masters 1997). This decrease is usually due to the loss of conservative species. Because the 1977 tract has a lower frequency of burning, future analysis will be needed to make a more definitive conclusion.

The FQI allows for the analysis of quality of a floristic ecosystem and can be used to formulate a more specific management plan. A site has high floristic quality if the FQI is above 50, of intermediate quality if the FQI is between 20 and 50, and of poor quality if the FQI is between 0 and 20 (Packard and Ross 1997). Sites with indices greater than 45 are considered statewide-significant Natural Areas, although prairie restorations rarely exceed an FQI of 35 (Taft et al. 1997). Using these values, the 1977 (18.60) and 1986 (19.60) tracts are of poor quality and the 1979 (25.80), 1981 (23.00), and 1983 (20.50) tracts are of intermediate floristic quality. Over time, the tract FQIs may increase and eventually reached an FQI of 35.

Community composition, structure, hydrology, soil fertility, and fire regime can be severely altered by introduced plant species (Walck et al. 1999, White and Schwarz 1998). Burning appears to have very little effect on *S. varia*, as areas where this species is prevalent burn at a lower intensity than the rest of the tracts (Paul Marien, pers. comm.; J. Ward, pers. obs.). Legumes are known to alter the pH and nutrient content of the soil and can potentially have a negative effect on other prairie species. Exotic plants, especially legumes, can change soil chemistry to favor the invader (Campbell 1999). For example, research in Colorado and Minnesota has found that increased levels of nitrogen cause a decrease in native grass diversity (Wilson and Gerry 1995). This decrease is linked to the dependence of arbuscular mycorrhizal fungi found in association with the root systems of virtually all tallgrass prairie plant species (Wilson et al. 2001). *Securigera varia* also had a significant negative impact on species richness and diversity during the 2001 growing season. The slopes of the graphs in Figs. 3, 4, and 5 are all negative and reveal a decrease in diversity and species richness.

This research provides baseline data as well as permanent plots for future study and monitoring of long-term restoration success. In addition, this research will expand the current knowledge of Illinois prairie quality and structure. Research has found that the tracts are becoming more similar over time, as verified by the Sorensen's Index of Similarity and the cluster diagram. In addition, the floristic quality shows an increase as the tracts age. Currently, the tracts are of poor and intermediate quality, but they have the potential to increase to higher qualities over time. FQIs should continue to rise and species richness and diversity may well improve if *Securigera varia* is controlled by management practices. In addition, measures should be taken to promote the increase of more conservative forb species. This site is of sufficient quality and structure to illustrate and teach people about the prairie and Illinois natural history (Ward 2001).

ACKNOWLEDGMENTS

This paper is largely based on a thesis submitted in 2002 by the first author to the Graduate School of Eastern Illinois University in partial fulfillment of the requirements of the degree of Master of Science in Biological Sciences. We thank Scott Meiners for assisting with the ordination program, and for reviewing the manuscript. We would like to thank the staff and volunteers at the Macon County Conservation District, especially Paul Marien, Jeff Tish, and Ross Thompson, for their assistance and effort in helping to complete this project, and Daniel Tucker for help with field work. The first author sincerely thanks friends and family for trudging out into the prairie and supporting her during her college years, and dedicates this paper to the memory of Maude Pschirrer and Ferne Miller, who never stopped believing in her.

LITERATURE CITED

Anderson, R. C. 1991. Presettlement forests of Illinois. pages 9—19 *in* G. V. Burger, J. E. Ebinger, and G. S. Wilhelm, eds. Proceeding of the Oak Woods Management Workshop, Eastern Illinois University, Charleston, Illinois.

Bailey, A. W. and C. E. Poulton. 1968. Plant communities and environmental relationships in a portion of the Tillamook burn, Northwestern Oregon. Ecology 49:1-13.

Barbour, M.G., J. H. Burk, and W. D. Pitts. 1987. Terrestrial plant ecology, 2nd Ed. Benjamin/ Cummings Publishing Company, Inc., Menlo Park, California.

Bazzaz, F. A. 1975. Plant species diversity in old-field successional ecosystems in southern Illinois. Ecology 56: 485—488.

Burroughs, J. 2002. Decatur, Illinois climate averages 1971-2000. Midwestern Regional Climate Center: Champaign, Illinois. (email 04/03/02).

Campbell, F. T. 1999. Noxious weeds and invasive plants. FDCH Congressional Testimony. 06/24/99.

Daubenmire, R. 1959. A canopy coverage method of vegetation analysis. Northwest Science 33: 43—64.

Davit, C. Ed. 1999. Public prairies of Missouri. Missouri Department of Conservation, Jefferson City, Missouri.

Doll, J. C. 1990. Soil survey of Macon County, Illinois. USDA, Soil Conservation Service.

Ebinger, J. E. and W. E. McClain. 1991. Forest succession in the prairie peninsula of Illinois. Symposium Proceedings: Our Living Heritage. 34:375—381.

Gleason, H. A. and A. Cronquist. 1964. The natural geography of plants. Columbia University Press, New York.

Gotelli, N. J. and D. Simberloff. 1987. The distribution and abundance of tallgrass prairie plants: a test of the core-satellite hypothesis. American Naturalist 130:18—35.

Harty, F. M. 1993. How Illinois kicked the exotic habitat. Pages 195—209. *In* B. N. McKnight, editor. Biological pollution: the control and impact of invasive exotic species. Indiana Academy of Science, Indianapolis, Indiana.

Henry, R. D. and A. R. Scott. 1980. Some aspects of the alien component of the spontaneous Illinois vascular flora. Transactions of the Illinois Academy of Science 73:35—40.

Hutchison, M. 1988. A guide to understanding, interpreting, and using the public land survey field notes in Illinois. Natural Areas Journal 8:245—255.

Illinois State Climatologist Office. 2002. Illinois State Water Survey, Champaign, Ill. <http://www.sws.uiuc.edu/atmos/statecli/index.htm> (accessed 30 December 2003).

Iverson, L. R., G. L. Rolfe, T. J. Jacob, A. S. Hodgins, and M. R. Jeffords. 1991. Forests of Illinois. Illinois Council on Forest development, Urbana, and Illinois Natural History Survey, Champaign, Illinois.

Masters, L. A. 1997. Monitoring vegetation. Pages 279-301. *In* S. Packard and C. F. Mutel, editors. The tallgrass restoration handbook: for prairies, savannas, and woodlands. Island Press, Washington, D.C.

McClain, W. E. 1997. Prairie establishment and landscaping. Natural Heritage Technical Publication #2. Division of Natural Heritage, Illinois Department of Natural Resources, Springfield, Illinois.

McClain, W. E. 2003. Prairie Establishment and Landscaping. Technical Publication # 2. Revised edition. Division of Natural Heritage. Illinois Department of Natural Resources. Springfield, Illinois 66 pages.

McClain, W. E. and S. L. Elzinga. 1994. The occurrence of prairie and forest fires in Illinois and other midwestern states, 1679-1854. Erigenia 13:79—90.

Mohlenbrock, R. H. 2002. Vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville, Illinois.

Mueller-Dombois, D. and H. Ellenberg. 1974. Aims and methods of vegetation ecology. John Wiley and Sons, New York, New York.

Old, S. M. 1969. Microclimate, fire, and plant production in an Illinois prairie. Ecological Monographs 39:355-384.

Packard, S. and L. M. Ross 1997. Restoring remnants. Pages 63—88. In S. Packard and C.F. Mutel, editors. The tallgrass restoration handbook: for prairies, savannas, and woodlands. Island Press, Washington, D.C.

Schwegman, J. E. 1973. Comprehensive plan for the Illinois Nature Preserves System. Part 2. The natural divisions of Illinois. Illinois Nature Preserves Commission, Rockford, Illinois. map+32 pp.

Steinauer, E. M. and S. L. Collins. 1996. Prairie ecology—the tallgrass prairie. In F. B. Samson and F. L. Knopf, editors. Prairie conservation: preserving North America's most endangered ecosystem. Island Press, Washington, D.C.

Taft, J. B., G. S. Wilhelm, D. M. Ladd, and L. A. Masters. 1997. Floristic quality assessment for vegetation in Illinois, a method for assessing vegetation integrity. Erigenia 15:1—95.

Walck, J. L., J. M. Baskin, and C. C. Baskin. 1999. Effects of competition from introduced plants on establishment, survival, growth and reproduction of rare plant *Solidago shortii* (Asteraceae). Biological Conservation 88:312—219.

Ward, J. 2001. Rock Springs Center Prairie Manual. Macon County Conservation District, Decatur, Illinois. 28 pp.

White, P. S. and A. E. Schwarz. 1998. Where do we go from here? The challenges of risk assessment for invasive plants. Weed Technology. 12:744—751.

Wilson, G. W. T., D. C. Hartnett, M. D. Smith, and K. Kobbeman. 2001. Effects of mycorrhizae on the growth and demography of tallgrass prairie forbs. American Journal of Botany 88:142—1457.

Wilson, S. D. and A. K. Gerry. 1995. Strategies for mixed-grass prairie restoration: herbicide, tilling, and nitrogen manipulation. Restoration Ecology 3:290—298.

Zalba, S. M., M. I. Sonaglioni, C.A. Compagnoni, and C. J. Belenguer. 2000. Using a habitat model to assess the risk of invasion by an exotic plant. Biological Conservation 93:203—208.

Table 1: Cumulative importance values of key graminoid and forb species during 1999-2001 growing season. Importance values rank each species according to their importance in the prairie ecosystem. Importance values are out of a total of 200. Top graminoid and forb species where chosen according to decreasing importance value to give an illustration of the dominant composition of this prairie restoration. Graminoids are grasses, sedges, and rushes. Forbs are all other herbaceous flowering plants.

TOP FIVE GRAMINOIDS	IMPORTANCE VALUES
Andropogon gerardii	42.76
Schizachyrium scoparium	31.80
Sorghastrum nutans	16.86
Panicum virgatum	7.18
Sporobolus compositus	0.70

TOP FIVE FORBS	IMPORTANCE VALUES
Solidago spp.	26.40
Chamaechrista fasciculata	14.52
Securigera varia	12.68
Lespedeza capitata	7.18
Calystegia sepium	4.77

Table 2: Cumulative Sorensen's Index of Similarity results during the 1999—2001 growing season. Sorensen's Index of Similarity is used to determine the degree of vegetative similarity between tracts.

	1977	1979	1981	1983
1979	58.62			
1981	53.97	63.77		
1983	60.32	63.77	72.97	
1986	57.69	62.07	69.84	63.49

Table 3: Floristic Quality Index for individual tracts. The Floristic Quality Index (FQI) accesses the quality of the vegetation present with regard to habitat degradation. The average coefficient of conservatism ($\hat{C}$) gives the average coefficients for all species within each tract dependent on required growth conditions of individual species.

	2001		CUMULATIVE	
Tract	$\hat{C}$	FQI	$\hat{C}$	FQI
1977	3.72	18.60	3.72	18.60
1979	4.45	14.80	4.56	25.80
1981	3.36	16.80	3.88	23.00
1983	3.71	17.00	3.42	20.50
1986	3.29	12.30	4.00	19.60

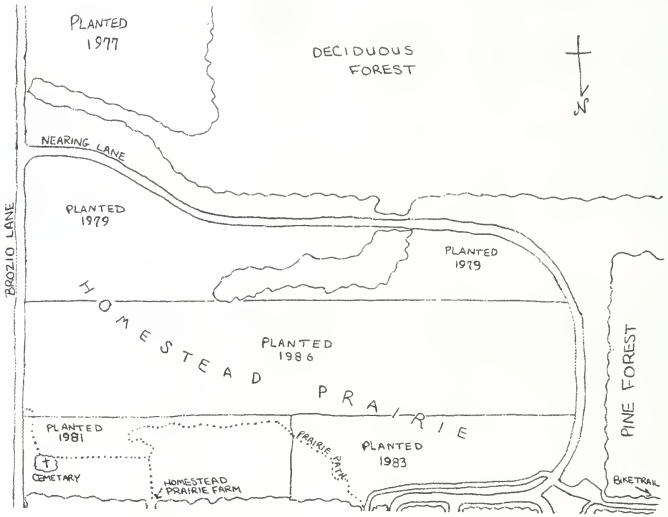
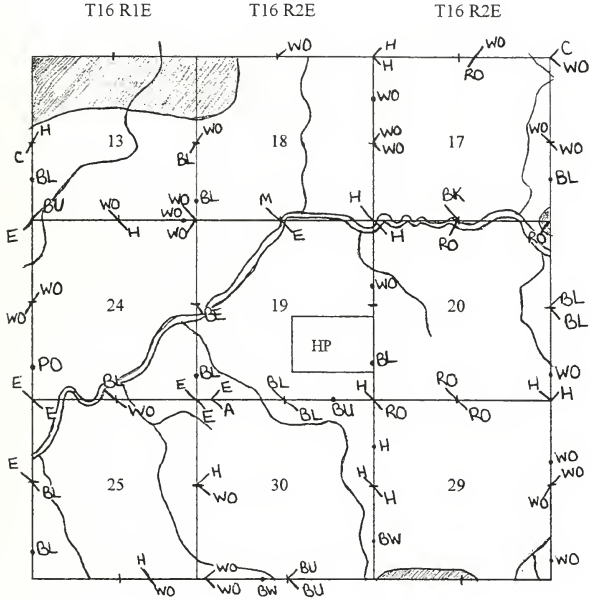


Figure 1: Map of Rock Spring Environmental Center study area (S19 T16N R2E), Decatur, Macon County, Illinois.



Plant Name		Scientific Name
A	Ash	*Fraxinus* sp.
C	Cherry	*Prunus serotina* Ehrh.
BL	Black Oak	*Quercus velutina* Lam.
BW	Black Walnut	*Juglans nigra* L.
BE	Box Elder	*Acer negundo* L.
BK	Buckeye	*Aesculus glabra* Willd.
BU	Bur Oak	*Quercus macrocarpa* Michx.
E	Elm	*Ulmus* sp.
H	Hickory	*Carya* sp.
M	Maple	*Acer* sp.
PO	Pin Oak	*Quercus palustris* Muenchh.
RO	Red Oak	*Quercus rubra* L.
WO	White Oak	*Quercus alba* L.

Various Names and Symbols
HP Homestead Prairie
Sangamon River (═)
Creek (—)
Prairie (////)

Figure 2: Recreated map of original land survey records.

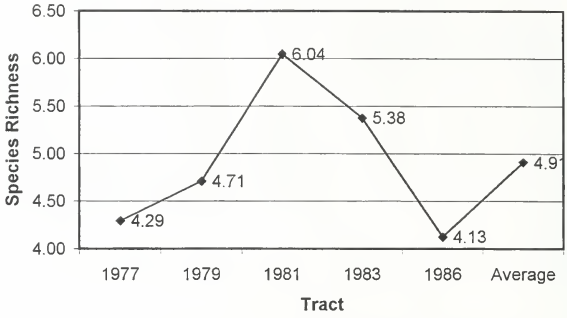


Figure 3: Species richness sampled during the 2001 growing season based on the Daubenmire numbering system.

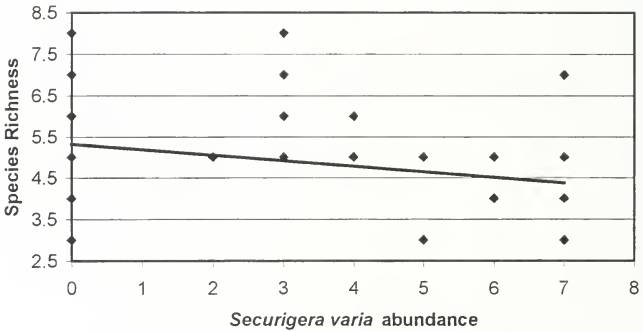


Figure 4: Negative effects of *Securigera varia* on species richness using the Daubenmire number system during the 2001 growing season. $y = -0.1338 x + 5.3119$; $R^2 = 0.0686$

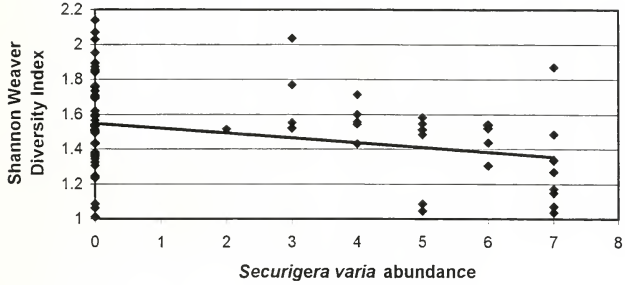


Figure 5: Negative effects of *Securigera varia* on Shannon-Weaver Diversity Index using the Daubenmire number system during the 2001 growing season. Shannon-Weaver Diversity reflects the variability of a community. $y = -0.0277 x + 1.5468$; $R^2 = 0.0778$

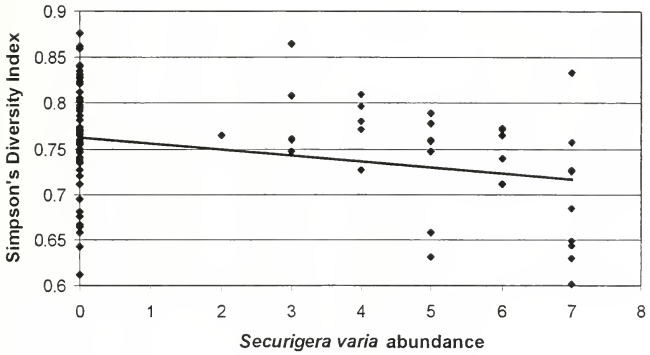


Figure 6: Negative effects of *Securigera varia* on Simpson's Diversity Index using the Daubenmire number system during the 2001 growing season. Simpson's Diversity Index reflects the dominance of the abundant species. $y = - 0.0066 x + 0.7623$; $R^2 = 0.0683$.

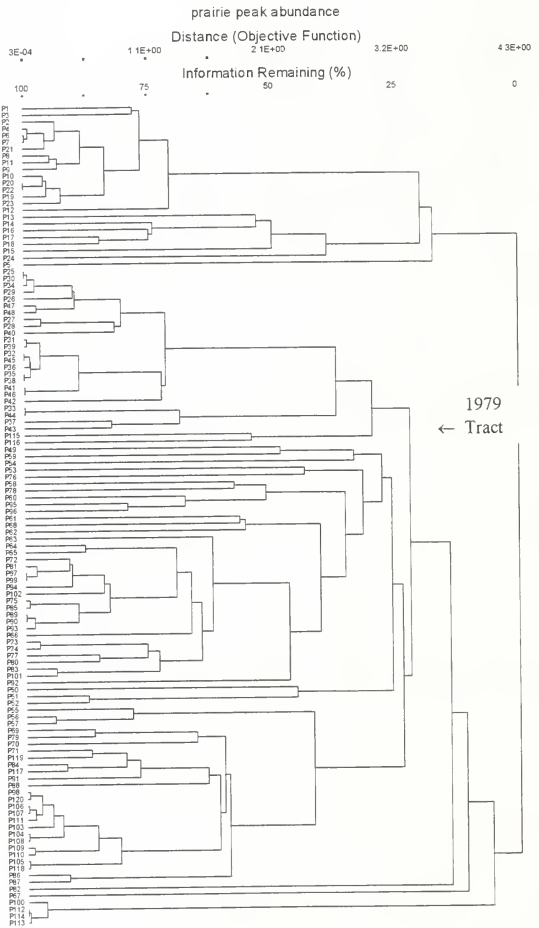


Figure 7: Cluster Diagram of individual plots during the 2001 growing season. The 1981, 1983, and 1986 tracts are located at the bottom and are intermingled together.

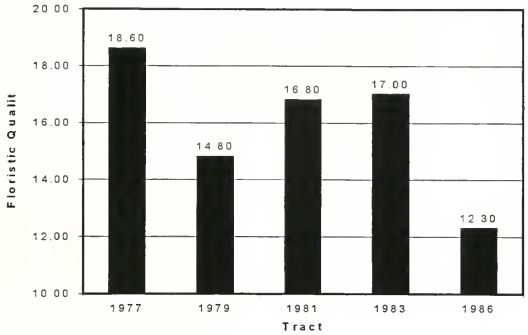


Figure 8: Cumulative Floristic Quality Index of individual tracts at Rock Springs Environmental Center, Macon County, Illinois.

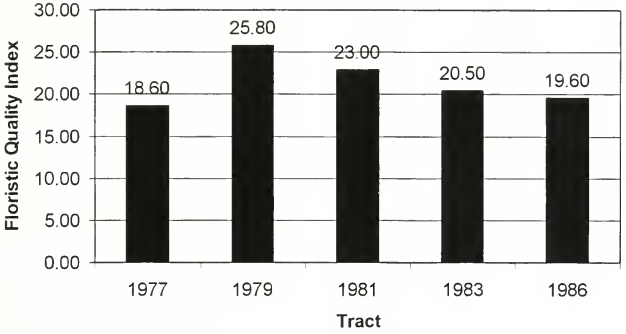


Figure 9: Floristic quality index during the 2001 growing season at Rock Springs Environmental Center, Macon County, Illinois.

Appendix 1

The vascular flora of the Homestead Prairie at Rock Springs Environmental Center, Decatur, Illinois, 1999-2003. Nomenclature follows Mohlenbrock (2002). Non-native species are preceded by an asterisk. Collection numbers for voucher specimens are indicated; those by Ward range from 216 to 334; those by Tucker from 12141 to 13586. All specimens are deposited at the Stover-Ebinger Herbarium, Eastern Illinois University (EIU).

FERNS

DRYOPTERIDACEAE
Woodsia obtusa (Spreng.) Torr., 13574

GYMNOSPERMS

CUPRESSACEAE
Juniperus virginiana L., 13576

DICOTYLEDONEAE

ANACARDIACEAE
Toxicodendron radicans (L.) Kuntze, 12607

APIACEAE
Eryngium yuccifolium Michx., 12610
**Pastinaca sativa* L., 12592
Zizia aurea (L.) Koch, obs.

ASCLEPIADACEAE
Asclepias syriaca L., 12566, 12594
Asclepias tuberosa L., 259

ASTERACEAE
**Achillea millefolium* L., 13564
Ageratina altissima (L.) King & Robins., 12589
Ambrosia artemisiifolia L., 12611
Ambrosia trifida L., 12600
Aster drummondii Lindl., 319
Aster lanceolatus Willd. var. *simplex* (Willd.) A.G. Jones. 12620
Aster lateriflorus (L.) Britt., 12590
Aster novae-angliae L., 12619
Aster pilosus Willd., 317, 12627
Cirsium discolor (Muhl.) Spreng., 12581
Conyza canadensis (L.) Cronq., 12591
Coreopsis lanceolata L., 237
Coreopsis tripteris L., 311, 332
Echinacea pallida (Nutt.) Nutt., 248
Echinacea purpurea (L.) Moench, obs.
Erechtites hieracifolia (L.) Raf., 12599
Erigeron annuus (L.) Pers., 270
Eupatorium altissimum L., 12622
Eupatorium serotinum Michx., 12586
Helianthus mollis Lam., 12615A
Helianthus tuberosus L. , 13561
Lactuca canadensis L. , 13551
Liatris pycnostachya Michx., 218
Oligoneuron rigidum (L.) Small, 12623
Parthenium integrifolium L., 249, 272
Pseudognaphalium obtusifolium (L.) Hilliard & Burtt., 318, 12628
Ratibida pinnata (Vent.) Barnh., 290
Rudbeckia hirta L., 261, 268
Silphium integrifolium Michx., 279, 12615
Silphium laciniatum L., 289
Silphium perfoliatum L., obs.
Silphium terebinthinaceum Jacq., 12613
Solidago canadensis L., 12613
Solidago juncea Ait., 309
Solidago missouriensis Nutt., 285, 294
Solidago nemoralis Ait., 333
**Taraxacum officinale* Weber, 12617
Vernonia gigantea (Walt.) Trel., 307, 12582

BORAGINACEAE
Myosotis verna Nutt., 239

BRASSICACEAE
Lepidium virginicum L., 238

CAESALPINIACEAE
Chamaechrista fasciculata (Michx.) Greene, 299
Gleditsia triacanthos L., 12585

CAMPANULACEAE
Lobelia siphilitica L., 13571

CANNABINACEAE
Humulus lupulus L., 12137

CAPRIFOLIACEAE
**Lonicera japonica* Thunb., 13579
**Lonicera maackii* (Rupr.) Maxim., 12584
Symphoricarpos orbiculatus Moench, 12595

CARYOPHYLLACEAE
**Dianthus armeria* L., 12149

CONVOLVULACEAE
Calystegia sepium (L.) R. Br., 321

CORNACEAE
Cornus drummondii C.A. Mey., 12588

CORYLACEAE
Corylus americana Walt., 13569

DIPSACACEAE
**Dipsacus fullonum* L., 12143

ELAEAGNACEAE
**Elaeagnus umbellata* Thunb., 13580

EUPHORBIACEAE
Acalypha rhomboidea Raf., obs
Chamaesyce supina (Raf.) Moldenke, 12614
Euphorbia corollata L., 292
Poinsettia dentata (Michx.) Kl. & Garcke, 12596

FABACEAE
Amorpha canescens Pursh, 282, 295
Baptisia alba (L.) Vent. var. *macrophylla* (Larisey) Isely, 260
Dalea candida (Michx.) Willd., 284
Dalea purpurea Vent., 217, 283
Desmodium illinoense Gray, 288
Desmodium sessilifolium (Torr.) Torr. & Gray, 303
Lespedeza capitata Michx., 274, 296
**Lespedeza cuneata* (Dum.-Cours.) G. Don, 291
**Melilotus albus* Medic., 219
**Melilotus officinalis* (L.) Pallas, 13560
Orbexilum onobrychis (Nutt.) Rydb., 12145, 12601
**Securigera varia* (L.) Lassen, 242
**Trifolium campestre* Schreb., 13583
**Trifolium pratense* L., 12616
**Trifolium repens* L., obs.

FAGACEAE
Quercus imbricaria Michx., 13577
Quercus velutina Lam., 12146

GENTIANACEAE
Gentiana alba Muhl., 334

HYPERICACEAE
Hypericum punctatum Lam., 322
Hypericum sphaerocarpum Michx., 12139

LAMIACEAE
Monarda fistulosa L., 267
**Prunella vulgaris* L., 12152
Pycnanthemum pilosum Nutt., 12609
Pycnanthemum tenuifolium Schrad., 220, 280
Pycnanthemum virginianum (L.) Dur. & B.D. Jacks., 12587
Teucrium canadense L., 12624

LAURACEAE
Sassafras albidum (Nutt.) Nees, 13550

MALVACEAE
**Sida spinosa* L., 13554

MORACEAE
**Morus alba* L., 12604

OLEACEAE
Fraxinus americana L., 13552
**Ligustrum obtusifolium* Sieb. & Zucc., 12140

ONAGRACEAE
Oenothera biennis L., 314

OXALIDACEAE
Oxalis stricta L., 12603

PLANTAGINACEAE
Plantago aristata Michx., 12153

POLYGONACEAE
Fallopia scandens (L.) Holub, 13562
**Persicaria cespitosa* (Blume) Nakai, 12608
Persicaria pensylvanica (L.) Small, 13555
**Rumex acetosella* L., 240
**Rumex crispus* L., obs.

ROSACEAE
Fragaria virginiana Duchesne, 13585
Geum canadense Jacq., 13557
Potentilla arguta Pursh, 216, 269
**Potentilla recta* L., 241
**Rosa multiflora* Thunb., 12626
Rubus flagellaris Willd., 12138
Rubus occidentalis L., 300
Rubus pensilvanicus Poir., 286, 12151

RUBIACEAE
Galium triflorum Michx., 13570

SALICACEAE
Populus deltoides Marsh., 13582
Salix interior Rowlee, 13563

SOLANACEAE
Physalis subglabrata Mack. & Bush, 12602
Solanum carolinense L., 12597
Solanum ptychanthum Dunal, 13572

ULMACEAE
**Ulmus pumila* L., 12148
Ulmus rubra Muhl., 13568

URTICACEAE
Boehmeria cylindrica (L.) Sw., 12605

VERBENACEAE
Verbena urticifolia L., 298, 12142

VITACEAE
Vitis aestivalis Michx., 12147
Vitis cinerea (Engelm.) Engelm., 12141
Vitis riparia Michx., 12150

MONOCOTYLEDONEAE

COMMELINACEAE
**Commelina communis* L., obs.
Tradescantia ohiensis Raf., 253, 281

CYPERACEAE
Carex blanda Dewey, obs.
Carex cephalophora Muhl., 326
Carex hirsutella Mack., 323
Cyperus strigosus L., 13581
Scirpus pendulus Muhl., obs.

IRIDACEAE
Sisyrinchium campestre Bickn., obs.

JUNCACEAE
Juncus dudleyi Wieg., 228
Juncus interior Wieg., 271, 325
Juncus tenuis Willd., 297, 331
Juncus torreyi Coville, 13586

ORCHIDACEAE
Spiranthes gracilis (Bigel.) Beck, 12618
Spiranthes lacera (Raf.) Raf., 12618A

POACEAE
Agrostis gigantea Roth, 13565
Andropogon gerardii Vitman, 302, 312
Aristida oligantha Michx., 12583
Bouteloua curtipendula (Michx.) Torr., 313
**Bromus inermis* Leyss., 12144
Dichanthelium acuminatum (Sw.) Gould, 330,12621
Dichanthelium oligosanthes (Schultes) Gould. 13575
**Digitaria ischaemum* (Schreb.) Schreb., 12593A
Elymus canadensis L., 273
Elymus × *ebingeri* G.C. Tucker[1], 293
Elymus virginicus L., 13558
Eragrostis spectabilis (Pursh) Steudel, 13578
**Festuca arundinacea* Schreb., obs.
Panicum capillare L., 144
Panicum dichotomiflorum Michx., 13556
Panicum virgatum L., 328
**Poa pratensis* L. (obs.)
Schizachyrium scoparium (Michx.) Nash, 316
**Setaria faberi* F. Herrm., 12612
**Setaria glauca* (L.) Beauv., 315
Sorghastrum nutans (L.) Nash, 304
Sporobolus compositus (Poir.) Merr., 12593
Sporobolus heterolepis (Gray) Gray, 13553
Tridens flavus (L.) Hitchcock, 12598

SMILACACEAE
Smilax tamnoides L., 12606

[1] The other parent of this hybrid, *E. hystrix* L., was noted in the woods on the northern edge of the Homestead Prairie.

Erigenia, Number 20, October 2004, pp. 53—58

Important Floristic Finds from DuPage County, Illinois

Scott N. Kobal[1] and Wayne A. Lampa[2]

ABSTRACT: New state, regional and county records, as well as major range extensions in Illinois and new records for state endangered and threatened species are reported for DuPage County, Illinois. A total of 29 species is discussed (1 fern, 22 dicots and 6 monocots), of which 13 are new state records, 8 are new regional records, i.e., not included in Swink and Wilhelm (1994) for the Chicago region, and four are state endangered and threatened species not previously reported for DuPage County. Of the remaining four species, each is known from just one other county in northeastern Illinois, and two of them are known from one additional county outside northeastern Illinois. Of the 29 species described, 23 are introduced exotics.

Introduction

DuPage County is a rapidly urbanizing county of over 900,000 people, located in northeastern Illinois 15 miles west of downtown Chicago. DuPage is the second most densely populated county in Illinois. Land use in the county consists almost entirely of residential and commercial development, small areas of open space, and rapidly dwindling agricultural land. Most of the remaining open space and natural habitats are found in the 24,400 acres of land owned by the Forest Preserve District of DuPage County (FPDDC).

The county has a rich history of plant collection and identification, going back to the time of Pepoon (1927), who recorded many species from DuPage County. The county also owes much of this legacy to the knowledgeable collectors (Floyd Swink, Ray Schulenberg and Gerould Wilhelm) and meticulously-cataloged herbarium of the Morton Arboretum, Lisle, Illinois. Despite this, new plant records and voucher specimens are continually obtained for this heavily botanized county. This paper documents important new state, regional and county records, as well as major range extensions and new records of state endangered and threatened species, collected by the authors primarily on FPDDC lands.

Nomenclature for all plant species follows either Gleason and Cronquist (1991), Swink and Wilhelm (1994), or Mohlenbrock (2002b). All plant specimens that are mentioned in this report have been deposited in the herbarium at the Morton Arboretum. Distribution information for the Illinois counties in the Chicago Region follows Swink and Wilhelm (1994); for the state of Illinois, it follows Mohlenbrock and Ladd (1978) and Mohlenbrock (2002b). Distribution information for other states comes from Gleason and Cronquist (1991), or USDA, NRCS (2004).

FERN ALLIES

Isoetes butleri Engelm. (Glade Quillwort)
Family: Isoetaceae
Collection Habitat: Dolomite prairie along Des Plaines River
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: May 27, 1999
Collector: Scott N. Kobal (99-06)

Before its discovery in Will County in 1991 (Taylor and Schwegman 1992), *Isoetes butleri* was known only from limestone glades in eastern Kansas east across Missouri to south central Kentucky (Gleason and Cronquist 1991, Swink and Wilhelm 1994). This species was once thought to occur in six counties in extreme southern Illinois in the Shawnee Hills, growing on sandstone (Mohlenbrock, 1967). These reports were apparently based on misidentified specimens of *Isoetes melanopoda* J. Gay & Durieu (Taylor et al. 1976, Mohlenbrock 1999). *I. butleri* occupies seasonably wet spots over limestone and dolomite bedrock in dolomite prairie (Herkert 1994, Swink and Wilhelm 1994). The Illinois population is disjunct from the species' continuous range (USDA, NRCS 2004) and is listed as endangered in the state (Illinois Endangered

[1] Forest Preserve District of DuPage County, P. O. Box 5000, Wheaton, Illinois 60189-5000; author for correspondence
[2] Conservation Research Institute, 375 West First Street, Elmhurst, Illinois 60126

Species Protection Board, 1999). The DuPage County collection represents one of only two counties this species is currently known from in Illinois, as the plant previously was known only from five populations in Will County (Mohlenbrock 1999, Herkert and Ebinger 2002, Mohlenbrock 2002b).

DICOTYLEDONS

Vinca major L. (Greater Periwinkle)
Family: Apocynaceae
Collection Habitat(s): On spoil pile in weedy ground
Locality: Maryknoll Forest Preserve
Initial Collection Date: November 20, 2002
Collector: Scott N. Kobal and Wayne A. Lampa (FPD 02-34)

This native of southern Europe is cited as occasionally escaping from cultivation in the southern United States by Gleason and Cronquist (1991), and rarely in Illinois by Mohlenbrock (2002b). Mohlenbrock (2002b) reports the plant only from Pope County. Swink and Wilhelm (1994) do not record this species for northeastern Illinois.

Anthriscus caucalis M. Bieb. (Bur Chervil)
Family: Apiaceae (Umbelliferae)
Collection Habitat(s): Prairie restoration
Locality: Danada Forest Preserve
Initial Collection Date: June 11, 2001
Collector: Scott N. Kobal (FPD 01-07)

Anthriscus caucalis is a new state record. This European species occurs in 18 states scattered throughout the United States (USDA, NRCS 2004). Swink and Wilhelm (1994) only report this species from Porter and LaPorte counties in northwestern Indiana, where it is an occasional weed of the Indiana Dunes region. Mohlenbrock (2002b) reports this species as newly discovered in Illinois (based on this specimen).

Heracleum mantegazzianum Sommier & Levier (Giant Hogweed)
Family: Apiaceae (Umbelliferae)
Collection Habitat(s): Wooded floodplain near trail
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: June 27, 2001
Collectors: Wayne A. Lampa and Scott N. Kobal (FPD 01-11)

Giant hogweed is a new state record. This native of southwestern Asia has only been reported from five states: Maine, Michigan, New York, Pennsylvania and Washington (USDA, NRCS 2004). Gleason and Cronquist (1991) report that this species is established as a weed in central and western New York and is expected to spread. It is listed as a Federal Noxious Weed (USDA, NRCS 2004). Mohlenbrock (2002b) cites this plant as newly discovered in Illinois based on the above cited specimen.

Acanthopanax sieboldianus Mak. (Five-leaved Aralia, Palmate Hercules' Club)
Family: Araliaceae
Collection Habitat(s): Disturbed floodplain forest, mesic forest
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: June 10, 1997
Collectors: Wayne A. Lampa and Scott N. Kobal (97-12)

Acanthopanax sieboldianus is a new state record. Mohlenbrock (2002b) reports this species as escaped from cultivation in DuPage County (based on this specimen). This shrub is a native to Japan and China and is cultivated as an ornamental in this region. Only pistillate plants are in cultivation in North America so no fruit is produced (Dirr 1998). This species has been reported from only six states (Connecticut, Kentucky, Pennsylvania, Massachusetts, West Virginia and Utah), occurring primarily in the eastern United States (USDA, NRCS 2004).

Hedera helix L. (English Ivy)
Family: Araliaceae
Collection Habitat(s): Wooded floodplain
Locality: Warrenville Grove Forest Preserve
Initial Collection Date: December 12, 2001
Collector: Scott N. Kobal (FPD 01-26)

English ivy is known from 28 states in the contiguous United States (USDA, NRCS 2004). This plant is a native of Europe and is widely cultivated in various forms and occasionally escapes (Gleason and Cronquist 1991). Mohlenbrock and Ladd (1978) and Mohlenbrock (2002b) only report this species from Jackson County. Swink and Wilhelm (1994) do not list it for northeastern Illinois.

Symphyotrichum divaricutum (Nutt.) Nesom (Southern Annual Saltmarsh Aster)
Synonyms: *Aster subulatus* Michx. var. *ligulatus* Shinners
Aster exilis Ell., nomen dubium
Family: Asteraceae (Compositae)
Collection Habitat(s): Disturbed area along lake shoreline
Locality: West Branch Forest Preserve
Initial Collection Date: September 24, 2002
Collector: Scott N. Kobal (FPD 02-37)

Symphyotrichium divaricatum is a new state record. This species is found in 11 states in the south-central and central U.S. (USDA, NRCS 2004). It is a narrow-leaved annual rather similar to *Aster subulatus* Michx., but with better developed rays that evidently surpass the pappus. It is mostly more southern, but has been collected in southeastern Missouri (Gleason 1968).

Lobelia X speciosa Sweet (Hybrid Cardinal Flower)
Synonym: *Lobelia siphilitica* L. var. *hybrida* Hack.
Family: Campanulaceae (Lobeliaceae)
Collection Habitat: Wetland Mitigation Site (in association with *L. cardinalis* and *L. siphilitica*)
Locality: Wood Ridge Forest Preserve
Initial Collection Date: September 13, 2002
Collector: Scott N. Kobal (FPD 02-21)

Lobelia X speciosa is reputed to be a hybrid between *Lobelia cardinalis* L. and *Lobelia siphilitica* L. (Ebinger 1985, Mohlenbrock 1990, 2002b). The species is known from three states; Missouri, Illinois and Indiana (USDA, NRCS 2004). The deep rose flower color and hirtellous calyces of this hybrid distinguish it from its parents (Mohlenbrock 1990). This plant was first found in Illinois by Jacob Schneck, in the late 19th Century, in Wabash County. The only other records for this species in Illinois are from Macoupin and Coles Counties (Ebinger 1985).

Lonicera subsessilis Rehder.
Family: Caprifoliaceae
Collection Habitat(s): Mesic forest
Locality: Fullersburg Woods Forest Preserve
Initial Collection Date: May 19, 1997
Collectors: Victoria A. Nuzzo and Scott N. Kobal (97-10)

Lonicera subsessilis is a new state record. This shrub is a native of Korea, having been introduced to the United States in 1917. It differs from all related species in its 4-merous flowers (Rehder 1940).

Cucurbita pepo L. var. ***ovifera*** (L.) Alef. (Pear Gourd)
Family: Cucurbitaceae
Collection Habitat(s): Disturbed moist ground
Locality: West Branch Forest Preserve
Initial Collection Date: September 7, 1999
Collectors: Wayne A. Lampa and Scott N. Kobal (99-20)

Cucurbita pepo var. *ovifera* is a variety of the common field pumpkin (*Cucurbita pepo* L.) that is grown for the interesting and variable ornamental gourds it produces (Mohlenbrock 1978). Mohlenbrock and Ladd (1978), Mohlenbrock (1978) and USDA, NRCS (2004) report this tropical American species from seven counties in the southern half of Illinois. Swink and Wilhelm (1994) do not cite this species for northeastern Illinois.

Lupinus polyphyllus Lindl. (Bigleaf Lupine)
Family: Fabaceae (Leguminosae)
Collection Habitat(s): Prairie restoration
Locality: Pratt's Wayne Woods Forest Preserve
Initial Collection Date: June 3, 1994
Collector: Scott N. Kobal (94-19)

Bigleaf lupine is a new state record. Gleason and Cronquist (1991) describe this as a western species that has casually escaped from cultivation in northern New England and adjacent Canada. This plant is reported from 14 states, primarily in the northern and western United States (USDA, NRCS 2004).

Lamium galeobdolon (L.) L. (Yellow Archangel)
Family: Lamiaceae (Labiatae)
Collection Habitat(s): Oak woodland
Locality: Wayne Grove Forest Preserve
Initial Collection Date: May 10, 1999
Collector: Scott N. Kobal (99-02)

Lamium galeobdolon is a new state record. This Eurasian ornamental is known from only three states: Massachusetts, New York, and Virginia (USDA, NRCS 2004).

Magnolia stellata (Sieb. & Zucc.) Maxim. (Star Magnolia)
Family: Magnoliaceae
Collection Habitat(s): Shrubby old-field
Locality: Herrick Lake Forest Preserve
Initial Collection Date: November 2, 1994
Collectors: Wayne A. Lampa and Scott N. Kobal (94-38)

Star magnolia is a new state record. This ornamental tree, a native of Asia, is known as an escape only from Ohio in the United States (USDA, NRCS 2004).

Epilobium parviflorum Schreber (Small Flowered Hairy Willow Herb)
Family: Onagraceae
Collection Habitat(s): Marsh
Locality: The Morton Arboretum
Initial Collection Date: August 5, 2002
Collector: Scott N. Kobal (FPD 02-10)

Epilobium parviflorum is a new state record. This European species is known from only three states: Michigan, Ohio and Pennsylvania (USDA, NRCS 2004). Gleason and Cronquist (1991) report that it is introduced in wet places in Michigan and southern Ontario.

Oenothera perennis L. (Small Sundrops)
Family: Onagraceae
Collection Habitat(s): Shrubby wet prairie
Locality: Fischer Woods Forest Preserve
Initial Collection Date: June 26, 2003
Collector: Scott N. Kobal (FPD 03-22)

Oenothera perennis occurs in sand and gravel prairie and on dry rocky prairie slopes and knobs in northern Illinois (Herkert and Ebinger 2002). This state threatened species is cited from only four counties in Illinois, three of these (Lake, Cook and Will) being in northeastern Illinois (Swink and Wilhelm 1994, Herkert and Ebinger 2002). Mohlenbrock (2002b) cites this plant from Cook, Lake, McHenry, Will and Winnebago Counites.

Potentilla intermedia L. (Intermediate Cinquefoil)
Family: Rosaceae
Collection Habitat(s): Prairie restoration
Locality: Glen Oak Forest Preserve
Initial Collection Date: June 23, 1994
Collectors: Wayne A. Lampa and Scott N. Kobal (94-26)

Potentilla intermedia is a native of Eurasia that is found in 21 states in the northeast and midwest (Gleason and Cronquist 1991, USDA, NRCS 2004). This species has been recorded from Champaign, Hamilton and McDonough Counties in Illinois (Mohlenbrock and Ladd 1978, Mohlenbrock 2002b). Swink and Wilhelm (1994) do not cite this species for northeastern Illinois.

Prunus subhirtella Miq. (Higan Cherry)
Family: Rosaceae
Collection Habitat(s): Oak woodland adjacent to the Morton Arboretum
Locality: Hidden Lake Forest Preserve
Initial Collection Date: June 19, 2001
Collector: Scott N. Kobal (FPD 01-08)

Prunus subhirtella is a new state record. This species is native to Eurasia having been introduced from Japan in 1844 (Rehder 1940). This handsome tree is planted as an ornamental and is reported as escaping in the United States only from the state of Ohio (USDA, NRCS 2004).

Pyrus betulaefolia Bunge. (Birch-leaved Pear)
Family: Rosaceae
Collection Habitat(s): Shrubby old-field adjacent to the Morton Arboretum
Locality: Hidden Lake Forest Preserve
Initial Collection Date: July 17, 1995
Collector: Scott N. Kobal (95-37)

Pyrus betulaefolia is a new state record. This fast growing species is native to Asia, was introduced about 1865 and is planted as an ornamental and as a fruit tree (Rehder 1940).

Rosa centifolia L. (Cabbage Rose)
Family: Rosaceae
Collection Habitat(s): Along a hedgerow near a former home site
Locality: Springbrook Prairie Forest Preserve
Initial Collection Date: June 26, 1995
Collector: Scott N. Kobal (95-24)

Rosa centifolia is a new state record. This cultivated rose rarely escapes from cultivation (Gleason and Cronquist 1991). It is reported from eight states: Wisconsin, Michigan, Missouri, New York, New Jersey, Ohio, Pennsylvania and Connecticut (USDA, NRCS 2004).

Rosa virginiana Mill. (Virginia Rose)
Family: Rosaceae
Collection Habitat(s): Marsh edge
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: June 17, 1998
Collector: Scott N. Kobal (98-13)

Rosa virginiana is introduced to the Chicago Region from farther east where it is known only from Lake County (Swink and Wilhelm 1994, Mohlenbrock 2002b). This rose is known from 18 states, mostly in the eastern U.S. (USDA, NRCS 2004), with Missouri being the westernmost edge of its range.

Petunia parviflora A. L. Juss. (Seaside Petunia)
Family: Solanaceae
Collection Habitat(s): Open floodplain along Salt Creek
Locality: Salt Creek Greenway Forest Preserve
Initial Collection Date: October 7, 2003
Collector: Scott N. Kobal (FPD 03-40)

Petunia parviflora is a new state record. This species is mainly subtropical in both North and South America, and is occasionally found north in the northeastern United States as a waif (Gleason and Cronquist 1991). Seaside petunia is known from eight states in the southern and western U. S. and Puerto Rico (USDA, NRCS 2004).

Solanum sarachoides Sendtn. (Hairy Nightshade)
Synonym: *Solanum sarrachoides* Sendtner
Family: Solanaceae
Collection Habitat(s): Disturbed ground
Locality: The Morton Arboretum
Initial Collection Date: July 18, 2000
Collector: Scott N. Kobal (FPD 00-07)

This South American species is very widespread in the United States (USDA, NRCS 2004), occurring in 40 of the 48 contiguous states. Mohlenbrock (1990) reports this plant from St. Clair County based on a collection in 1981. Swink and Wilhelm (1994) cite it only from DeKalb County in northeastern Illinois. Mohlenbrock (2002b) reports this plant as adventive in disturbed soil in DeKalb and St. Clair Counties.

Verbena x engelmannii Moldenke (Engelmann's Vervain)
Family: Verbenaceae
Collection Habitat(s): Prairie and field edges
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: August 24, 2001
Collector: Scott N. Kobal (FPD 01-19)

This plant is reputed to be a hybrid between *Verbena hastata* L. and *Verbena urticifolia* L. (Mohlenbrock 2002b). This plant is known from 24 states in the eastern and midwestern United States (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) and Mohlenbrock (2002b) report this species only from Jackson County. Swink and

Wilhelm (1994) cite this plant from Kankakee County in northeastern Illinois.

MONOCOTYLEDONS

Scirpus hattorianus Makino (Early Dark Green Rush)
Family: Cyperaceae
Collection Habitat(s): Wooded riparian area
Locality: Fullersburg Woods Forest Preserve
Initial Collection Date: October 18, 1994
Collector: Scott N. Kobal (94-37)

Mohlenbrock (2002b) reports this very rare species from Cook, Carroll and Kankakee Counties. Swink and Wilhelm (1994) record this plant from Lake and Kankakee counties in northeastern Illinois. Herkert and Ebinger (2002) record this state endangered species from Lake, DuPage and Kankakee counties. This plant is usually found in moist upland soils with light to moderate shade, whereas *Scirpus atrovirens* Willd., to which it is closely related, grows more commonly in marshes, stream sides and wet meadows (Swink and Wilhelm 1994, Tucker 2000).

Scirpus paludosus A. Nelson (Alkali Bulrush)
Synonyms: *Bolboschoenus maritimus* (L.) Palla
Scirpus maritimus L.
Scirpus maritimus L. var. *paludosus* (A. Nels.) Kuk.
Family: Cyperaceae
Collection Habitat(s): Wetland areas along heavily used roadways
Locality: Fischer Woods Forest Preserve
Initial Collection Date: July 3, 1997
Collector: Scott N. Kobal (97-13)

Scirpus paludosus is a widely distributed plant in the United States, occurring in 35 of the contiguous United States and Alaska and Hawaii (USDA, NRCS 2004). Mohlenbrock (2002b) cites only Cook and LaSalle Counties for this state endangered species. Swink and Wilhelm (1994) consider this species to be introduced from farther west and record it from Lake, Cook and Grundy Counties. Herkert and Ebinger (2002) report this bulrush from Cook, DuPage and LaSalle counties.

Egeria densa Planch. (Brazilian Waterweed, Giant Waterweed)
Synonyms: *Anacharis densa* (Planch.) Vict.
Elodea densa (Planch.) Caspary
Family: Hydrocharitaceae
Collection Habitat(s): Artificial pond
Locality: West DuPage Woods Forest Preserve
Initial Collection Date: October 30, 1996
Collectors: Scott N. Kobal, Wayne A. Lampa and Gerould S. Wilhelm (96-44)

Egeria densa is native of southeastern Brazil and northern Argentina and is commonly cultivated in aquaria and occasionally established in ponds (Gleason and Cronquist 1991). Brazilian waterweed is reported from 33 states in the contiguous United States, as well as Hawaii and Puerto Rico (USDA, NRCS 2004). This species is usually found as an adventive in mine ponds in Illinois and has been reported from the southern Illinois counties of Edwards, Franklin, Jefferson and Williamson (Mohlenbrock and Ladd 1978, Mohlenbrock 2002b). Mohlenbrock (1970) reports that the method of introduction to Illinois waters is at this time unknown, although it is suspected to be the result of aquarium disposals. This represents the first collection of this species in northern Illinois.

Najas minor All. (Brittle Naiad)
Family: Najadaceae
Collection Habitat(s): Quarry pond, wetland restorations and artificial lakes
Locality: Pratt's Wayne Woods Forest Preserve
Initial Collection Date: October 1, 1997
Collector: Scott N. Kobal (97-27)

This species was first discovered in Illinois in 1963 from Lake Murphysboro (Mohlenbrock 1970). *Najas minor* has not previously been reported north of Iroquois County, being occasional to common in the southern two-thirds of the state, but absent elsewhere (Mohlenbrock and Ladd 1978, Mohlenbrock 2002b). This Eurasian species is found in ponds, lakes, and slow-moving streams, often in eutrophic or alkaline waters in 22 states, primarily in the eastern U. S. (Gleason and Cronquist 1991, USDA, NRCS 2004).

Agropyron elongatum (Host) P. Beauv. (Tall Wheat Grass)
Synonyms: *Elytrigia elongata* (Host) Nevski
Elytrigia pontica (Podp.) Holub
Triticum elongatum Host
Family: Poaceae (Gramineae)
Collection Habitat(s): Prairie restorations
Locality: Timber Ridge Forest Preserve
Initial Collection Date: August 8, 2000
Collector: Scott N. Kobal (FPD 00-04)

Agropyron elongatum is introduced from the Mediterranean region and has escaped at scattered locations in the western United States, as well as being locally established in southern Ontario (Gleason and Cronquist 1991). The species is known from 19 states, with Illinois being the only state east of the Mississippi River (USDA, NRCS 2004). Swink and Wilhelm (1994) only record this grass from a single collection made in 1974 in Cook County. Mohlenbrock (2002a,b) also note only one collection from Cook County on disturbed saline soils.

Tripsacum dactyloides (L.) L. (Eastern Gama Grass)
Family: Poaceae (Gramineae)
Collection Habitat(s): Railroad right-of-way
Locality: Waterfall Glen Forest Preserve
Initial Collection Date: September 13, 1995
Collector: Patricia Armstrong

Tripsacum dactyloides is reported by Mohlenbrock (2002b) as occurring occasionally in low ground in the southern two-thirds of the state, but being absent elsewhere. Mohlenbrock and Ladd (1978) do not report this species occurring north of Fulton and Tazewell Counties. Swink and Wilhelm (1994) do not list this species as occurring in the Chicago region.

ACKNOWLEDGMENTS

The authors would like to thank Dr. Gerould Wilhelm and the late Floyd Swink for their tireless and enthusiastic help in identifying specimens over the years, as well as providing encouragement and guidance. We would also like to thank William Hess and Kim Allen, formerly of the Morton Arboretum Herbarium for their work in cataloging and carefully preserving all of the specimens the authors have collected. We thank Rachel Reklau of the Forest Preserve District of DuPage County, for reviewing the manuscript and providing editorial help.

LITERATURE CITED

Ebinger, J. E. 1985. *Lobelia cardinalis* x *L. siphilitica* in Illinois. Transactions of the Illinois Academy of Science 78:29—31.

Dirr, M. A. 1998. Manual of woody landscape plants—their identification, ornamental characteristics, culture, propagation and uses. 5th edition. Stipes Publishing, L.L.C. Champaign, Illinois.

Gleason, H. A. 1968. The new Britton and Brown illustrated flora of the northeastern United States and adjacent Canada. 4th printing. The New York Botanical Garden, Bronx, New York.

Gleason, H. A. and A. Cronquist. 1991. Manual of vascular plant of northeastern United States and adjacent Canada. New York Botanical Garden, Bronx, New York.

Herkert, J. R. 1994. Endangered and threatened species of Illinois: status and distribution, Volume 3: changes to the Illinois list of endangered and threatened species. Illinois Endangered Species Protection Board, Springfield, Illinois.

Herkert, J. R. and J. E. Ebinger, editors. 2002. Endangered and Threatened Species in Illinois: Status and Distribution, Volume 1—Plants. Illinois Endangered Species Protection Board, Springfield, Illinois. 161 pp.

Illinois Endangered Species Protection Board. 1999. Checklist of endangered and threatened plants and animals of Illinois. Endangered Species Protection Board, Springfield, Illinois.

Mohlenbrock, R. H. 1967. The illustrated flora of Illinois: Ferns. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 1970. Guide to the vascular flora of Illinois: Flowering plants, flowering rush to rushes. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 1978. The illustrated flora of Illinois: Flowering plants, hollies to loasas. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 1990. The illustrated flora of Illinois: Flowering plants, nightshades to mistletoe. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 1999. The illustrated flora of Illinois: Ferns – 2nd edition. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 2002a. The illustrated flora of Illinois: Grasses, *Bromus* to *Paspalum* – 2nd Edition. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. 2002b. Vascular flora of Illinois. Southern Illinois University Press, Carbondale, Illinois.

Mohlenbrock, R. H. and D. M. Ladd. 1978. Distribution of Illinois vascular plants. Southern Illinois University Press, Carbondale, Illinois.

Pepoon, H. S. 1927. An annotated flora of the Chicago area. Chicago Academy of Science, Chicago, Illinois.

Rehder, A. 1940. Manual of cultivated trees and shrubs hardy in North America. 2nd ed. Macmillan Company, New York.

Swink, F. and G. Wilhelm. 1994. Plants of the Chicago Region. 4th ed. Indiana Academy of Science, Indianapolis.

Taylor, W. C., R. H. Mohlenbrock, and J. Murphy. 1976. The spores and taxonomy of *Isoetes butleri* and *I. melanopoda*. American Fern Journal 65:33—38.

Taylor, W. C. and J. E. Schwegman. 1992. *Isoetes butleri* in Illinois. American Fern Journal 82:82—83.

Tucker, G. C. 2000. Some notable plant records from east-central and southern Illinois. Erigenia 18:75—79.

USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA. 70874-4490. USA

ERIGENIA, Number 20, October 2004, pp 59—66

EFFECTS OF PRESCRIBED BURNING ON THE WOODY UNDERSTORY AT EMMA VANCE WOODS, CRAWFORD COUNTY, ILLINOIS

Bob Edgin[1] and Roger Beadles[2]

ABSTRACT: The overstory composition and effects of prescribed burning on the woody understory were studied at Emma Vance Woods, Crawford County, Illinois, during the 1997 to 2003 growing seasons. The study area is a dry-mesic upland forest located in a presettlement forest-prairie interface zone. Overstory and woody understory sampling were conducted in September 1999. Prescribed burning was conducted in March 2001 and December 2002. Post-burn understory sampling was conducted in September 2003. Increment cores were removed from randomly selected *Quercus alba* L. (white oak) and *Carya* spp. (hickory) trees in December 2003. Increment cores indicated the canopy trees were approximately 150 years old, a date that corresponds to a period of increased settlement in that portion of Crawford County. Tree density averaged 307.5 trees/ha with the dominant species being white oak (IV = 64.4 of 200), followed by *Q. velutina* Lam. (black oak), *Carya tomentosa* (Poir.) Nutt. (mockernut hickory), *C. glabra* (Mill.) Sweet (pignut hickory) and *Sassafras albidum* (Nutt.) Nees (sassafras). Following burning, large sapling (> 2.5 cm dbh and < 10.0 cm dbh) density was reduced from an average of 688 stems/ha to 478 stems/ha (-30.5%) and small sapling (> 50 cm tall and < 2.5 cm dbh) density was reduced from 4,720 stems/ha to 820 stems/ha (-82.6%). Woody seedling (< 50 cm tall) density increased from 38,720 stems/ha to 108,000 stems/ha.

INTRODUCTION

Prior to European settlement, hereafter referred to as presettlement, forest vegetation covered approximately 39% of Illinois with the distribution of the forest types being determined by soil, topography and fire patterns (Iverson et al. 1991). Closed canopy forests usually occurred near streams, areas of rugged topography, or other locations where natural features of the landscape limited fire (Anderson and Anderson 1975, Ebinger 1987). In forest-prairie interface zones and other areas where fire intensity and/or frequency were greater, open woodlands, savannas, and barrens were common.

In east-central Illinois, open oak-hickory woodlands occupied up to 35% of the local presettlement landscape (Edgin 1996, Edgin and Ebinger 1997, Cowell and Jackson 2002). In Crawford County, about 33% of the landscape was prairie and 33% was forest (Edgin and Ebinger 1997) while open woodlands (16%) and barrens (11%) were also common.

Emma Vance Woods is located in Licking Township in the extreme northwest corner of Crawford County. Prior to European settlement, this area contained a mosaic of closed canopy forests, prairies, and open woodlands (Figure 1). *Quercus alba* L. (white oak), *Quercus velutina* Lam. (black oak) and *Carya* spp. (hickories) were common components of the forests with *Ulmus* spp. (elm), *Fraxinus* spp. (ash), *Celtis occidentalis* L. (hackberry) and *Acer saccharum* Marsh. (sugar maple) as lesser associates (General Land Office survey notes). The tallgrass prairies occurred on more level areas or on broad, low ridges and were probably dominated by *Andropogon gerardii* Vitman (big blue stem) (Perrin 1883, Schwegman 1973). Open woodlands usually occurred in areas of rolling topography or forest-prairie interface zones and were dominated by white oak, black oak and hickories (General Land Office survey notes, Edgin and Ebinger 1997). *Corylus americana* Walt. (hazelnut), briars and vines were frequently mentioned as understory components, but grasses, shrubby oaks and *Sassafras albidum* (Nutt.) Nees (sassafras) were also reported (General Land Office survey notes).

[1] Illinois Nature Preserves Commission, 9940 East 500th Avenue, Newton, Illinois 62448, author for correspondence
[2] Rural Route 1, Box 140, Ellery, Illinois 62833

European settlement of Crawford County began at Palestine and Hutsonville in the east-central portion of the county in the early 1800s (Perrin 1883, Selby 1909). Licking Township was first settled by squatters in the 1820s and experienced sporadic settlement until the 1840s when a number of families migrated from Ohio (Selby 1909). Settlement was sporadic through the latter 1800s and extensive prairies persisted in the township through the early 1880s. Dolson prairie, in the eastern part of the township, covered about 520 ha; Willow prairie was 5.6 km long north to south and 4.8 km wide. White's prairie, located near the western border of the township, was 2.5 km wide (Perrin 1883).

During the 1900s, most of the natural communities in Crawford County were lost or altered by clearing, grazing, fire suppression, urbanization and other changes in land use practices. By 1996, 64% of the Crawford County land base had been converted to cropland, the prairies had been eliminated and open woodlands occupied only 0.7% of the landscape (Illinois Department of Natural Resources 1996). Of the open woodlands that remain, many have probably experienced considerable changes in their composition and structure due to timber harvests, natural succession and fire suppression and none have been studied quantitatively.

Emma Vance Woods is located in a presettlement ecotonal area. The site is owned by Lincoln Trail College (LTC), Robinson, Illinois, and is used as an outdoor education area. Prior to this study, no formal studies or quantitative baseline data existed for the site. Prescribed burning was implemented to reduce woody understory stem density, reduce accumulated leaf litter, encourage recruitment of herbaceous species and to restore a more open character to the understory. The purposes of this study were 1) to provide a quantitative description of the woody overstory, 2) to provide a quantitative description of the woody understory vegetation both before and after prescribed burning, and 3) to establish permanent monitoring stations for long term study of the site.

DESCRIPTION OF THE STUDY SITE

Emma Vance Woods (EVW) is a 16.2 ha parcel located about 18 km northwest of Robinson in Crawford County, Illinois, at 39° 06' 50" north latitude; 87° 53' 11" west longitude (Figure 1). The property was donated to The Nature Conservancy around 1980 and ownership was transferred to LTC shortly thereafter (J. Schulte, LTC, pers. comm.). It contains 5.7 ha of dry-mesic upland forest, 4.4 ha of mesic floodplain forest and 6.1 ha of successional forest. The dry-mesic upland forest was the focus of this study.

EVW is located in the Effingham Plain Section of the Southern Till Plain Natural Division of Illinois (Schwegman 1973) and in the east-central edge of Transeau's (1935) prairie peninsula and Anderson's (1983) prairie-forest transition. The climate is continental with hot summers and cold winters. Average temperature ranges from -2.7° C (27.2° F) in January to 24.9° C (76.8° F) in July (Awalt 1996). Average annual precipitation is 95 cm (38 inches) (Awalt 1996).

The surrounding landscape is primarily agricultural with second-growth forests confined to stream corridors or areas that are unsuitable for farming (Figure 1). County roads border the west and north sides of the property. Muddy Creek, a low gradient perennial stream, flows in a southerly direction through the site. The upland forest is west of Muddy Creek.

The study area slopes gently from northwest to southeast. Elevation ranges from 161 m above sea level in the northwest corner to 158 m above sea level in the southeast corner. The soil is Bluford silt loam, a somewhat poorly drained soil that developed on Illinoian till overlain with loess (Awalt 1996). Sandstone fragments are at or near the surface along the east-facing slope that overlooks Muddy Creek.

Prairie vegetation, including big blue stem, *Arnoglossum atriplicifolium* (L.) H. Robins. (Indian plantain), *Coreopsis tripteris* L. (tall coreopsis), *Monarda fistulosa* L. (bee balm), *Orbexilum onobrychis* (Nutt.) Rydb. (French grass), *Phlox pilosa* L. (downy phlox), *Pycnanthemum tenuifolium* Schrad. (slender mountain mint) and *Verbesina helianthoides* Michx. (yellow crownbeard), are common along the north and west sides of the study area. No evidence of recent timber harvest was observed during the study, nor was any present when LTC acquired the property (J. Schulte, LTC, pers. comm.). Prior to March 2001, no management activities had been conducted in the study area since LTC obtained the property. No written or oral written accounts detailing land uses or management activities that may have occurred prior to 1980 could be obtained.

MATERIALS AND METHODS

In September 1999, a 2.25 ha (100 m x 225 m) study area was established in the upland forest. For overstory sampling, the study area was divided into quadrats 25 meters on a side and the species and diameter recorded for all trees >10.0 cm diameter at breast height (dbh). From these data, density (#/ha), basal area (m2/ha), relative density, relative dominance, importance value (relative density + relative dominance = 200) and average dbh were determined for each species. Nomenclature follows Mohlenbrock (2002).

The woody understory was sampled using nested circular plots of 0.01, 0.001, 0.0001 ha located at 12 meter intervals along alternating sides of three transect lines having north-south orientations. Odd-numbered plots were located west of the transect lines, even-numbered plots to the east. The distance from the transect line to the center of each nested plot was determined using a single digit random numbers table. Four additional 0.0001 ha plots were located six meters from the center of each nested plot in each of the cardinal compass directions. The transect

lines were marked with 1 cm steel rods placed at 48 meter intervals and painted fluorescent orange. Large saplings (>2.5 cm dbh and <10.0 cm dbh) were sampled in the 0.01 ha plots (r = 5.64 m, n = 50). Small saplings (>50 cm tall and <2.5 cm dbh) were sampled in the 0.001 ha plots (r = 1.78 m, n = 50) and woody seedlings (< 50 cm tall) were sampled in the 0.0001 ha plots (r = 56.4 cm, n = 250). Density (stems/ha) was determined for large and small saplings and woody seedlings.

Prescribed burning was conducted by staff from the Illinois Nature Preserves Commission (INPC) and Illinois Department of Natural Resources (IDNR) in March 2001 and December 2002. These burns were conducted in early afternoon under clear skies with steady west or northwest winds of 10—16 km/hour. Fire intensity and rate of spread were moderate. Average flame length was 50 cm.

In December 2003, increment cores were removed from five randomly selected white oaks and five hickories using a 30 cm increment borer. After the cores were dried, sanded and stained, they were examined under a binocular microscope to determine the number of annual rings/core and distance between each of the rings.

RESULTS

Overstory sampling

In the overstory sampling, 22 tree species were encountered, averaging 307.5 trees/ha with a basal area of 26.967 m2/ha (Table 1). White oak was the dominant species, with an importance value of 64.4, and was most abundant in the 40+ cm diameter classes. Black oak ranked second in importance value (IV = 35.6) and was present in low numbers in all diameter classes. *Carya tomentosa* (Poir.) Nutt. (mockernut hickory) and *Carya glabra* (Mill.) Sweet (pignut hickory) ranked third and fourth in importance value, respectively, primarily because of their abundance in the smaller diameter classes. Sassafras and sugar maple ranked fifth and sixth, respectively, and were most abundant in the 10—19 cm dbh class. Sassafras was distributed fairly evenly throughout the forest. Sugar maple was restricted to a slope in the southeast corner of the forest. Dead standing trees averaged 12.4 trees/ha with white oak (2.7 trees/ha), sassafras (2.7), pignut hickory (1.8) and black oak (1.3) accounting for most of the total. The average diameter (cm) for each of these species was 25.2, 12.1, 15.0 and 45.3, respectively.

Tree growth form and increment core analysis

None of the canopy trees had limb scars characteristic of open-grown trees and none had a lowest limb less than 8 meters above ground level. The number of annual rings on the white oak cores ranged from 122 to 156 and averaged 134.6 rings/core (Table 2). However, the increment borer was not of sufficient length to reach the center of those trees; so the number of annual rings represents the minimum age of the tree. The number of annual rings on the hickory cores ranged from 133 to 159 and averaged 145.8 rings per core. One hickory tree had a punky center, so the total number of annual rings could not be determined.

During the period of 1844—1935, the average distance between the annual rings was 0.8 mm on the white oak cores and 1.2 mm on the hickory cores (Table 2). Both species experienced a rather dramatic increase in growth rate that began about 1935 and continued until about 1960. During this period, the distance between annual rings on the white oak cores averaged 3.4 mm while the hickories averaged 2.0 mm. A slower growth rate was observed for the period of 1960—2003. During this time period, the average distance between growth rings on the white oak cores was 2.3 mm; the hickories averaged 0.8 mm.

Understory sampling

Pre-burn large sapling density averaged 688 stems/ha with *Ulmus rubra* Muhl. (red elm), sassafras, sugar maple, *Cornus florida* L. (flowering dogwood), and *Cercis canadensis* L. (redbud) being the most abundant (Table 3). Post-burn large sapling density averaged 478 stems/ha with the density of red elm, sassafras and redbud reduced by 44.6%, 58.7%, 50.0%, respectively. Stem density for hickories as a group was not affected by burning, but their percentage of all stems increased from 10.8% prior to burning to 15.1% following burning because of the overall reduction in large sapling density. Oaks were scarce, with only six individuals encountered in both the pre- and post-burn sampling. Most other species experienced only minor changes in stem density.

Pre-burn small sapling density averaged 4,720 stems/ha with red elm, *Asimina triloba* (L.) Dunal (pawpaw), ash, sassafras and hackberry being the most abundant (Table 3). Post-burn small sapling density averaged 820 stems/ha with root sprouts of pawpaw, sassafras, *Populus grandidentata* Michx. (big tooth aspen) and *Acer negundo* L. (box elder) being the only species encountered. Small saplings of red elm, which accounted for 52.9% of the pre-burn stems, were not encountered in post-burn sampling.

Pre-burn woody seedling density averaged 38,720 stems/ha with red elm, ash, sassafras, *Carya ovata* (Mill.) K. Koch (shagbark hickory) and hackberry being the most abundant among the tree species and *Viburnum recognitum* Fern. (arrowwood), *Viburnum prunifolium* L. (black haw), hazelnut and *Euonymus atropurpureus* Jacq. (wahoo) the most abundant shrubs (Table 3). Post-burn woody seedling density averaged 108,000 stems/ha with root sprouts of red elm (33.0%), sassafras (12.3%) and pawpaw (7.5) and seedlings of *Vitis* spp.(grape) (21.3%) and hackberry (3.8%) accounting for most of the stems. Grape and hackberry seedlings were usually less than 5 cm tall and were most often encountered near the base of larger trees and under avian perches in canopy gaps. Sugar maple and red maple seedlings increased considerably, probably due to the removal of leaf litter, but most were less than 5 cm tall.

Although no herbaceous sampling was conducted, visual observations revealed very little herbaceous vegetation in the interior of the upland forest prior to burning. *Parthenocissus quinquefolia* (L.) Planch. (Virginia creeper), *Viola* spp. (violets) and scattered clumps of *Carex* spp. (sedges) were the most common species among the thick leaf litter. Following burning, most of the herbaceous species observed were typical of a closed canopy oak-hickory forest and included disturbance-related species such as *Conyza canadensis* (L.) Cronq. (mare's tail), *Phytolacca americana* L. (pokeweed), *Galium* spp. (bedstraw) and *Acalypha rhomboidea* Raf. (three-seeded mercury). A few species typical of more open woodlands, such as *Helianthus divaricatus* L. (woodland sunflower), *Solidago ulmifolia* Muhl. (elm-leaved goldenrod), *Porteranthus stipulatus* (Muhl.) Britt. (Indian physic), and *Monarda bradburiana* Beck. (bee balm) were observed near the edges and in the more open areas. Other species present, but suppressed pre-burn, or observed for the first time in the forest following burning, included *Veronicastrum virginicum* (L.) Farw. (Culver's root), *Eupatorium sessilifolium* L. (upland boneset), *Hedeoma pulegioides* (L.) Pers. (American pennyroyal), *Arnoglossum atriplicifolium* (L.) Robins (Indian plantain) and *Scrophularia marilandica* L. (late figwort). Species having a strong affinity to prairie communities were confined to the north and west edges of the forest.

DISCUSSION

The data derived from the increment cores indicate the canopy trees date back to the 1850s, a date that corresponds to a period of increased settlement in Licking township. The core data also suggest that some activity led to an opening of the canopy and a period of increased basal area production beginning circa 1935. Local historical and weather records give no indication that a natural event, such as a tornado, windstorm, or wildfire occurred during that time frame. Therefore, it seems likely that the increased basal area production may have been stimulated by a selective timber harvest. A selective harvest may also explain the relative lack of trees in 60+ cm diameter class.

Although the study area is located in a presettlement ecotonal region, the canopy trees lacked the characteristic form of open-grown trees. The lack of lower limbs and limb scars also suggest that the canopy trees developed in a closed canopy forest rather than an open woodland. At 307.5 trees/ha, the tree density at Emma Vance Woods is nearly twice that of the presettlement forests of Crawford and neighboring Lawrence County (Edgin and Ebinger 1997, Edgin 1996). The tree density and lack of oaks in the smaller diameter classes at EVW is consistent with results reported from recent studies at Red Hills Woods Nature Preserve in Lawrence County (277 trees/ha) and Big Creek Woods Memorial Nature Preserve in nearby Richland County (370.7 trees/ha) (Edgin and Ebinger 2001, Edgin 2003a).

Hickories as a group were abundant among the smaller diameter trees at EVW, having a combined importance of 47.0. Hickories also accounted for 15.1% of the stems encountered in the post-burn large sapling category, indicating that they will be a major component of the forest in the future. This pattern of hickory recruitment has been observed at other natural areas in southeastern Illinois and appears to be most prevalent in forests near the dry end of the dry-mesic continuum (Edgin et al. 2002, Edgin 2003a, Edgin 2003b).

Conducted in a highly fragmented landscape, the burns at EVW lacked the scale, and perhaps the intensity, of presettlement fires. Infrequent, high intensity fires have a greater capacity to reduce large tree density than frequent, low intensity fires, which tend to reduce woody understory density and stimulate herbaceous recruitment (Nuzzo 1994). Given the position of EVW in the modern landscape, high intensity fires are not possible and it seems unlikely that prescribed burning alone can reduce the density of the canopy trees and large saplings to that of a presettlement open woodland. However, the low intensity burns at EVW substantially reduced large and small sapling density and invigorated many herbaceous species, but root sprouts of red elm, sassafras, pawpaw and ash were common in the seedling category. Jenkins and Jenkins (1996) reported similar findings from a single prescribed burn in which sapling density was initially reduced by 54%, but 92% of the fire-killed hardwood stems resprouted. Frequent burning may be necessary to moderate the abundance of red elm, pawpaw and sassafras.

ACKNOWLEDGMENTS

The authors wish to thank Lincoln Trail College and the Illinois Nature Preserves Commission for granting permission to conduct the study. Sincere appreciation is also extended to Dr. J. E. Ebinger for his thoughts on study design, to Brian Garrard and Tracey Edgin for their assistance in data collection and to two anonymous reviewers whose thoughtful comments greatly improved the manuscript.

LITERATURE CITED

Anderson, R. C. 1983. The eastern prairie-forest transition - An overview. P. 86—92 *in* R. Brewer, ed., Proceedings of the Eighth North American Prairie Conference. Western Michigan University, Kalamazoo, Michigan.

Anderson, R. C. and R Anderson. 1975. The presettlement vegetation of Williamson County, Illinois. Castanea 40:345—363.

Awalt, F. L. 1996. Soils Survey of Crawford County, Illinois. United States Department of Agriculture, Washington, D.C.

Cowell, C. M. and M. T. Jackson. 2002. Vegetation change in a forest remnant at the eastern presettlement prairie margin, U.S.A. Natural Areas Journal 22:53—60.

Ebinger, J. E. 1987. Presettlement vegetation of Coles County, Illinois. Transactions of the Illinois State Academy of Science 80:15—24.

Edgin, B. R. 1996. Barrens of presettlement Lawrence County, Illinois. P. 59—65 in Charles Warwick ed., Proceedings of the 15th North American Prairie Conference, October 23—26, 1996, St. Charles, Illinois.

Edgin, B. R. 2003a. Vascular flora Big Creek Woods Memorial Nature Preserve, Richland County, Illinois. Transactions of the Illinois State Academy of Science 96:179—192.

Edgin, B. R. 2003b. Changes in the woody vegetation at Sandy Branch Woods, Marion County, Illinois from 1976 to 2003. Illinois Nature Preserves Commission report for landowner, Springfield.

Edgin, B. R. and J. E. Ebinger. 1997. Barrens and the forest-prairie interface in presettlement Crawford County, Illinois. Castanea 62:260-267.

Edgin, B. R. and J. E. Ebinger. 2001. Vascular flora of the Red Hills State Park, Lawrence County, Illinois. Transactions of the Illinois State Academy of Science 94:1—19.

Edgin, B. R., R. Beadles, and J. E. Ebinger. 2002. Woody composition and structure of Karcher's Post Oak Woods Nature Preserve, Hamilton County, Illinois. Transactions of the Illinois State Academy of Science 95:251—259.

General Land Office. Survey notes. Volumes 163—166, 174, 176. Illinois State Archives. Illinois State Museum, Springfield, Illinois.

Illinois Department of Natural Resources. 1996. Illinois land cover, an atlas. Illinois Department of Natural Resources, Springfield.

Iverson, L. R., G. L. Rolfe, T. J. Jacob. A. S. Hodgins, and M. R. Jeffords. 1991. Forests of Illinois. Illinois Council on Forest Development, Urbana, and Illinois Natural History Survey, Champaign, Illinois.

Jenkins, M. A. and S. E. Jenkins. 1996. Savanna and glade vegetation of Turkey Mountain, Arkansas: Effects of a single prescribed burn. Pp. 127—134 *in* Charles Warwick ed., Proceedings of the 15th North American Prairie Conference, October 23—26, 1996, St. Charles, Illinois.

Mohlenbrock, R. H. and D. M. Ladd. 1978. Distribution of Illinois vascular plants. Southern Illinois University Press, Carbondale, Illinois.

Nuzzo, V. A. 1994. Extent and status of midwest oak savanna: Presettlement and 1985. Pp. 1—23 *in* Fralish, J. S., R. C. Anderson, J. E. Ebinger and R. Szafoni, eds., Proceedings of the North American Conference on savannas and barrens, October 15—16, 1994, Normal, Illinois.

Schwegman, J. E. 1973. Comprehensive plan for the Illinois nature preserves system. Part 2—The natural divisions of Illinois. Illinois Nature Preserves Commission, Springfield, Illinois. 32 pages + map.

Transeau, E. N. 1935. The prairie peninsula. Ecology 16: 423—437.

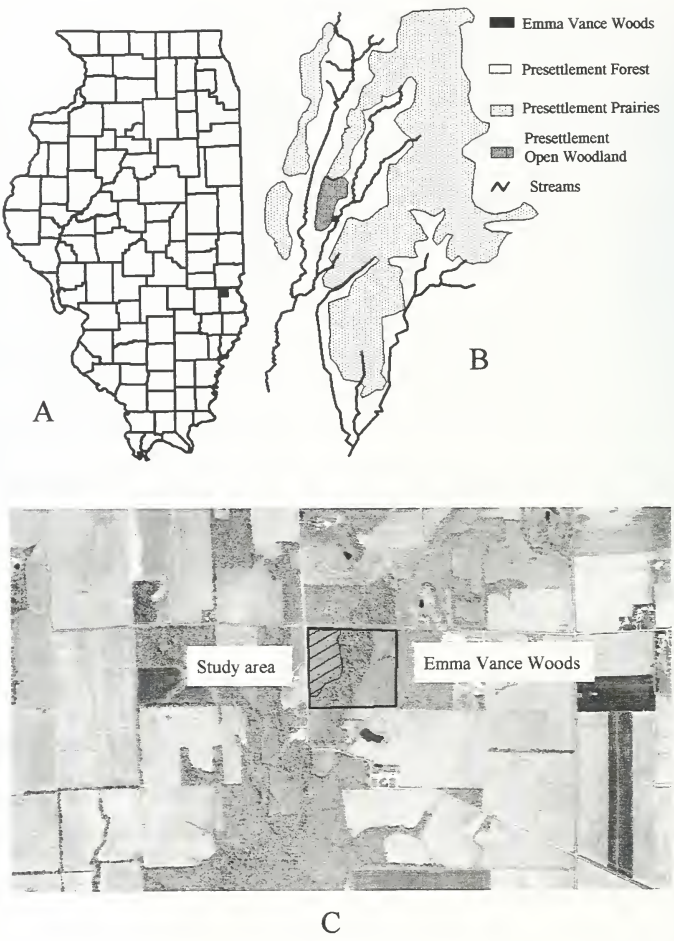


Figure 1. Location of Emma Vance Woods in Crawford County, Illinois (A). Location relative to presettlement prairies (B). Location within the modern landscape (C).

Table 1. Densities (#/ha), diameter classes (cm), basal area (m2/ha), relative values, importance values and average diameters (cm) of trees encountered in the dry-mesic upland forest at Emma Vance Woods, Crawford County, Illinois.

	Diameter classes (cm)						Density	Basal Area	Rel.	Rel.		Avg. Dia.
Species	10-19	20-29	30-39	40-49	50-59	60+	(#/ha)	(m^2/ha)	Den.	Dom.	I.V.	(cm)
Quercus alba	3.6	4.0	8.4	16.0	19.6	7.9	59.5	10.828	19.3	45.1	64.4	46.2
Quercus velutina	9.8	9.3	11.6	5.8	4.5	4.0	45.0	5.037	14.6	21.0	35.6	34.2
Carya tomentosa	16.0	8.0	10.2	4.9	1.3	—	40.4	2.764	13.1	11.5	24.6	26.9
Carya glabra	24.4	6.7	1.7	2.2	0.8	—	35.8	1.381	11.7	5.8	17.5	19.6
Sassafras albidum	33.3	4.8	0.4	—	—	—	38.5	0.701	12.5	2.9	15.4	14.6
Acer saccharum	24.9	2.6	—	—	—	—	27.5	3.142	9.0	2.1	11.1	14.7
Ulmus rubra	16.0	2.7	0.4	—	—	—	19.1	0.408	6.2	1.7	7.9	15.6
Quercus rubra	1.7	2.6	0.9	0.9	0.8	0.4	7.3	0.767	2.4	3.2	5.6	32.0
Fraxinus americana	4.9	1.8	1.8	—	—	—	8.5	0.670	2.8	1.4	4.2	20.8
Prunus serotina	3.6	2.2	0.9	—	—	—	6.7	0.243	2.2	1.0	3.2	20.2
Carya ovata	3.5	1.3	0.8	—	—	—	5.6	0.196	1.9	0.8	2.7	19.0
Others (11 species)	6.5	4.3	0.8	0.8	0.8	0.4	13.6	0.830	4.3	3.5	7.8	
Totals	148.2	50.3	37.9	30.6	27.8	12.7	307.5	26.967	100.0	100.0	200.0.0	

Table 2. Species, diameter at breast height, core length, and number of annual rings for increment cores collected from 10 trees at Emma Vance Woods in March 2004.

	dbh	Core length	# of annual	Avg. distance between annual rings (mm)		
Species	(cm)	(cm)	rings	1844-1934	1935-1959	1960-2003
Quercus alba	54.9	26	122	0.7	3.2	2.4
Quercus alba	57.2	27	156	1.3	3.8	1.6
Quercus alba	57.6	23.5	149	0.8	3.1	2.2
Quercus alba	57.9	27.5	133	0.6	3.8	2.0
Quercus alba	74.0	28	122	0.5	3.1	3.1
Carya glabra	37.7	16.5	155	1.3	2.0	0.7
Carya tomentosa	40.1	19.2	151	1.6	1.7	1.0
*Carya tomentosa	41.9	19	133	0.8	2.1	0.2
Carya tomentosa	47.7	22.6	157	0.9	2.1	1.0
Carya tomentosa	50.4	21.3	159	1.3	1.9	1.2
Average distance between annual rings (mm)				1.0	2.7	1.5

* Individual with punky center

Average number of annual rings, *Q. alba* = 134.6, *Carya* spp. = 145.8

Table 3. Pre- and post-burn density (stems/ha) of woody seedlings (< 50 cm tall), shrubs, small saplings (>50 cm tall and <2.5 cm dbh) and large saplings (>2.5 cm dbh and <10.0 cm dbh) in the dry-mesic upland forest at Emma Vance Woods, Crawford County, Illinois.

	Seedlings		Small saplings		Large saplings	
Species	Pre-burn	Post-burn	Pre-burn	Post-burn	Pre-burn	Post-burn
Ulmus rubra	11,800	35,640	2,500	---	296	164
Fraxinus spp.	9,840	7,360	640	---	18	28
Sassafras albidum	2,520	13,320	220	280	126	52
Viburnum recognitum	2,020	1,960	---	---	---	---
Viburnum prunifolium	1,740	840	---	---	---	2
Carya ovata	1,560	1,640	80	---	22	20
Celtis occidentalis	1,480	4,200	200	---	10	8
Prunus serotina	1,360	1,680	60	---	4	2
Carya cordiformis	1,200	1,000	60	---	10	10
Asimina triloba	960	8,080	700	480	8	8
Quercus velutina	760	640	40	---	2	4
Corylus americana	800	1,920	---	---	---	---
Quercus alba	680	520	---	---	4	2
Cornus florida	520	440	---	---	46	54
Carya glabra	320	280	80	---	22	20
Euonymus atropurpureus	260	---	---	---	---	---
Cercis canadensis	240	1,040	---	---	36	18
Acer negundo	160	80	40	20	2	---
Lindera benzoin	140	840	---	---	---	---
Acer saccharum/A. rubrum	120	1120	60	---	56	60
Morus rubra	80	200	20	---	2	---
Carya tomentosa	40	80	---	---	20	22
Staphylea trifolia	80	---	---	---	---	---
Diospyros virginiana	40	---	20	---	2	---
Crataegus mollis	---	440	40	---	---	---
Vitis spp.	---	23,040	---	---	---	---
Celastrus scandens	---	680	---	---	---	---
Smilax spp.	---	520	---	---	---	---
Liquidambar styraciflua	---	360	---	---	---	---
Campsis radicans	---	80	---	---	---	---
Populus grandidentata	---	---	---	40	---	---
Amelanchier arborea	---	---	---	---	2	4
Totals	38,720	108,000	4,760	820	688	478

Erigenia, Number 20, October 2004, pp. 67—97

Illinois Flora Updates 2004

New Distribution Records and Noteworthy Collections

This is the first installment of what we hope will be both a regular and popular feature in *Erigenia*. Two perceptive field botanists deserve recognition for organizing and submitting these records: Scott Kobal, with the Forest Preserve District of DuPage County, and David Ketzner with the Illinois Natural History Survey. The records include some interesting and unusual finds, in addition to many new county distribution reports. Not surprisingly, there are a number of new distribution records for non-native plants; some of these records include known invaders of natural areas. The committee would also thank these reviewers: Dr. L. Rick Phillippe, Illinois Natural History Survey; Mr. David Ketzner, Illinois Natural History Survey; Mr. Eric Ulaszek, USDA Forest Service, Midewin National Tallgrass Prairie, and Ms. Marty Vogt, *Erigenia* staff. The Illinois Flora Updates is off to great start, and again, we encourage all members to consider submitting new finds for the next edition of *Erigenia*.

—Flora Updates Committee, Illinois Native Plant Society

Illinois Flora Updates 2004: new distribution records and noteworthy collections

Scott N. Kobal
Plant Ecologist, Forest Preserve District of DuPage County

Citation: Kobal, S. 2004. Illinois Flora Updates: New distribution records and noteworthy collections: *Erigenia* 20:67—97.

Scientific Name: *Acanthopanax sieboldianus* Makino
Identification Manual (Source of nomenclature): USDA, NRCS 2004
Common Name: Five-leaved Aralia
Family: Araliaceae
County: DuPage
Date of Collection: 10 June 1997
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: 97-12
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 135642
Locality information: Waterfall Glen Forest Preserve
Habitat: Fully naturalized colony in a disturbed floodplain area.
Associates: *Acer negundo, Actinomeris alternifolia, Alliaria petiolata, Allium canadense, Circaea lutetiana* var. *canadensis, Eupatorium rugosum, Galium aparine, Geum canadense, Gleditsia triacanthos, Pilea pumila, Polygonum virginianum, Ranunculus septentrionalis,* and *Robinia pseudoacacia.*
Comments on population size: Fairly large colony noted.
Information published elsewhere: Mohlenbrock (2002) reports this species as escaped from cultivation in DuPage County based on this record.
Significance: New state record.
Species Native or Alien: Alien – native of Asia

Scientific Name: *Aegilops cylindrica* Host
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Jointed Goat Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 24 June 2003
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: FPD 03-19
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155763
Locality information: Waterfall Glen Forest Preserve near Lemont.
Habitat: The plants were found growing in the railroad ballast along the Santa Fe Railroad tracks.
Associates: *Alliaria petiolata. Arctium minus, Chaenorrhinum minus, Cirsium arvense, C. vulgare, Coronilla varia, Erigeron canadensis, Galium aparine, Lychnis alba, Nepeta cataria, Parthenocissus inserta, Poa compressa, Polygonatum canaliculatum, Polygonum scandens, Rubus occidentalis, Tradescantia ohiensis,* and *Verbascum thapsus.*
Comments on population size: Small number of plants seen (8-10).
Information published elsewhere: No
Significance: New county record. The species is uncommon in the Chicago Region, usually found in railroad ballast or waste ground (Swink and Wilhelm 1994).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Aethusa cynapium* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Fool's Parsley
Family: Umbelliferae (Apiaceae)
County: DuPage
Date of Collection: 16 August 1999
Collector's Name: Scott N. Kobal
Collection Number: 99-19
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 124445
Locality information: Greene Valley Forest Preserve near Woodridge.
Habitat: Collected in a weedy area near an old residence.
Associates: *Bromus inermis, Cirsium vulgare, Geum canadense, Hackelia virginiana, Hemerocallis fulva, Hesperis matronalis, Leonurus cardiaca, Phlox paniculata, Phytolacca americana, Pilea pumila, Solanum americanum* and *Vitis riparia.*
Comments on population size: Small number of plants seen (15-20).
Information published elsewhere: No
Significance: New county record. Mohlenbrock (2002) cites this Eurasian native as rarely escaping from cultivation in disturbed soil and reports it from Cook and Kane Counties. Swink and Wilhelm (1994) add Kendall County to this list. Fool's parsley is known from 17 states in the United States, primarily in the northeast and upper midwest (USDA, NRCS 2004)
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Agropyron elongatum* (Host) P. Beauv.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Tall Wheat Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 8 August 2000
Collector's Name: Scott N. Kobal
Collection Number: FPD 00-04
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 149867
Locality information: Timber Ridge Forest Preserve
Habitat: Prairie Restoration
Associates: *Acer negundo, Ambrosia artemisiifolia* var. *elatior, A. trifida, Aster pilosus, Daucus carota, Elymus canadensis, Erigeron annuus, Hordeum jubatum, Melilotus alba, Rhamnus cathartica, Solidago canadensis, Sorghastrum nutans,* and *Vitis riparia.*
Comments on population size: Small, only a few clumps seen
Information published elsewhere: No
Significance: New county record – this species previously was known from only one collection made in 1974 in Cook County (Mohlenbrock 2002, Swink and Wilhelm 1994). Since the initial collection the plant has been collected at two other forest preserves in DuPage County.
Species Native or Alien: Alien – introduced from the Mediterranean region.

Scientific Name: *Andropogon saccharoides* Sw.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Silver Beard Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 18 November 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-33
Herbarium where specimen is deposited: Morton Arboretum, Lisle. IL
Accession Number: 155111
Locality information: Waterfall Glen Forest Preserve
Habitat: Several plants were noted growing along the edge of a gravel road adjacent to a natural gas pipeline right-of-way where a water pipeline had recently been installed. The area was seeded in May 2000.

Associates: *Ambrosia artemisiifolia* var. *elatior, Andropogon scoparius, Aster pilosus, Bouteloua curtipendula, Chrysanthemum leucanthemum* var. *pinnatifidum, Daucus carota, Festuca elatior, Lonicera maackii, Monarda fistulosa, Oenothera biennis, Setaria glauca*, and *Solidago canadensis.*
Comments on population size: Only a few plants were noted.
Information published elsewhere: No
Significance: New county record. Silver beard grass is native to the south and west of Illinois and adventive in waste ground in the state (Mohlenbrock 2002, Swink and Wilhelm 1994). Mohlenbrock (2002) records this plant from Alexander, Clark, Grundy, Jackson, Johnson, Sangamon and Union Counties in Illinois. Mohlenbrock (2001) reports this species from Sangamon, Grundy, Jackson, Johnson and Union Counties. Swink and Wilhelm (1994) cite this grass only from Grundy County in northeastern Illinois.
Species Native or Alien: Alien – native to the south and west of Illinois.

Scientific Name: *Anthriscus caucalis* M. Bieb.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Bur Chervil
Family: Umbelliferae (Apiaceae)
County: DuPage
Date of Collection: 11 June 2001
Collector's Name: Scott N. Kobal
Collection Number: 01-07
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152250
Locality information: Danada Forest Preserve
Habitat: The plants were found growing in a disturbed area that had been planted to prairie in 2000.
Associates: *Alliaria petiolata, Ambrosia artemisiifolia* var. *elatior, Capsella bursa-pastoris, Cerastium vulgatum, Chenopodium album, Daucus carota, Erigeron canadensis, Erechtites hieracifolia, Lactuca serriola, Lolium perenne, Oxalis stricta, Rorippa palustris* var. *fernaldiana, Rudbeckia hirta, Taraxacum officinale*, and *Veronica arvensis.*
Comments on population size: Small colony of plants observed
Information published elsewhere: Mohlenbrock (2002) makes mention of this record in Additonal Taxa (page 457).
Significance: New state record.
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Arabidopsis thaliana* (L.) Heynh.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Mouse-ear Cress
Family: Cruciferae (Brassicaceae)
County: DuPage
Date of Collection: 17 May 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 131199
Locality information: McDowell Grove Forest Preserve
Habitat: The plants were found growing in the wheel tracks on top of the Fawell Dam away from the turf grasses.
Associates: *Dactylis glomerata, Lychnis alba, Plantago lanceolata, Potentilla recta, Rumex crispus, Taraxacum officinale*, and *Veronica arvensis.*
Comments on population size: Small number of plants observed – habitat has now been destroyed.
Information published elsewhere: No
Significance: New county record. Mouse-ear cress is a European species that is occasional in the southern half of the state and rare in the northern half (Mohlenbrock 2002). Mohlenbrock and Ladd (1978) and Mohlenbrock (1980) report this species predominantly from southern Illinois, with Lake County being the only citation for northeastern Illinois. Swink and Wilhelm (1994) report this plant from Lake, Cook, Will, and Kankakee Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Aristida basiramea* Engelm.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Fork-Tipped Three-Awn Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 19 September 1994
Collector's Name: Wayne A. Lampa
Collection Number: 94-33B
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 123964
Locality information: West Chicago Prairie Forest Preserve
Habitat: Plants were found growing along the edge of the Chicago and Northwestern Railroad Yards.
Associates: *Ambrosia artemisiifolia* var. *elatior, Aster pilosus, Bidens polylepis, Bulbostylis capillaris, Cassia fasciculata*, and *Liatris pycnostachya.*
Comments on population size: Small number of plants observed.
Information published elsewhere: No
Significance: New county record. Swink and Wilhelm (1994) cite *Aristida basiramea* as being presumably introduced from farther west to the Chicago Region and reported it from Will, Grundy and Kankakee Counties. Mohlenbrock (2001) notes this species from 18 counties outside of the Chicago region.
Species Native or Alien: Alien – introduced from farther west.

Scientific Name: *Aristida intermedia* Scribn. & Ball
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: False Arrow Feather
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 19 September 1994
Collector's Name: Wayne A. Lampa
Collection Number: 93-33A
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 123174
Locality information: West Chicago Prairie Forest Preserve
Habitat: Plants were found growing along the edge of the Chicago and Northwestern Railroad Yards.
Associates: *Ambrosia artemisiifolia* var. *elatior, Aster pilosus, Bidens polylepis, Bulbostylis capillaris, Cassia fasciculata, and Liatris pycnostachya.*
Comments on population size: Small number of plants observed.
Information published elsewhere: No
Significance: New county record. *Aristida intermedia* has been noted previously from Lake, Cass, McHenry, Grundy, Henry, LaSalle, Will, and Lee Counties (Mohlenbrock and Ladd 1978, Mohlenbrock 2001). Swink and Wilhelm (1994) report this species from Lake, Will and Kankakee Counties in the Chicago region.
Species Native or Alien: Native

Scientific Name: *Aster exilis* Ell.
Identification Manual (Source of nomenclature): USDA, NRCS 2004
Common Name: Southern Annual Saltmarsh Aster
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 24 September 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-37
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155107
Locality information: West Branch Forest Preserve
Habitat: Along a portion of newly constructed shoreline of a quarry lake
Associates: *Bidens cernua* and *Echinochloa crusgalli.*
Comments on population size: Small – only a few plants noted
Information published elsewhere: No
Significance: New state record.
Species Native or Alien: Alien – introduced from farther south

Scientific Name: *Betula nigra* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: River Birch
Family: Betulaceae
County: DuPage
Date of Collection: 3 May 2001
Collector's Name: Scott N. Kobal
Collection Number: FPD 01-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152102
Locality information: McDowell Grove Forest Preserve
Habitat: Floodplain along West Branch of the DuPage River.
Associates: *Acer negundo, A. saccharinum, Actinomeris alternifolia, Alliaria petiolata, Asarum canadense, Anemone canadensis, Angelica atropurpurea, Cornus obliqua, Fraxinus pennsylvanica* var. *subintegerrima, Geum canadense, Impatiens capensis, Lonicera* X *muendeniensis, Phalaris arundinacea, Ranunculus abortivus, R. septentrionalis, Rhamnus cathartica, R. frangula, Ribes americanum, R. missouriense, Rosa multiflora, Urtica procera, Viburnum recognitum, Viola sororia,* and *Vitis riparia.*
Comments on population size: Two very large trees
Information published elsewhere: No
Significance: New county record. Although this species is widely planted in the county, this is the first record of native trees. River birch is a widely distributed tree in the eastern and midwestern United States (USDA, NRCS 2004). In Illinois, the species is more common in the southern part of the state, becoming less common northward (Mohlenbrock 2002). Both Mohlenbrock and Ladd (1978) and Swink and Wilhlem (1994) report the species from Kane, Will and Kankakee Counties in northeastern Illinois.
Species Native or Alien: Native

Scientific Name: *Betula pendula* Roth
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: European White Birch
Family: Betulaceae
County: DuPage
Date of Collection: 9 September 1998
Collector's Name: Scott N. Kobal
Collection Number: 98-28
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 141803
Locality information: Pratt's Wayne Woods Forest Preserve
Habitat: Tree was found growing in an old field that was rapidly becoming filled in with black cherry.
Associates: *Apocynum sibiricum, Aster pilosus, Cornus racemosa, Daucus carota, Lonicera* X *muendeniensis,*

Populus deltoides, Potentilla recta, Prunus serotina, Rhamnus frangula, Rubus allegheniensis, R. occidentalis, Solidago canadensis, and *Taraxacum officinale.*
Comments on population size: Only one tree noted
Information published elsewhere: No
Significance: New county record. *Betula pendula* is a commonly cultivated ornamental tree in DuPage County. The plant is reported from 17 states (including Illinois) primarily in the northeast and midwest (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) do not report this species for Illinois. Swink and Wilhelm (1994) and Mohlenbrock (2002) cite it from McHenry County in northeastern Illinois. In addition to DuPage County, this tree has also been recently collected in Kane and Will Counties (G. Wilhelm pers. comm.)
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Brassica napus* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Rutabaga
Family: Cruciferae (Brassicaceae)
County: DuPage
Date of Collection: 20 November 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-45
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 133738
Locality information: Collected along the Great Western Trail adjacent to the Timber Ridge Forest Preserve near West Chicago.
Habitat: The plants were found growing in a recently disturbed area on the Com ED right-of-way.
Associates: *Abutilon theophrasti, Avena sativa,* and *Setaria glauca*
Comments on population size: Large number of plants seen in 1996 – they did not persist.
Information published elsewhere: No
Significance: New county record. *Brassica napus* is a fairly widespread Eurasian species, occurring in 33 of the contiguous United States and Alaska (USDA, NRCS 2004). In Illinois, this plant is known from only seven counties in central and southern Illinois (Mohlenbrock and Ladd 1978, Mohlenbrock 1980). Swink and Wilhelm do not report this species from northeastern Illinois.
Species Native or Alien: Alien – introduced from Europe.

Scientific Name: *Carex eburnea* Boott
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Ivory Sedge
Family: Cyperaceae
County: DuPage
Date of Collection: 15 May 2003
Collector's Name: Scott N. Kobal and John Johnson
Collection Number: FPD 03-07
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155742
Locality information: Timber Ridge Forest Preserve
Habitat: Dry prairie
Associates: *Achillea millefolium, Aster ericoides, Cornus racemosa, Fragaria virginiana, Hieracium caespitosum, Poa pratensis, Solidago nemoralis, S. rigida, Trifolium pratense,* and *Viola sororia.*
Comments on population size: Small population of plants observed (15-20).
Information published elsewhere: No
Significance: New county record. *Carex eburnea* is a rare sedge found in wooded ravines and calcareous ledges primarily in the northern half of Illinois. Mohlenbrock (1999) and Swink and Wilhelm (1994) only cite this species from Cook and Lake Counties in northeastern Illinois.
Species Native or Alien: Native

Scientific Name: *Carex woodii* Dewey
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Wood's Stiff Sedge
Family: Cyperaceae
County: Kendall
Date of Collection: 12 May 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152106
Locality information: Collected at Maramech Woods Nature Preserve near Plano
Habitat: The plants were found growing in a northern flatwoods forest
Associates: *Alliaria petiolata, Asarum canadense, Carpinus caroliniana* var. *virginiana, Circaea lutetiana* var. *canadensis, Dentaria laciniata, Eupatorium rugosum, Galium concinnum, Geranium maculatum, Geum canadense, Isopyrum biternatum, Podophyllum peltatum, Polygonum virginianum, Ranunculus septentrionalis, Rosa multiflora, Smilax ecirrhata, Tilia americana,* and *Viburnum prunifolium.*
Comments on population size: Small population noted
Information published elsewhere: No
Significance: New county record – State Threatened Species (Illinois Endangered Species Protection Board 1999, Herkert and Ebinger 2002).
Species Native or Alien: Native

Scientific Name: *Cerastium brachypodum* (Engelm.)
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Short-Pedicelled Chickweed
Family: Caryophyllaceae
County: DuPage
Date of Collection: 24 May 2004
Collector's Name: Scott N. Kobal
Collection Number: FPD 04-05
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116898
Locality information: Collected at West Chicago Prairie Forest Preserve in West Chicago.
Habitat: The plants were growing near the Chicago and Northwestern Railroad yards in cinders.
Associates: *Ambrosia artemisiifolia* var. *elatior, Androsace occidentalis, Bromus tectorum, Draba reptans, Erigeron strigosus, Fragaria virginiana, Hypericum perforatum, Lepidium virginicum, Oxalis stricta, Rubus flagellaris, Rumex acetosella, Silene antirrhina, Specularia perfoliata, Tradescantia ohiensis,* and *Veronica arvensis.*
Comments on population size: Several dozen plants were noted.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Alien – apparently introduced from farther south.

Scientific Name: *Cerastium pumilum* Curtis
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Curtis's Mouse-ear Chickweed
Family: Caryophyllaceae
County: DuPage
Date of Collection: 17 May 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-04
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 131312
Locality information: McDowell Grove Forest Preserve
Habitat: Collected on the Fawell Dam south of McDowell Grove Forest Preserve in Naperville. Thousands of the plants were found growing in the wheel tracks on top of the dam away from the turf grasses in a sandy substrate.
Associates: *Achillea millefolium, Arabidopsis thaliana, Cichorium intybus, Dactylis glomerata, Erigeron annuus, Holosteum umbellatum, Plantago lanceolata, Potentilla recta, Rumex crispus, Taraxacum officinale, Trifolium pratense,* and *Veronica arvensis.*
Comments on population size: Very abundant at the time of collection – habitat has now been destroyed
Information published elsewhere: No
Significance: New county record. *Cerastium pumilum* is reported by Mohlenbrock and Ladd (1978) and Mohlenbrock (1986) as occurring only in Jackson County. Mohlenbrock (2002) notes that it is sparingly adventive to grassy areas and scattered in Illinois. Swink and Wilhelm (1994) cite this European species from McHenry, Kane, Grundy, Cook, Will, and Kankakee Counties.
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Ceratocephalus testiculatus* (Crantz) Roth
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Bur Buttercup
Family: Ranunculaceae
County: DuPage
Date of Collection: 14 April 1997
Collector's Name: Scott N. Kobal
Collection Number: 97-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 134836
Locality information: Blackwell Forest Preserve
Habitat: Limestone gravel pad in campground
Associates: *Cerastium vulgatum, Draba verna, Lonicera maackii, Poa annua, Rhamnus cathartica, Taraxacum officinale, Verbascum blattaria,* and *Veronica arvensis.*
Comments on population size: A few dozen plants noted
Information published elsewhere: No
Significance: New county record. Bur buttercup is known from 23 states, primarily in the western United States but extending as far eastward as New York (USDA, NRCS 2004). This Eurasian species is not cited by either Mohlenbrock and Ladd (1978) or Mohlenbrock (1986). Mohlenbrock (2002) notes that it is naturalized in waste areas, particularly campgrounds in the northeastern counties. Swink and Wilhelm (1994) report this plant from Lake, Grundy, Will and Kankakee Counties.
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Chenopodium ambrosioides* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: American Wormseed
Family: Chenopodiaceae
County: DuPage
Date of Collection: 11 October 2000
Collector's Name: Scott N. Kobal
Collection Number: FPD 00-11
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 149855
Locality information: Salt Creek Marsh Forest Preserve
Habitat: Growing along the east bank of Salt Creek approximately 1000 feet north of Route 19 (Irving Park

Road). Found in an area of Salt Creek that had recently undergone some shoreline stabilization.
Associates: *Acnida altissima, Ambrosia artemisiifolia* var. *elatior, Aster ontarionis, A. pilosus, Bidens comosa, Cryptotaenia canadensis, Echinochloa crusgalli, Eupatorium serotinum, Oxalis stricta, Phalaris arundinacea, Polygonum cespitosum* var. *longisetum, P. pensylvanicum, P. punctatum, Rudbeckia laciniata, Taraxacum officinale, Verbena hastata,* and *V. urticifolia.*
Comments on population size: Only a few plants noted
Information published elsewhere: No
Significance: New county record. Mexican tea is an introduction from tropical America that is very widespread in the United States (USDA, NRCS 2004) and Illinois (Mohlenbrock and Ladd 1978). Swink and Wilhelm (1994) record this species from Cook, Will, Grundy and Kane Counties.
Species Native or Alien: Alien – introduced from Tropical America.

Scientific Name: *Clematis terniflora* DC.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Sweet Autumn Clematis
Family: Ranunculaceae
County: DuPage
Date of Collection: 2 October 1996
Collector's Name: Scott N. Kobal and Wayne A. Lampa
Collection Number: 96-37
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 132745
Locality information: Collected at Wood Dale Grove Forest Preserve near Wood Dale.
Habitat: The plants were found growing near the shoulder of Wood Dale Road.
Associates: *Agropyron repens, Aster pilosus, Bidens frondosa, Carya ovata, Daucus carota, Melilotus alba, Rhamnus cathartica, Solanum carolinense, Solidago canadensis, Sonchus uliginosus, Trifolium pratense,* and *Vitis riparia.*
Comments on population size: Only a few plants noted.
Information published elsewhere: No
Significance: New county record. *Clematis terniflora* is a native of Japan that is commonly cultivated and often escaped (Gleason and Cronquist 1991). The species is known from 30 states in the contiguous United States, primarily in the east and midwest (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) report this species from eight counties, mainly in central and southern Illinois. The only northeastern Illinois report, for Kane County, is also cited by Swink and Wilhelm (1994).
Species Native or Alien: Alien – introduced from eastern Asia.

Scientific Name: *Cleome hassleriana* Jacq.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Spider Flower
Family: Capparidaceae
County: DuPage
Date of Collection: 2 August 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-29
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154766
Locality information: Collected at Salt Creek Marsh Forest Preserve near Itasca.
Habitat: Plants were growing in an open area along the shore of Salt Creek, south of Thorndale Ave.
Associates: *Acnida altissima, Asclepias incarnata, Bidens frondosa, Echinochloa crusgalli, Lindernia dubia, Phalaris arundinacea, Polygonum hydropiper, P. persicaria,* and *P. punctatum.*
Comments on population size: Only a few plants were noted.
Information published elsewhere: No
Significance: New county record. This tropical American species is commonly planted but rarely escapes from cultivation to waste areas in several parts of the state (Mohlenbrock 1980, 2002). Mohlenbrock (2002) cites this species from six counties in Illinois, with two (Kendall and Lake) being in the Chicago region. Swink and Wilhelm (1994) report spider flower from Kendall and Lake Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from Tropical America.

Scientific Name: *Coreopsis tinctoria* Nutt.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Golden Coreopsis
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 18 July 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-40
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127650
Locality information: Collected along the south shoulder of Hobson Road approximately 1/4 mile west of Route 53 near the Green Valley Forest Preserve
Habitat: Weedy road shoulder
Associates: *Atriplex patula hastata, Chenopodium glaucum, Cichorium intybus, Cirsium vulgare, Hordeum jubatum, Polygonum arenastrum, Sonchus uliginosus,* and *Taraxacum officinale.*
Comments on population size: A few plants noted.
Information published elsewhere: No

Significance: New county record. Golden coreopsis is considered to be adventive from the western United States and to have escaped from cultivation in Illinois (Mohlenbrock 2002, Swink and Wilhelm 1994). Mohlenbrock and Ladd (1978) and Swink and Wilhelm (1994) cited this species in five and six counties respectively in northeastern Illinois.
Species Native or Alien: Alien – introduced from farther west

Scientific Name: *Cosmos bipinnatus* Cav.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Common Cosmos
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 18 August 1998
Collector's Name: Scott N. Kobal
Collection Number: 98-24
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 141406
Locality information: Collected at Lincoln Marsh Forest Preserve near Wheaton.
Habitat: The plants were found growing along a trail near a tree stump.
Associates: *Ambrosia artemisiifolia* var. *elatior, Aster sagittifolius* var. *drummondii, Cornus racemosa, Crataegus mollis, Daucus carota, Erechtites hieracifolia, Fragaria virginiana, Geum canadense, Hackelia virginiana, Rosa multiflora,* and *Vitis riparia.*
Comments on population size: Approximately 12-15 plants noted.
Information published elsewhere: No
Significance: New county record. Common cosmos is a native of Mexico and is commonly cultivated as a garden flower and casually escaped (Gleason and Cronquist 1991). Mohlenbrock and Ladd (1978) report this species from Grundy, Jackson and Saline Counties; Mohlenbrock (2002) makes reference to Grundy, Jackson, Saline and Will counties. Swink and Wilhelm (1994) cite this species from Grundy and Will Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from Mexico.

Scientific Name: *Cotoneaster apiculatus* Rehd. & Wils.
Identification Manual (Source of nomenclature): Dirr 1998
Common Name: Cranberry Cotoneaster
Family: Rosaceae
County: DuPage
Date of Collection: 26 May 2004
Collector's Name: Scott N. Kobal
Collection Number: FPD 04-08
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116941
Locality information: Collected at the West Branch Forest Preserve near Bartlett.
Habitat: The plants were found growing in an old quarry area south of Army Trail Road on the dry mounds of clay and gravel. The area where the plants were found is located several hundred yards south of the Prestige Nursery, from where they presumably escaped.
Associates: *Apocynum sibericum, Asclepias verticillata, Cornus racemosa, Festuca elatior, Fragaria virginiana, Lonicera* X *muendeniensis, Melilotus officinalis, Rosa multiflora, Salix interior, Solidago canadensis, S. rigida,* and *Ulmus pumila.*
Comments on population size: Approximately 12 plants of various sizes were observed.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Alien – introduced from China.

Scientific Name: *Cucumis melo* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Muskmelon
Family: Cucurbitaceae
County: DuPage
Date of Collection: 25 July 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-18
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 132162
Locality information: Collected at Blackwell Forest Preserve near West Chicago.
Habitat: The plant was found growing on a mound of earth near a maintenance building.
Associates: *Ambrosia artemisiifolia* var. *elatior, Citrullus lanatus, Convolvulus arvensis, Digitaria ishaemum, Echinochloa crusgalli, Phytolacca americana, Poa compressa, Polygonum persicaria, Populus deltoides, Setaria viridis,* and *Xanthium strumarium.*
Comments on population size: Only one plant noted
Information published elsewhere: No
Significance: New county record. Neither Mohlenbrock and Ladd (1978) nor Mohlenbrock (1978, 1986) report muskmelon from Illinois. Mohlenbrock (2002) notes that it occasionally escapes from cultivation into waste ground. The species is widespread across the United States, occurring in 28 states (USDA, NRCS 2004). Swink and Wilhelm (1994) cite this species from McHenry, Grundy and Kankakee Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from the Old World.

Scientific Name: *Cucurbita pepo* L.
Identification Manual (Source of nomenclature): Mohlenbrock 1978
Common Name: Common Field Pumpkin
Family: Cucurbitaceae
County: Cook
Date of Collection: 1 August 1995
Collector's Name: Scott N. Kobal and Wayne A. Lampa
Collection Number: SK 95-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127542
Locality information: Collected in a dumpsite between the Des Plaines River and the Chicago Sanitary and Shipping Canal west of Route 83.
Habitat: Plants were found growing on a spoil pile
Associates: *Abutilon theophrasti, Acalypha rhomboidea, Ambrosia artemisiifolia* var. *elatior, Daucus carota, Digitaria ischaemum, Dipsacus laciniatus, Eragrostis pectinacea, Euphorbia maculata, Oxalis stricta, Polygonum arenastrum, P. scandens, Portulaca oleracea,* and *Solanum americanum.*
Comments on population size: Only a few plants were noted.
Information published elsewhere: No
Significance: New state record.
Species Native or Alien: Alien. Native to tropical America

Scientific Name: *Cucurbita pepo* L. var. *ovifera* (L.) Alef.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Pear Gourd
Family: Cucurbitaceae
County: DuPage
Date of Collection: 7 September 1999
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: 99-20
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 147016
Locality information: Collected at the West Branch Forest Preserve near Bartlett.
Habitat: Found growing in an area near a drainage tile that had been disturbed in the previous year.
Associates: *Abutilon theophrasti, Alliaria petiolata, Ambrosia trifida, Angelica atropurpurea, Arctium minus, Aster simplex, Cirsium arvense, Leonurus cardiaca, Nepeta cataria, Pastinaca sativa, Phalaris arundinacea, Polygonum pensylvanicum, P. persicaria, Setaria faberi, Solanum americanum, S. dulcamara, Solidago canadensis,* and *Teucrium canadense.*
Comments on population size: Only one large plant noted
Information published elsewhere: No
Significance: New county record. *Cucurbita pepo* var. *ovifera* is variety of the common field pumpkin (*Cucurbita pepo* L.) that is grown for the interesting and variable ornamental gourds it produces (Mohlenbrock 1978). Mohlenbrock and Ladd (1978) and Mohlenbrock (1978) report this tropical American species from seven counties in the southern half of Illinois. Swink and Wilhelm (1994) do not cite this species for northeastern Illinois.
Species Native or Alien: Alien; native of tropical America.

Scientific Name: *Dianthus barbatus* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Sweet William
Family: Caryophyllaceae
County: DuPage
Date of Collection: 3 June 1994
Collector's Name: Scott N. Kobal
Collection Number: 94-13
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 119353
Locality information: Pratt's Wayne Woods Forest Preserve
Habitat: Prairie/wetland restoration
Associates: *Baptisia leucantha, Chrysanthemum leucanthemum* var. *pinnatifidum, Coreopsis lanceolata, Melilotus alba, Monarda fistulosa, Petalostemum purpureum, Ratibida pinnata, Rudbeckia hirta, Solidago altissima, Trifolium hybridum,* and *T. pratense.*
Comments on population size: Approximately 20-30 plants seen – they have now disappeared.
Information published elsewhere: No
Significance: New county record. *Dianthus barbatus* is widely distributed in the United States, occurring in 35 of the contiguous 48 states (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) report the species from Jackson County; Mohlenbrock (2002) cites Jackson and McLean Counties. Swink and Wilhelm (1994) do not cite it for northeastern Illinois. This European garden plant is commonly cultivated as an ornamental and occasionally escapes (Gleason and Cronquist 1991).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Egeria densa* Planchon
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Brazilian Water Weed
Family: Hydrocharitaceae
County: DuPage
Date of Collection: 30 October 1996
Collector's Name: Scott N. Kobal, Wayne A. Lampa and Gerould Wilhelm
Collection Number: 96-44
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 133516

Locality information: West DuPage Woods Forest Preserve
Habitat: Small pond located near parking lot and picnic area.
Associates: *Potamogeton foliosus*
Comments on population size: Large number of plants observed in pond – was dominant aquatic species at time of collection.
Information published elsewhere: No
Significance: New county record – formerly known only from southern Illinois.
Species Native or Alien: Alien – native to southeastern Brazil and northern Argentina.

Scientific Name: *Epilobium parviflorum* Schreber.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Small-flowered Hairy Willow Herb
Family: Onagraceae
County: DuPage
Date of Collection: 5 August 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-10
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154769
Locality information: Collected in the Bur-Reed Marsh at the Morton Arboretum. Growing adjacent to the boardwalk (Main Trail Loop 2) at the northern end of the marsh.
Habitat: Marsh
Associates: *Agrostis alba, Ambrosia artemisiifolia* var. *elatior, Apocynum sibiricum, Aster simplex, Boehmeria cylindrica, Convolvulus sepium, Epilobium coloratum, Eupatorium perfoliatum, Juncus effusus, Lycopus americanus, Penthorum sedoides, Phalaris arundinacea, Prunella vulgaris* var. *lanceolata, Scirpus pendulus, Scutellaria lateriflora, Teucrium canadense, Verbena hastata,* and *V. urticifolia.*
Comments on population size: Only two plants were noted
Information published elsewhere: No
Significance: New state record. The plant was collected again in 2004 at the Hawk Hollow Forest Preserve in the northwestern portion of DuPage County.
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Erigeron divaricatus* Michx.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Dwarf Fleabane
Family: Compositae (Asteraceae)
County: Kendall
Date of Collection: 2 September 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-24
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152711
Locality information: Collected at Silver Springs State Park near Yorkville.
Habitat: The plants were found growing along a gravel path on the south side of Loon Lake.
Associates: *Ambrosia artemisiifolia* var. *elatior, Daucus carota, Digitaria ischaemum, Eragrostis pectinacea, Euphorbia supina, Medicago lupulina, Plantago rugelii, Taraxacum officinale,* and *Veronica arvensis.*
Comments on population size: Plants fairly abundant along pathway
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Eriochloa villosa* (Thunb.) Kunth
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Chinese Cup Grass
Family: Gramineae (Poaceae)
County: Kendall
Date of Collection: 2 September 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-25
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152695
Locality information: Collected at Silver Springs State Park near Yorkville.
Habitat: The plants were found growing along the edge of an interior road.
Associates: *Actinomeris alternifolia, Agropyron repens, Daucus carota, Echinochloa crusgalli, Phalaris arundinacea, Polygonum persicaria, P. scandens, Rubus occidentalis, Setaria faberi, S. glauca,* and *Solidago canadensis.*
Comments on population size: Small number of plants seen
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Erodium cicutarium* (L.) L'Hèr.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Storksbill
Family: Geraniaceae
County: Kendall
Date of Collection: 12 May 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL

Accession Number: 152105
Locality information: Collected at Maramech Woods Nature Preserve near Plano
Habitat: The plant was found growing in a recent prairie restoration near Griswold Springs Road and Fox River Drive.
Associates: *Ambrosia artemisiifolia* var. *elatior*, *A. trifida*, *Erigeron annuus*, *E. canadensis*, *Monarda fistulosa*, *Ratibida pinnata*, *Tanacetum vulgare*, *Taraxacum officinale*, and *Verbascum thapsus*.
Comments on population size: One plant seen
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Europe.

Scientific Name: *Euonymus alatus* (Thunb.) Siebold
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Burning Bush
Family: Celastraceae
County: Kendall
Date of Collection: 11 June 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-07
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152101
Locality information: Collected at Jay Woods Forest Preserve near Plano.
Habitat: The plants were found growing on a wooded bluff along the Little Rock Creek.
Associates: *Aesculus glabra*, *Alliaria petiolata*, *Arisaema triphyllum*, *Carya ovata*, *Cornus racemosa*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Geranium maculatum*, *Prunus serotina*, *P. virginiana*, *Quercus alba*, *Rhus radicans*, *Smilacina racemosa* and *Tilia americana*.
Comments on population size: Small number of shrubs seen (15-20).
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Euonymus europaeus* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: European Spindle Tree
Family: Celastraceae
County: Kendall
Date of Collection: 27 May 2002
Collector's Name: Scott N. Kobal
Collection Number: SNK 02-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154753
Locality information: Cannonball Sedge Meadow near Yorkville.
Habitat: In a wooded floodplain along the edge of Blackberry Creek, east of Route 47 and north of Cannonball Trail.
Associates: *Acer negundo*, *Alliaria petiolata*, *Galium aparine*, *Lonicera maackii*, *Phalaris arundinacea*, *Rhus radicans*, *Rudbeckia laciniata*, *Sambucus canadensis*, *Solanum dulcamara*, *Solidago gigantea*, *Verbena urticifolia*, *Viburnum opulus*, and *Viola sororia*.
Comments on population size: One shrub observed
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Euonymus fortunei* (Turcz.) Hand.-Mazz.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Wintercreeper
Family: Celastraceae
County: Kendall
Date of Collection: 19 September 2004
Collector's Name: Scott N. Kobal
Collection Number: SNK 04-06
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116346
Locality information: Collected in the Old Post Park (Cook's Savanna). The plants were found growing near the intersection of Pearce Ford Drive and Waterford Drive near the Old Post Elementary School.
Habitat: Degraded oak woodland.
Associates: *Celtis occidentalis*, *Phytolacca americana*, *Polygonatum canaliculatum*, *Prunus serotina*, *Quercus alba*, *Ribes missouriense*, *Smilacina racemosa*, *Tilia americana*, *Ulmus americana*, and *Vitis riparia*.
Comments on population size: Numerous plants were noted in this woodland.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Alien – introduced from China.

Scientific Name: *Eupatorium sessilifolium* L. var. *brittonianum* Porter
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Upland Boneset
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 12 August 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-22
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 132164

Locality information: Collected at Waterfall Glen Forest Preserve near Darien.
Habitat: The plants were found growing on the west-facing slope of a small ravine in a white and black oak woodland.
Associates: *Agrimonia gryposepala, A. rostellata, Aristolochia serpentaria, Aster shortii, Cornus racemosa, Elymus villosus, Eupatorium purpureum, Phryma leptostachya, Poa compressa, Quercus alba, Q. velutina, Rosa setigera, Rhus radicans, Solidago ulmifolia, Viola sororia,* and *Vitis riparia.*
Comments on population size: Numerous plants were observed at the time of collection.
Information published elsewhere: No
Significance: New county record. Upland boneset is found in 20 states in the northeast and upper midwest (USDA, NRCS 2004). The plant is occasional in the southern half of Illinois and uncommon elsewhere (Mohlenbrock 2002). Both Mohlenbrock and Ladd (1978) and Swink and Wilhelm (1994) report this species from Cook and Will Counties in northeastern Illinois.
Species Native or Alien: Native

Scientific Name: *Euphorbia esula* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Leafy Spurge
Family: Euphorbiaceae
County: Kendall
Date of Collection: 6 May 2000
Collector's Name: Scott N. Kobal
Collection Number: SNK 00-04
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 148254
Locality information: Near Aurora along Route 30 approximately one mile south of Route 34. The plants were found growing along the east edge of the road.
Habitat: Road shoulder.
Associates: *Bromus inermis* and *Poa pratensis.*
Comments on population size: Small colony of plants noted – approximately 30.
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Eurasia.

Scientific Name: *Festuca capillata* Lam.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Hair-leaved Fescue
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 19 June 2003
Collector's Name: Scott N. Kobal
Collection Number: FPD 03-18
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155732
Locality information: Collected at Basic Life Forest Preserve, located east of Route 83 and north of Ogden Avenue. (Route 34).
Habitat: Numerous clumps of this grass were noted in a shrubby, disturbed prairie area along Route 83 near the Ogden Ave. on-ramp.
Associates: *Anemone virginiana, Asparagus officinalis, Chrysanthemum leucanthemum* var. *pinnatifidum, Cornus obliqua, C. racemosa, Daucus carota, Fragaria virginiana, Juniperus virginiana* var. *crebra, Lonicera* X *muendeniensis, Morus alba, Monarda fistulosa, Parthenium integrifolium, Poa compressa, Ratibida pinnata, Rhamnus cathartica, Solidago graminifolia, S. juncea,* and *Viburnum recognitum.*
Comments on population size: Plants were fairly abundant at the collection site.
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Festuca rubra* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Red Fescue
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 13 June 1994
Collector's Name: Scott N. Kobal and Wayne A. Lampa
Collection Number: 94-23
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 120900
Locality information: Hickory Grove Forest Preserve
Habitat: Found in an open wooded area that had been a former golf course.
Associates: *Agrostis alba, Aster sagittifolius* var. *drummondii, Aster simplex, Cirsium vulgare, Dactylis glomerata, Lonicera maackii, Phleum pratense, Quercus macrocarpa,* and *Solidago canadensis.*
Comments on population size: Large number of plants observed.
Information published elsewhere: No
Significance: New county record. Red fescue is native to Eurasia and is commonly planted in golf courses and to create low turfs in parks and other recreation areas (Swink and Wilhelm 1994). In the Chicago Region, Swink and Wilhelm (1994) report it from Cook and Lake Counties. This plant is also cited by Mohlenbrock and Ladd (1978), from the following Illinois counties: Peoria, Cass, Piatt, Jackson, and Alexander.
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Forsythia* X *intermedia* Zabel
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Golden Bell
Family: Oleaceae
County: DuPage
Date of Collection: 8 April 2004
Collector's Name: Scott N. Kobal
Collection Number: FPD 04-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116928
Locality information: Collected at West DuPage Woods Forest Preserve near West Chicago.
Habitat: The plants were found growing downslope from a former dwelling near the West Branch of the DuPage River. Several large colonies were noted with large and small plants present.
Associates: *Acer negundo, Alliaria petiolata, Geum canadense, Hepatica acutiloba, Juglans nigra, Lonicera maackii, Prunus serotina, Quercus rubra, Rhamnus cathartica, Ribes missouriense, Rosa multiflora, Tilia americana, Ulmus americana*, and *Viburnum opulus.*
Comments on population size: Numerous plants were noted in this woodland.
Information published elsewhere: No
Significance: New state record. Mohlenbrock (2002) cites only *Forsythia suspensa* (Thunb.) Vahl. as escaping from cultivation in Illinois. Swink and Wilhelm (1994) report *Forsythia* X *intermedia* as spontaneous only in Porter County, Indiana in the Chicago Region. They note that the two preceeding species, as well as *Forsythia viridissima* Lindl. are cultivated routinely in the region.
Species Native or Alien: Alien, introduced from cultivation.

Scientific Name: *Galium mollugo* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: White Bedstraw
Family: Rubiaceae
County: Kendall
Date of Collection: 16 June 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-09
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152084
Locality information: Collected at Maramech Woods Nature Preserve near Plano.
Habitat: The plants were found growing in a brome field near Griswold Springs Road and Fox River Drive.
Associates: *Bromus inermis, Carex brevior, Erigeron annuus, Juniperus virginiana crebra, Lactuca canadensis, Lonicera* X *muedeniensis, Pastinaca sativa*, and *Solidago canadensis.*
Comments on population size: Small number of plants observed
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Geum vernum* (Raf.) T. & G.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Spring Avens
Family: Rosaceae
County: Kendall
Date of Collection: 6 May 2000
Collector's Name: Scott N. Kobal
Collection Number: SNK 00-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 148255
Locality information: Collected at Harris Woods Forest Preserve.
Habitat: The plants were found along a mowed woodland path.
Associates: *Equisetum arvense, Erigeron philadelphicus, Eupatorium rugosum, Geum canadense, Helianthus grosseserratus, Taraxacum officinale*, and *Viola missouriensis.*
Comments on population size: A number of plants noted along trail
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Hamamelis virginiana* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Witch Hazel
Family: Hamamelidaceae
County: Kendall
Date of Collection: 4 May 2004
Collector's Name: Scott N. Kobal
Collection Number: SNK 04-03
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116932
Locality information: Collected at the Hoover Outdoor Education Center near Yorkville. The plants were found growing south of the Fox River, north of Fox Road, and west of Route 47.
Habitat: Wooded bluff along the Fox River.
Associates: *Alliaria petiolata, Anemone quinquefolia, Arabis laevigata, Carex pensylvanica, Carpinus caroliniana* var. *virginiana, Galium concinnum, Hepatica acutiloba, Ostrya virginiana, Polygonatum canalicualtum, Prenanthes alba, Prunus virginiana, Solidago flexicaulis,*

Thalictrum dioicum, Tilia americana, Trillium recurvatum, and *Viola sororia.*
Comments on population size: Numerous plants were noted in this woodland.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Native

Scientific Name: *Hedera helix* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: English Ivy
Family: Araliaceae
County: DuPage
Date of Collection: 12 December 2001
Collector's Name: Scott N. Kobal
Collection Number: FPD 01-26
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155191
Locality information: Warrenville Grove Forest Preserve in Warrenville.
Habitat: Along the floodplain of the West Branch of the DuPage River.
Associates: *Acer negundo, Alliaria petiolata, Fraxinus pennsylvanica, Glechoma hederacea, Hesperis matronalis, Lonicera maackii, L.* X *muendeniensis, Populus deltoides, Prunus serotina, Rhamnus cathartica, Ribes missouriense, Rosa multiflora, Ulmus americana,* and *Viburnum lantana.*
Comments on population size: Small number of vines seen – hard to distinguish individuals
Information published elsewhere: No
Significance: New county record. English ivy is known from 27 states in the contiguous United States (USDA, NRCS 2004). This plant is native of Europe and is widely cultivated in various forms and occasionally escapes (Gleason and Cronquist 1991). Mohlenbrock and Ladd (1978) and Mohlenbrock (2002) only report this species from Jackson County. Swink and Wilhelm (1994) do not list it for northeastern Illinois.
Species Native or Alien: Alien – native of Europe.

Scientific Name: *Heracleum mantegazzianum* Sommier & Levier
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Giant Hogweed
Family: Umbelliferae (Apiaceae)
County: DuPage
Date of Collection: 27 June 2001
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: FPD 01-11
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152083
Locality information: Collected at Waterfall Glen Forest Preserve near Darien.
Habitat: The plants were found growing along the bank of a branch of Sawmill Creek in a floodplain forest.
Associates: *Acer negundo, Actinomeris alternifolia, Ambrosia trifida, Amphicarpa bracteata, Aster lateriflorus, Crataegus punctata, Erigeron annuus, Eupatorium rugosum, Glyceria striata, Impatiens capensis, Phalaris arundinacea, Plantago rugelii, Polygonum virginianum, Ranunculus septentrionalis, Rudbeckia laciniata, Sambucus canadensis, Scirpus atrovirens, Solidago canadensis, Sphenopholis intermedia, Verbena urticifolia,* and *Vitis riparia.*
Comments on population size: Six to eight plants noted in 2001. Plants have been vigorously herbicided since that time to control population size.
Information published elsewhere: Mohlenbrock (2002) makes mention of this record in Additonal Taxa (page 457).
Significance: New state record
Species Native or Alien: Alien – introduced from southwest Asia.

Scientific Name: *Holosteum umbellatum* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Jagged Chickweed
Family: Caryophyllaceae
County: DuPage
Date of Collection: 17 May 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-03
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 131198
Locality information: Collected on the Fawell Dam south of the McDowell Grove Forest Preserve in Naperville.
Habitat: The plants were found growing in the wheel tracks on top of the dam away from the turf grasses.
Associates: *Achillea millefolium, Cichorium intybus, Plantago lanceolata, Poa pratensis, Potentilla recta, Taraxacum officinale,* and *Veronica arvensis.*
Comments on population size: Plants were fairly numerous at the time of collection–habitat has now been destroyed.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Alien–introduced from Eurasia.

Scientific Name: *Hypericum prolificum* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Shrubby St. John's Wort
Family: Hypericaceae
County: DuPage
Date of Collection: 18 July 2002

Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: FPD 02-08
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154763
Locality information: Collected at Timber Ridge Forest Preserve near Winfield.
Habitat: Found growing in a shrubby, disturbed prairie/old field near the edge of a marsh.
Associates: *Agrimonia gryposepala, Apocynum sibiricum, Asclepias verticillata, Aster ericoides, Carex granularis, Cornus racemosa, Crataegus monogyna, Daucus carota, Erigeron annuus, Lonicera* X *muendeniensis, Melilotus alba, Penstemon digitalis, Plantago lanceolata, Poa compressa, Poa pratensis, Prunella vulgaris* var. *lanceolata, Rhamnus cathartica, Rudbeckia triloba, Salix interior, Solidago rigida,* and *Trifolium pratense.*
Comments on population size: Two plants were noted in 2002
Information published elsewhere: No
Significance: New county record. Mohlenbrock and Ladd (1978) and Mohlenbrock (2002) cite shrubby St. John's Wort as occasional in the southern 3/5 of Illinois and also from Cook and Lake Counties in the Chicago region. Swink and Wilhelm (1994) record this plant from Cook, Lake and Kane Counties in northeastern Illinois.
Species Native or Alien: Native

Scientific Name: *Inula helenium* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Elecampane
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 7 October 2003
Collector's Name: Scott N. Kobal and Wayne A. Lampa
Collection Number: FPD 03-39
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155967
Locality information: Collected at the Basic Life Forest Preserve east of Route 83 and north of Ogden Ave (Route 34).
Habitat: The plant was found growing along the edge of a trail in a shrubby field.
Associates: *Acer negundo, Ambrosia artemisiifolia* var. *elatior, Arctium minus, Aster lateriflorus, Bidens frondosa, Daucus carota, Dipsacus laciniatus, Erigeron annuus, Glechoma hederacea, Helianthus grosseserratus, Polygonum cespitosum* var. *longisetum, Rhamnus cathartica, R. frangula, Rosa multiflora, Solidago canadensis* and *Vitis riparia.*
Comments on population size: Only one plant noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Iodanthus pinnatifidus* (Michx.) Steud.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Violet Cress
Family: Cruciferae (Brassicaceae)
County: Kendall
Date of Collection: 18 June 1999
Collector's Name: Scott N. Kobal and Jason Pettit
Collection Number: SNK 99-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 143869
Locality information: Collected at Baker's Woods Forest Preserve. The plants were found growing along the west bank of the Aux Sable Creek approximately 200 yards north of Route 52.
Habitat: Wooded floodplain.
Associates: *Asclepias syriaca, Campanula americana, Carex grisea, Cryptotaenia canadensis, Fraxinus pennsylvanica* var. *subintegerrima, Geum canadense, Gleditsia triacanthos, Lysimachia nummularia, Oxalis stricta, Poa compressa, Rhus radicans, Ulmus americana,* and *Vitis riparia.*
Comments on population size: Small number of plants seen
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Isoetes butleri* Engelm.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Glade Quillwort
Family: Isoetaceae
County: DuPage
Date of Collection: 27 May 1999
Collector's Name: Scott N. Kobal
Collection Number: 99-06
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 143903
Locality information: Waterfall Glen Forest Preserve
Habitat: Dolomite prairie – the plants occupied areas of the prairie that had bare soil and exposed rock with little competition from other flora.
Associates: *Allium canadense, A. cernuum, Cardamine parviflora* var. *arenicola, Carex crawei, C. molesta, C. tetanica, Deschampsia caespitosa* var. *glauca, Eleocharis compressa, Eupatorium serotinum, Hypericum sphaerocarpum, Isanthus brachiatus, Penstemon hirsutus, Poa compressa, Scutellaria parvula,* and *Veronica peregrina.*
Comments on population size: Only 12 to 15 individuals observed in 1999.
Information published elsewhere: No

Significance: New County record–State Endangered species (Illinois Endangered Species Protection Board 1999, Herkert and Ebinger 2002).
Species Native or Alien: Native

Scientific Name: *Lamium galeobdolon* (L.) L.
Identification Manual (Source of nomenclature): USDA, NRCS 2004
Common Name: Yellow Archangel
Family: Lamiaceae (Labiatae)
County: DuPage
Date of Collection: 10 May 1999
Collector's Name: Scott N. Kobal
Collection Number: 99-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 144004
Locality information: Collected at Wayne Grove Forest Preserve near Bartlett.
Habitat: The plants were found growing in an oak woodland approximately 1/2 mile north of Stearns Road and 1/2 mile west of Bartlett Road
Associates: *Alliaria petiolata, Allium canadense, Carya ovata, Circaea lutetiana* var. *candensis, Cornus racemosa, Erythronium albidum, Geum canadense, Hydrophyllum virginianum, Polygonatum canaliculatum, Polygonum virginianum, Prunus serotina, Ranunculus septentrionalis, Rhamnus cathartica, Ribes missouriense, Rubus occidentalis, Smilacina racemosa,* and *Viola sororia.*
Comments on population size: A few dozen plants noted in 1999 – subsequent visits to the site since that time indicate that the species is increasing in abundance.
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Lemna minuscula* Hertel
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Dinky Duckweed
Family: Lemnaceae
County: DuPage
Date of Collection: 27 June 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-26
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127656
Locality information: Waterfall Glen Forest Preserve
Habitat: Cattail marsh
Associates: *Ceratophyllum demersum, Cornus obliqua, Eleocharis erythropoda, Leersia oryzoides, Lycopus americanus, Rhamnus frangula, Typha* X *glauca* and *Vitis riparia.*
Comments on population size: Abundant in open water area of marsh.
Information published elsewhere: No
Significance: New county record. *Lemna minuscula* is reported from Carroll, Madison and Will Counties by Mohlenbrock (1970) and Mohlenbrock and Ladd (1978). In addition to these three counties, Mohlenbrock (2002) cites Cook County. Swink and Wilhelm (1994) cite dinky duckweed from Lake, Cook and Will Counties in the Chicago region. The small size and poor condition upon drying contribute to the problem of proper identification of this species (Mohlenbrock 1970).
Species Native or Alien: Native

Scientific Name: *Ligustrum obtusifolium* Siebold & Zucc.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Border Privet
Family: Oleaceae
County: DuPage
Date of Collection: 1 June 2000
Collector's Name: Scott N. Kobal
Collection Number: FPD 00-02
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 148868
Locality information: Collected at Oldfield Oaks Forest Preserve in Darien.
Habitat: The plant was found growing in a shrubby old field adjacent to a marsh.
Associates: *Acer negundo, Agrimonia gryposepala, Carex blanda, Chrysanthemum leucanthemum* var. *pinnatifidum, Cornus racemosa, Daucus carota, Erigeron annuus, Eupatorium altissimum, Galium mollugo, Geum canadense, Juglans nigra, Phalaris arundinacea, Potentilla recta, Prunus serotina, Rhamnus cathartica, Solidago canadensis, S. nemoralis,* and *Vitis riparia.*
Comments on population size: One shrub observed
Information published elsewhere: No
Significance: New county record. Border privet is a native of Japan that was first reported in Illinois by Mohlenbrock (1975), who stated that is rarely found in waste ground. This shrub is reported from 17 states in the eastern and midwestern United States (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) record this species only from Kane and Coles Counties. Ebinger (1983) noted many populations are found in disturbed sites in Illinois such as old fields, roadsides, disturbed areas and waste ground and stated this shrub has the potential to spread in natural areas. In northeastern Illinois, Swink and Wilhelm (1994) cite this species from Kane, Grundy and Kankakee Counties
Species Native or Alien: Alien – introduced from Asia.

Scientific Name: *Liriodendron tulipifera* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Tulip Tree
Family: Magnoliaceae
County: DuPage
Date of Collection: 25 May 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-08
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127547
Locality information: Collected at Waterfall Glen Forest Preserve near Darien.
Habitat: Oak woodland
Associates: *Acer negundo, Allium canadense, Allium cernuum, Alliaria petiolata, Lonicera* X *muendeniensis, Parthenocissus quinquefolia, Podophyllum peltatum, Prunus serotina, Quercus alba, Rhamnus cathartica, Rosa multiflora, Viburnum recognitum,* and *Vitis riparia.*
Comments on population size: Numerous large and small trees noted
Information published elsewhere: No
Significance: New county record. Tulip tree is usually found in rich, hardwood forests and confined to the southern three-fifths of the state (Mohlenbrock 2002). Mohlenbrock (1981) did not report this species in northeastern Illinois. Swink and Wilhelm (1994) report this tree from Kane, DeKalb and Will Counties in northeastern Illinois. They also report that it is probable that all of the northeastern Illinois collections represent escapes from cultivation.
Species Native or Alien: Alien – introduced from further south.

Scientific Name: *Lonicera subsessilis* Rehd.
Identification Manual (Source of nomenclature): Rehder 1940
Common Name: none
Family: Caprifoliaceae
County: DuPage
Date of Collection: 19 May 1997
Collector's Name: Victoria A. Nuzzo and Scott N. Kobal
Collection Number: 97-10
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 135632
Locality information: Collected at Fullersburg Woods Forest Preserve in Oak Brook.
Habitat: Found growing in a mesic woodland.
Associates: *Alliaria petiolata, Allium canadense, A. tricaccum* var. *burdickii, Arisaema triphyllum, Circaea lutetiana* var. *canadensis, Fraxinus americana, Parthenocissus quinquefolia, Polygonatum canaliculatum, Prunus serotina, Quercus alba, Ribes missouriense,* and *Viburnum opulus.*
Comments on population size: One shrub was observed
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – native of Korea

Scientific Name: *Lupinus polyphyllus* Lindl.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Bigleaf Lupine
Family: Leguminosae (Fabaceae)
County: DuPage
Date of Collection: 3 June 1994
Collector's Name: Scott N. Kobal
Collection Number: 94-19
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 120781
Locality information: Pratt's Wayne Woods Forest Preserve
Habitat: Prairie Restoration
Associates: *Chrysanthemum leucanthemum* var. *pinnatifidum, Coreopsis lanceolata, Daucus carota, Monarda fistulosa, Poa pratensis, Ratibida pinnata, Rudbeckia hirta,* and *Taraxacum officinale.*
Comments on population size: Approximately 10-15 plants noted
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from the western United States.

Scientific Name: *Lycopus europaeus* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: European Water Horehound
Family: Labiatae (Lamiaceae)
County: DuPage
Date of Collection: 29 July 1999
Collector's Name: Scott N. Kobal
Collection Number: 99-16
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 144027
Locality information: Collected at Waterfall Glen Forest Preserve near Lemont
Habitat: The plants were found growing along the edge of a cattail marsh that was south of the Des Plaines River and north of the Chicago Sanitary and Shipping Canal.
Associates: *Acer saccharinum, Bidens comosa, Boehmeria cylindrica, Impatiens capensis, Iris pseudacorus, Lemna minor, Phalaris arundinacea, Rumex altissimus, Sagittaria latifolia, Salix interior, Solanum dulcamara,* and *Typha* X *glauca.*
Comments on population size: Small number of plants noted

Information published elsewhere: No
Significance: New county record. *Lycopus europaeus* is a European species that is reported from 17 states in the east and Midwest (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) and Mohlenbrock (2002) report this species from McHenry County. Swink and Wilhelm (1994) cite this plant from McHenry, Kane and Kendall Counties in northeastern Illinois.
Species Native or Alien: Alien–introduced from Europe

Scientific Name: *Lysimachia vulgaris* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Garden Loosestrife
Family: Primulaceae
County: DuPage
Date of Collection: 4 September 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-32
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 132776
Locality information: Collected at Swift Prairie Forest Preserve near Addison.
Habitat: The plants were found growing in a prairie restoration area.
Associates: *Ambrosia artemisiifolia* var. *elatior, Aster pilosus, A. novae-angliae, Bidens frondosa, Convolvulus sepium, Coreopsis tinctoria, Echinochloa crusgalli, Hibiscus trionum, Melilotus alba,* and *Plantago rugelii.*
Comments on population size: Only a few plants noted
Information published elsewhere: No
Significance: New county record. This native of Eurasia is found occasionally escaping from cultivation, usually into moist fields (Mohlenbrock 2002, Gleason and Cronquist 1991). Mohlenbrock and Ladd (1978) report this species from 10 counties in Illinois, five of those being in northeastern Illinois. Swink and Wilhelm (1994) cite the same five counties: Lake, Kane, Kendall, Cook and Will.
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Magnolia stellata* (Sieb. & Zucc.) Maxim.
Identification Manual (Source of nomenclature): USDA, NRCS 2004
Common Name: Star Magnolia
Family: Magnoliaceae
County: DuPage
Date of Collection: 2 November 1994
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: 94-38
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 123181
Locality information: Collected at Herrick Lake Forest Preserve near Wheaton.
Habitat: The plant grew in an old field that is becoming dominated by trees and shrubs
Associates: *Agrimonia gryposepala, Aster sagittifolius* var. *drummonii, Lonicera maackii, L.* X *muendeniensis, Poa compressa, Rhamnus cathartica, R. frangula, Sanicula gregaria,* and *Viburnum recognitum.*
Comments on population size: Only one individual observed
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Melissa officinalis* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Common Balm
Family: Labiatae (Lamiaceae)
County: DuPage
Date of Collection: 3 September 2003
Collector's Name: Scott N. Kobal
Collection Number: FPD 03-33
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155943
Locality information: Collected at Blackwell Forest Preserve near Warrenville.
Habitat: The plants were found growing along the edge of a woodland trail near Springbrook Creek, south of Mack Road.
Associates: *Acer negundo, Alliaria petiolata, Arctium minus, Circaea lutetiana* var. *canadensis, Dactylis glomerata, Geum canadense, Oxalis europea, Parthenocissus quinquefolia, Quercus alba, Q. macropcarpa, Rhamnus cathartica, Taraxacum officinale,* and *Viburnum opulus.*
Comments on population size: Only one plant was noted. One plant was also found and collected in a degraded oak woodland at Maple Grove Forest Preserve in October 2004.
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Monarda didyma* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Oswego Tea
Family: Labiatae (Lamiaceae)
County: DuPage
Date of Collection: 10 July 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-07
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL

Accession Number: 154762
Locality information: Collected at Wayne Grove Forest Preserve near Bartlett
Habitat: The plants were found growing in an oak woodland where they had presumably escaped from nearby residences.
Associates: *Agrimonia gryposepala, Amphicarpaea bracteata, Arisaema triphyllum, Aster lateriflorus, Carya ovata, Circaea lutetiana canadensis, Dioscorea villosa, Eupatorium rugosum, Fraxinus americana, Galium triflorum, Impatiens capensis, Lamium galeobdolon, Leersia virginica, Parthenocissus quinquefolia, Phalaris arundinacea, Polygonum virginianum, Prunus serotina, Quercus alba, Rubus occidentalis, Smilacina racemosa,* and *Smilax ecirrhata.*
Comments on population size: Approximately 6-8 plants seen
Information published elsewhere: No
Significance: New county record. Oswego Tea, a native of the eastern United States and widely cultivated as an ornamental, has escaped from cultivation into woodlands in Illinois (Mohlenbrock 2002, Swink and Wilhelm 1994). Mohlenbrock (2002) cites this species from Cook, Hancock, Lake, McDonough, Shelby and Wasbash Counties in Illinois. Swink and Wilhelm (1994) record Oswego tea from Cook and Lake Counties in the Chicago region.
Species Native or Alien: Alien – native to the eastern United States

Scientific Name: *Myriophyllum spicatum* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: European Water Milfoil
Family: Haloragidaceae
County: DuPage
Date of Collection: 27 July 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-44
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127657
Locality information: East Branch Forest Preserve
Habitat: Quarry Lake
Associates: No aquatic associates were noted.
Comments on population size: Very abundant at the time of collection– herbicide control has kept the population down in recent years.
Information published elsewhere: No
Significance: New county record. European water milfoil, a native of Europe, was not reported from Illinois by Mohlenbrock and Ladd (1978), or Mohlenbrock (1986). Swink and Wilhelm (1994) cite the species from Lake, McHenry and Kendall Counties in northeastern Illinois. Mohlenbrock (2002) reports the plant from those counties cited by Swink and Wilhelm (1994). Based on specimens at the Morton Arboretum, *Myriophyllum spicatum* has been collected recently from Kane, Grundy and DeKalb Counties in the Chicago region since 1994 (G. Wilhelm, pers. comm.).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Najas marina* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Spiny Naiad
Family: Najadaceae
County: DuPage
Date of Collection: 1 October 1997
Collector's Name: Scott N. Kobal
Collection Number: 97-26
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 136646
Locality information: Pratt's Wayne Woods Forest Preserve
Habitat: Quarry pond
Associates: *Najas minor* and *Potamogeton nodosus*
Comments on population size: Small number of plants observed
Information published elsewhere: No
Significance: New county record. *Najas marina* was first collected in Illinois in Lake County in 1964 (Winterringer 1966). Mohlenbrock and Ladd (1978) and Mohlenbrock (2002) both cite this Eurasian species as occurring only in Lake County. Swink and Wilhelm (1994) report spiny naiad from Lake and McHenry Counties. *Najas marina* is found in brackish or highly alkaline water of ponds and lakes (Gleason and Cronquist 1991).
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Najas minor* All.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Brittle Naiad
Family: Najadaceae
County: DuPage
Date of Collection: 1 October 1997
Collector's Name: Scott N. Kobal
Collection Number: 97-27
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 136648
Locality information: Pratt's Wayne Woods Forest Preserve
Habitat: Quarry Pond
Associates: *Najas marina* and *Potamogeton nodosus*
Comments on population size: Quite abundant in the shallow areas of the pond. Since its discovery in 1997, it has been found in eight additional forest preserves in lakes and wetland restoration sites.

Information published elsewhere: No
Significance: New county record – formerly known only from the southern 2/3 of Illinois.
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Narcissus pseudonarcissus* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Daffodil
Family: Amaryllidaceae
County: DuPage
Date of Collection: 15 April 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154754
Locality information: Salt Creek Marsh Forest Preserve
Habitat: Plants were found growing on a spoil pile of soil and concrete.
Associates: *Acer negundo, Alliaria petiolata, Geum canadense, Lonicera* X *muendeniensis, Prunus serotina, Rhamnus cathartica, Rosa multiflora, Taraxacum officinale, Ulmus pumila,* and *Vitis riparia.*
Comments on population size: A few plants noted growing on the spoil pile.
Information published elsewhere: No
Significance: New county record. This commonly planted species native to Europe occasionally escapes from cultivation into waste places or persists in areas where it was formerly planted (Gleason and Cronquist 1991, Swink and Wilhelm 1994). Mohlenbrock and Ladd (1978) cite this species from 14 counties in Illinois, with Cook County being the only record for the Chicago region. Swink and Wilhelm (1994) record this plant only from Cook and Lake Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from Europe.

Scientific Name: *Oenothera macrocarpa* Nutt.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Winged Fruit Evening Primrose
Family: Onagraceae
County: DuPage
Date of Collection: 23 June 1994
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: 94-18
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 120749
Locality information: Collected at Glen Oak Forest Preserve in Glen Ellyn
Habitat: Prairie Restoration
Associates: *Ambrosia artemisiifolia* var. *elatior, Aster pilosus, Cirsium arvense, Convolvulus arvensis, Daucus carota, Erigeron annuus, Lactuca scariola, Oenothera biennis, Phleum pratense, Rudbeckia hirta, Silphium integrifolium,* and *Trifolium repens.*
Comments on population size: Only a few plants seen – the species was seen at one other prairie/wetland restoration area in 1998.
Information published elsewhere: No
Significance: New county record. *Oenothera macrocarpa* is reported from eight states in the midwestern United States (USDA, NRCS 2004). This plant is cited in Illinois only from St. Clair County (Mohlenbrock and Ladd 1978, Mohlenbrock 2002). Swink and Wilhelm (1994) do not record this plant for the Chicago region.
Species Native or Alien: Alien – introduced from farther west

Scientific Name: *Oenothera perennis* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Small Sundrops
Family: Onagraceae
County: DuPage
Date of Collection: 26 June 2003
Collector's Name: Scott N. Kobal
Collection Number: FPD 03-22
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155730
Locality information: Collected at Fischer Woods Forest Preserve near Bensenville.
Habitat: The plants were found growing in a small opening of a moist, shrubby area
Associates: *Agrimonia gryposepala, Anemone virginiana, Fraxinus pennsylvanica, Gentiana andrewsii, Helianthus grosseserratus, Hypericum punctatum, Prunella vulgaris lanceolata, Rhamnus cathartica, Rhus radicans,* and *Solidago canadensis.*
Comments on population size: A few small clumps noted
Information published elsewhere: No
Significance: New county record. State threatened species (Illinois Endangered Species Protection Board 1999, Herkert and Ebinger 2002).
Species Native or Alien: Native

Scientific Name: *Oryzopsis racemosa* (Sm.) Hitchc.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Black-seeded Rice Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 7 July 1998
Collector's Name: Scott N. Kobal
Collection Number: 98-17
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL

Accession Number: 141108
Locality information: Blackwell Forest Preserve
Habitat: Southwest-facing slope on wooded glacial kame
Associates: *Alliaria petiolata, Arctium minus, Campanula americana, Circaea lutetiana* var. *canadensis, Elymus villosus, Geranium maculatum, Geum canadense, Hackelia virginiana, Hesperis matronalis, Leonurus cardiaca, Lonicera maackii, Phlox divaricata, Ribes missouriense, Rubus allegheniensis, Rubus occidentalis, Sanicula gregaria, Smilacina racemosa, Smilax lasioneura,* and *Uvularia grandiflora.*
Comments on population size: Only one small clump observed in 1998 – the population has since increased.
Information published elsewhere: No
Significance: New county record. This rare grass has been reported from Grundy, LaSalle, Winnebago, Peoria, and Vermillion Counties by Mohlenbrock and Ladd (1978). Swink and Wilhelm (1994) report this plant from Grundy, Kane, Lake and Cook Counties in northeastern Illinois.
Species Native or Alien: Native

Scientific Name: *Panicum gattingeri* Nash
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Gattinger's Panic Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 17 September 1999
Collector's Name: Scott N. Kobal
Collection Number: 99-22
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 145346
Locality information: Waterfall Glen Forest Preserve
Habitat: The plants were found growing along a little used gravel access road.
Associates: *Agalinis tenuifolia, Ambrosia artemisiifolia* var. *elatior, Aster ericoides, Campanula aparinoides, Convolvulus sepium, Daucus carota, Eragrostis pectinacea, Euphorbia supina, Gaura biennis* var. *pitcheri, Lobelia siphilitica, Lycopus americanus, Oenothera biennis, Panicum capillare, Poa compressa, Populus deltoides, Prunella vulgaris* var. *lanceolata, Solidago canadensis, Sporobolus neglectus,* and *Typha X glauca.*
Comments on population size: Only a small number of plants were observed.
Information published elsewhere: No
Significance: New county record. *Panicum gattingeri* is a rare weed of dry ruderal areas, scattered throughout the state, except for the northern three tiers of counties (Mohlenbrock 1986, Swink and Wilhelm 1994). Mohelnbrock and Ladd (1978), Swink and Wilhelm (1994), and Mohlenbrock (2001) cite this grass from only Kankakee County in northeastern Illinois. This species is sometimes considered to be a variety of *Panicum capillare* L. by some botanists, others consider it to be synonymous with *P. philadelphicum* Trin. (Mohlenbrock 2001).
Species Native or Alien: Native

Scientific Name*: Panicum latifolium* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Broad-leaved Panic Grass
Family: Gramineae (Poaceae)
County: Kendall
Date of Collection: 4 August 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-12
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152093
Locality information: Collected at Maramech Woods Nature Preserve near Plano.
Habitat: The plants were found growing on a wooded slope.
Associates: *Campanula americana, Carex pensylvanica, Eupatorium rugosum, Festuca obtusa, Galium concinnum, Parthenocissus quinquefolia, Phryma leptostachya, Prunus serotina, Quercus rubra, Ulmus americana, Viburnum prunifolium, Viola sororia,* and *Xanthoxylum americanum.*
Comments on population size: Small population observed
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Panicum philadelphicum* Trin.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Philadelphia Panic Grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 24 September 2002
Collector's Name: Scott N. Kobal and Wayne A. Lampa
Collection Number: FPD 02-26
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154934
Locality information: West Branch Forest Preserve
Habitat: Old former quarry area on a clay and gravel substrate.
Associates: *Agalinis tenuifolia, Ambrosia artemisiifolia* var. *elatior, Aster pilosus, A. novae-angliae, Bidens cernua, Carex granularis, Cornus racemosa, Digitaria ischaemum, Juncus dudleyi, J. nodosus, J. torreyi, Lycopus americanus, Oenothera biennis, Panicum capillare, P. implicatum, Prunella vulgaris* var. *lanceolata, Scirpus pendulus, Solidago graminifolia, Sporobolus vaginiflorus,* and *Xanthium strumarium.*

Comments on population size: Large number of plants were observed (50+).
Information published elsewhere: No
Significance: New county record. *Panicum philadelphicum* is locally scattered in the southern 3/5 of the state as well as DeKalb County in northeastern Illinois (Mohlenbrock and Ladd 1978, Mohlenbrock 1986, Swink and Wilhelm 1994, Mohlenbrock 2001). Mohlenbrock (2001, 2002) describes the habitat of this plant as being dry, usually sandy soil. Swink and Wilhelm (1994) report that it is a species of limestone pavements and outcrops, but have not seen any specimens from the Chicago region.
Species Native or Alien: Native

Scientific Name: *Papaver rhoeas* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Corn Poppy
Family: Papaveraceae
County: DuPage
Date of Collection: 24 June 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-09
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 131539
Locality information: Winfield Mounds Forest Preserve near Winfield.
Habitat: In an old field south of Geneva Road.
Associates: *Abutilon theophrasti, Acer negundo, Ambrosia artemisiifolia* var. *elatior, Arctium minus, Brassica kaber, Chenopodium album, Cirsium vulgare, Convolvulus arvensis, Erigeron canadensis, Festuca elatior,* and *Hibiscus trionum.*
Comments on population size: Only one plant seen
Information published elsewhere: No
Significance: New county record. *Papaver rhoeas* is a widely distributed plant, occurring in 35 of the contiguous United States (USDA, NRCS 2004). Corn poppy is a native of Eurasia that occasionally escapes from cultivation but is non-persistent (Mohlenbrock 2002, Swink and Wilhelm 1994). This species is reported from 11 counties in Illinois by Mohlenbrock and Ladd (1978), of which two (Cook and Will) are located in northeastern Illinois. Swink and Wilhelm (1994) record this species from Cook County based on a record from Jones and Fuller (1955).
Species Native or Alien: Alien; introduced from the Old World

Scientific Name: *Parthenocissus tricuspidata* (Siebold & Zucc.) Planch.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Boston Ivy
Family: Vitaceae
County: DuPage
Date of Collection: 27 October 1998
Collector's Name: Scott N. Kobal
Collection Number: 98-32
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 142227
Locality information: Waterfall Glen Forest Preserve
Habitat: In a plantation of jack pine, spreading along the ground and climbing up the trunks of the pine trees.
Associates: In a plantation of *Pinus banksiana*, with *Acer negundo, Alliaria petiolata, Celastrus orbiculatus, Cirsium arvense, Polygonum virginianum, Ribes missouriense, Rubus allegheniensis, R. occidentalis, Ulmus americana,* and *Vitis riparia.*
Comments on population size: Plants were growing in a rather confined area (10 x 10 meters).
Information published elsewhere: No
Significance: New county record. Boston Ivy is native to China and Japan and is commonly planted as a wall climber and rarely escaping (Gleason and Cronquist 1991, Swink and Wilhelm 1994). Mohlenbrock and Ladd (1978) report this species only from Kane and Hancock Counties; Swink and Wilhelm (1994) cite Kane, Cook and Will Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Petunia parviflora* A.L. Juss.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Seaside petunia
Family: Solanaceae
County: DuPage
Date of Collection: 7 October 2003
Collector's Name: Scott N. Kobal
Collection Number: FPD 03-40
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 156037
Locality information: Collected at the Salt Creek Greenway Forest Preserve near Oak Brook
Habitat: The small mat-forming plants were found growing very abundantly along the east shoreline of Salt Creek north of 22nd Street.
Associates: *Acnida altissima, Aster simplex, A. subulatus, Bidens comosa, Chenopodium glaucum, Cyperus esculentus, Glechoma hederacea, Lippa lanceolata, Lycopersicum esculentum, Polgonum arenastrum, P. hydropiper, P. pensylvanicum, P. persicaria, P. punctatum, Populus deltoides, Viola sororia*, and *Xanthium strumarium.*
Comments on population size: Large population; hundreds of plants noted
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – mainly subtropical in both North and South Amercia.

Scientific Name: *Philadelphus pubescens* Loisel.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Downy Mock Orange
Family: Saxifragaceae
County: DuPage
Date of Collection: 13 June 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-18
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127553
Locality information: Collected at Hidden Lake Forest Preserve south of Glen Ellyn.
Habitat: The plant was found along the edge of a small ravine in an oak woodland.
Associates: *Acer negundo, Alliaria petiolata, Geum canadense, Hemerocallis fulva, Lonicera maackii, Parthenocissus quinquefolia, Prunus serotina, Prunus virginiana, Quercus alba, Rhamnus cathartica,* and *Rhus radicans.*
Comments on population size: A few shrubs noted.
Information published elsewhere: No
Significance: New county record. Downy mock orange is known from 20 states in the east and midwest (USDA, NRCS 2004). Mohlenbrock (2002) reports that the species is native to the southern United States and rarely escapes – citing it from Cook and Madison Counties. Swink and Wilhelm (1994) cite this species from Cook County and consider it adventive to the Chicago region.
Species Native or Alien: Alien; introduced from farther south.

Scientific Name: *Pinus nigra* Arnold
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Austrian Pine
Family: Pinaceae
County: DuPage
Date of Collection: 26 May 2004
Collector's Name: Scott N. Kobal
Collection Number: FPD 04-06
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116935
Locality information: Collected at Herrick Lake Forest Preserve near Warrenville. The plants were found growing in a shrubby area adjacent to the St. James Farm, south of Butterfield Road (Route 56) and west of Herrick Road.
Habitat: The tree, approximately 1.5 meters tall, was found in a thicket about 100—150 feet from a row of large Austrian pines planted on the St. James Farm property. There was also a row of honey locusts adjacent to the pines and these were also seen escaped in the area.
Associates *Aster sagittifolius* var. *drummondii, Carex blanda, Convolvulus sepium, Gleditsia triacanthos, Morus alba, Poa pratensis, Rhamnus cathartica, Rosa multiflora, Rubus occidentalis, Solidago canadensis,* and *Vitis riparia.*
Comments on population size: One individual was noted.
Information published elsewhere: No
Significance: New county record.
Species Native or Alien: Alien – introduced from Europe.

Scientific Name: *Polygonum bungeanum* Turcz.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Prickly Smartweed
Family: Polygonaceae
County: Will
Date of Collection: 4 October 1998
Collector's Name: Scott N. Kobal
Collection Number: SNK 98-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 141974
Locality information: Collected at the Lenore McDonald Farm (Conservation Foundation Property) in Naperville. The area is located north of Knoch Knolls Road and west of Ring Road.
Habitat: The plants were found growing along the edge of a cornfield.
Associates: *Abutilon theophrasti, Acalypha rhomboidea, Agropyron repens, Chenopodium album, Cirsium arvense, Glechoma hederacea, Phleum pratense, Plantago major, Polygonum persicaria, Rumex crispus, Setaria faberi, Solanum americanum,* and *Trifolium repens.*
Comments on population size: Only a small number of plants noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Polygonum cespitosum* Blume var. *longisetum* (Bruyn) Stewart
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Creeping Smartweed
Family: Polygonaceae
County: Kendall
Date of Collection: 6 August 2000
Collector's Name: Scott N. Kobal
Collection Number: SNK 00-09
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 149849
Locality information: Collected at Harris Woods Forest Preserve.
Habitat: The plants were found along a woodland path.
Associates: *Acer saccharum, Aster lateriflorus, Carex jamesii, Geum canadense, Prunus virginiana, Rhus radicans, Rubus occidentalis,* and *Smilacina racemosa.*

Comments on population size: Approximately 20–30 plants noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Polygonum cespitosum* Blume var. *longisetum* (Bruyn) Stewart
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Creeping Smartweed
Family: Polygonaceae
County: Kane
Date of Collection: 3 September 2002
Collector's Name: Scott N. Kobal
Collection Number: SNK 02-10
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155042
Locality information: Collected at Tri-County State Park in the Kane County portion.
Habitat: The plants were found growing in a disturbed wooded area that was recently cleared of brushy understory.
Associates: *Acer negundo, Alliaria petiolata, Aster lateriflorus, Bidens frondosa, Hackelia virginiana, Parthenocissus quinquefolia, Phytolacca americana, Prunus serotina, Rhamnus cathartica, Rhus radicans, Solanum americanum, S. dulcamara, Taraxacum officinale, Ulmus pumila,* and *Vitis riparia.*
Comments on population size: Plants fairly abundant
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Potamogeton illinoensis* Morong
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Illinois Pondweed
Family: Zosteraceae
County: DuPage
Date of Collection: 22 November 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-35
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155108
Locality information: Hidden Lake Forest Preserve
Habitat: Constructed lake, adjacent to the East Branch of the DuPage River.
Associates: No aquatic associates were noted at the time of this collection.
Comments on population size: Plants were fairly abundant in certain areas of the lake.
Information published elsewhere: No
Significance: New county record. Illinois pondweed is reported as occasional in lakes, and often found in calcareous waters (Swink and Wilhelm 1994). This plant is cited from the following counties in northeastern Illinois by Swink and Wilhelm (1994): McHenry, Lake, Cook, Kendall and Kankakee.
Species Native or Alien: Native

Scientific Name: *Potamogeton zosteriformis* Fern.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Flat-stemmed Pondweed
Family: Zosteraceae
County: DuPage
Date of Collection: 9 July 2001
Collector's Name: Scott N. Kobal
Collection Number: 01-13
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152099
Locality information: Springbrook Prairie Forest Preserve
Habitat: Constructed wetland
Associates: *Najas minor, Potamogeton crispus* and *Potamogeton nodosus.*
Comments on population size: Small number of plants observed.
Information published elsewhere: No
Significance: New county record. *Potamogeton zosteriformis* is reported from Kankakee, Cook, Lake, McHenry, Winnebago and Menard Counties by Mohlenbrock and Ladd (1978). Swink and Wilhelm (1994) add Kane County to this list and report that it is frequent in lakes and streams, rare in the western sector of the Chicago region with most contemporary populations persisting only in the better lakes of our eastern sector.
Species Native or Alien: Native

Scientific Name: *Potentilla intermedia* L.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Intermediate Cinquefoil
Family: Rosaceae
County: DuPage
Date of Collection: 23 June 1994
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: 94-26
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 120893
Locality information: Collected at Glen Oak Forest Preserve in Glen Ellyn.
Habitat: The plants grew in a prairie restoration.
Associates: *Aster pilosus, Convolvulus sepium, Daucus carota, Echinacea purpurea, Elymus canadensis, Erigeron*

annuus, Phleum pratense, Ratibida pinnata, and *Rudbeckia hirta.*
Comments on population size: Only a few plants noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Prunus avium* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Sweet Cherry
Family: Rosaceae
County: DuPage
Date of Collection: 29 April 1997
Collector's Name: Scott N. Kobal
Collection Number: 97-03
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 135640
Locality information: Collected at West DuPage Woods Forest Preserve near West Chicago.
Habitat: Found growing in a wooded area at the edge of a picnic area.
Associates: *Agrimonia gryposepala, Alliaria petiolata, Galium triflorum, Geum canadense, Polygonum virginianum, Prunus serotina, Quercus velutina, Rhamnus cathartica, Rubus occidentalis, Smilacina racemosa,* and *Taraxacum officinale.*
Comments on population size: One tree noted
Information published elsewhere: No
Significance: New county record. Sweet cherry is known from 26 states in the northeast, midwest and western United States (USDA, NRCS 2004). This native of Eurasia is cited by Gleason and Cronquist (1991) as often escaping from cultivation in our range, even appearing like a native. Mohlenbrock (2002) notes that this species rarely escapes from cultivation. Mohlenbrock and Ladd (1978) cited it from Jackson County in Illinois. Swink and Wilhelm (1994) do not report it from northeastern Illinois.
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Prunus subhirtella* Miq.
Identification Manual (Source of nomenclature): Rehder 1940
Common Name: Higan Cherry
Family: Rosaceae
County: DuPage
Date of Collection: 19 June 2001
Collector's Name: Scott N. Kobal
Collection Number: FPD 01-08
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152080
Locality information: Collected at Hidden Lake Forest Preserve near Glen Ellyn.
Habitat: Found growing in an oak woodland.
Associates: *Alliaria petiolata, Arisaema triphyllum, A. dracontium, Fraxinus americana, Lonicera maackii, Parthenocissus quinquefolia, Prunus serotina, P. virginiana, Quercus alba. Ribes missouriense, Rubus pensilvanicus, Ulmus americana,* and *Viburnum recognitum.*
Comments on population size: One shrub observed
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from Eurasia

Scientific Name: *Pyrus betulaefolia* Bunge
Identification Manual (Source of nomenclature): Rehder 1940
Common Name: Birch-leaved Pear
Family: Rosaceae
County: DuPage
Date of Collection: 17 July 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-37
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127652
Locality information: Collected at Hidden Lake Forest Preserve near Glen Ellyn.
Habitat: Found in a shrubby old field adjacent to the Morton Arboretum
Associates: *Bromus inermis, Lonicera maackii, Poa pratensis, Rhamnus cathartica, Rubus occidentalis,* and *Vitis riparia.*
Comments on population size: One shrub observed
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from Asia

Scientific Name: *Rosa centifolia* L.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Cabbage Rose
Family: Rosaceae
County: DuPage
Date of Collection: 26 June 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-24
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127543
Locality information: Collected at Springbrook Prairie Forest Preserve near Naperville.
Habitat: The plants were found in an old hedgerow
Associates: *Achillea millefolium, Arctium minus, Cirsium arvense, Daucus carota, Gleditsia triacanthos, Hemerocallis fulva, Lonicera maackii, Plantago lanceolata, Poa pratensis, Potentilla recta, Prunus serotina, Quercus*

alba, Rubus occidentalis, Rumex crispus, and *Solidago gigantea.*
Comments on population size: Approximately 12 plants observed
Information published elsewhere: No
Significance: New state record
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Rosa virginiana* Mill.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Virginia Rose
Family: Rosaceae
County: DuPage
Date of Collection: 17 June 1998
Collector's Name: Scott N. Kobal
Collection Number: 98-13
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 141107
Locality information: Collected at Waterfall Glen Forest Preserve near Darien.
Habitat: The plants were found growing along the edge of a marsh near Westgate Road
Associates: *Carex lacustris, Cirsium arvense, C. vulgare, Convolvulus sepium, Coronilla varia, Geum canadense, Helianthus grosseserratus, Polygonum scandens, Sonchus uliginosus, Typha* X *glauca, Verbena hastata,* and *Vitis riparia.*
Comments on population size: Approximately two dozen plants seen
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from farther east

Scientific Name: *Rudbeckia amplexicaulis* Vahl
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Annual Black-eyed Susan
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 6 August 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 01-12
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154758
Locality information: Collected at Pioneer Park Forest Preserve in Naperville.
Habitat: The single plant was found growing in a disturbed area where a building had been torn down south of Hobson Road and west of the West Branch of the DuPage River.
Associates: *Abutilon theophrasti, Aster pilosus, Brassica kaber, Carduus nutans, Cirsium arvense, C. vulgare, Daucus carota, Lepidium virginicum, Medicago lupulina, Muhlenbergia schreberi, Oenothera biennis, Plantago major, Rumex crispus, Setaria viridis, Taraxacum officinale,* and *Xanthium strumarium.*
Comments on population size: One plant observed
Information published elsewhere: No
Significance: New county record. Mohlenbrock and Ladd (1978) and Mohlenbrock (2002) report this species from Cook, Greene and Jackson counties. Swink and Wilhelm (1994) report this plant only from Cook County in northeastern Illinois.
Species Native or Alien: Alien – introduced from farther west or south.

Scientific Name: *Rudbeckia speciosa* Wender. var. *sullivantii* (C.L. Boynt. & Beadle) B. L. Rob.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Showy Black-eyed Susan
Family: Compositae (Asteraceae)
County: DuPage
Date of Collection: 27 August 2003
Collector's Name: Scott N. Kobal
Collection Number: FPD 03-32
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155931
Locality information: Collected at the West Branch Forest Preserve near Bartlett.
Habitat: The plants were found growing along the shoreline of a quarry lake south of Smith Road and east of the West Branch of the DuPage River.
Associates: *Agalinis tenuifolia, Ambrosia artemisiifolia* var. *elatior, Apocynum sibericum, Asclepias incarnata, Aster novae-angliae, A. pilosus, Carex granularis, Euphorbia maculata, Festuca elatior, Fragaria virginiana, Juncus nodosus, Leersia oryzoides, Lycopus americanus, Monarda fistulosa, Panicum capillare, P. implicatum, Phalaris arundinacea, Prunella vulgaris* var. *lanceolata, Rhamnus cathartica, Salix interior, Setaria glauca, Trifolium pratense,* and *Vitis riparia.*
Comments on population size: Only a small number of plants seen
Information published elsewhere: No
Significance: New county record. Showy black-eyed Susan occurs in a variety of moist, calcareous habitats (Swink and Wilhelm 1994). This species is occasional in the eastern counties of Illinois (Mohlenbrock 2002). Mohlenbrock and Ladd (1978) cite three counties from northeastern Illinois. Swink and Wilhelm (1994) record this plant from five counties in northeastern Illinois (Kane, Grundy, Cook, Will and Kankakee).
Species Native or Alien: Native

Scientific Name: *Ruellia strepens* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Smooth Ruellia
Family: Acanthaceae
County: Kendall
Date of Collection: 8 August 1999
Collector's Name: Scott N. Kobal
Collection Number: SNK 99-05
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 135690
Locality information: Collected at Baker's Woods Forest Preserve.
Habitat: The plants were found growing on a wooded floodplain along the west bank of Aux Sable Creek approximately 1/8 mile north of Route 52.
Associates: *Asarum canadense, Carex grayi, Celtis occidentalis, Elymus virginicus, Geum canadense, Gleditsia triacanthos, Lysimachia nummularia, Ranunculus septentrionalis, Rhus radicans, Smilax tamnoides* var. *hispida, Ulmus americana,* and *Vitis riparia.*
Comments on population size: Plants were fairly abundant along floodplain
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Rumex maritimus* L. var. *fueginus* (Phil.) Dusén
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Golden Dock
Family: Polygonaceae
County: DuPage
Date of Collection: 13 August 1996
Collector's Name: Scott N. Kobal
Collection Number: 96-24
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 132158
Locality information: Collected at Fullerton Park Forest Preserve near Addison.
Habitat: The plants were found growing at the edge of a small wetland area.
Associates: *Bidens comosa, Eleocharis acicularis, Leersia oryzoides,* and *Lindernia dubia.*
Comments on population size: Plants fairly numerous
Information published elsewhere: No
Significance: New county record. Golden dock is a widespread plant in the United States, being found in 35 of the 50 contiguous states (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) report this species from 11 counties in Illinois, four of these (McHenry, Kane, Grundy and Cook) in northeastern Illinois. Swink and Wilhelm (1994) cite this species from those northeastern Illinois counties, as well as McHenry and Will Counties.
Species Native or Alien: Native

Scientific Name: *Sagina procumbens* L.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Pearlwort
Family: Caryophyllaceae
County: DuPage
Date of Collection: 29 April 2000
Collector's Name: Scott N. Kobal
Collection Number: FPD 00-01
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 148256
Locality information: Collected in Naperville along the Naperville Riverwalk near the West Branch of the DuPage River.
Habitat: Here the plants were found growing abundantly between the paving bricks along the Riverwalk west of Eagle Street.
Associates: No vascular plant associates were noted
Comments on population size: Plants quite abundant in a small area
Information published elsewhere: No
Significance: New county record. Pearlwort is a widespread species in the United States, occurring in 31 of the contiguous 50 states (USDA, NRCS 2004). Mohlenbrock and Ladd (1978) and Mohlenbrock (1986) report *Sagina decumbens* (Elliot) T. & G. as being occasional in the southern half of the state and rare in the northern half. Mohlenbrock (2002) states that *S. procumbens* is apparently confined to the northern quarter of Illinois. Swink and Wilhelm (1994) state that previous reports of *S. decumbens* in the Chicago Region are being referred to as *S. procumbens*. They report *S. procumbens* from Lake, Cook, Kane and Will Counties in northeastern Illinois.
Species Native or Alien: Alien – introduced from the southern states

Scientific Name: *Samolus parviflorus* Raf.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Water Pimpernel
Family: Primulaceae
County: DuPage
Date of Collection: 30 September 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-28
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154931

Locality information: Fullersburg Woods Forest Preserve in Oak Brook.
Habitat: On a shaded mudflat along the edge of Salt Creek.
Associates: *Acnida altissima, Echinochloa crusgalli, Lindernia dubia, Mimulus ringens, Panicum dichotomiflorum, Polygonum persicaria, P. punctatum,* and *Rorippa palustris* var. *fernaldiana.*
Comments on population size: A small number of plants were noted in a confined area
Information published elsewhere: No
Significance: New county record. *Samolus parviflorus* is cited by Mohlenbrock (2002) as occurring occasionally throughout Illinois, except for the northwestern counties. Mohlenbrock and Ladd (1978) report this plant from Lake, Cook, Kendall and Kankakee Counties in northeastern Illinois. Swink and Wilhelm (1994) report this species as rare in the Chicago Region and cite it from the same northeastern Illinois counties as Mohlenbrock and Ladd (1978).
Species Native or Alien: Native

Scientific Name: *Scirpus hattorianus* Makino
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Early Dark Green Rush
Family: Cyperaceae
County: DuPage
Date of Collection: 18 October 1994
Collector's Name: Scott N. Kobal
Collection Number: 94-37
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 123180
Locality information: Fullersburg Woods Forest Preserve
Habitat: Small terrace along wooded floodplain
Associates: *Alliaria petiolata, Aster lateriflorus, Boehmeria cylindrica, Cirsium arvense, Cornus racemosa, Epilobium coloratum, Geum canadense, Impatiens capensis, Lobelia silphilitica, Polygonum punctatum, Rhamnus cathartica, Solidago altissima, Typha angustifolia, Verbena urticifolia, Vitis riparia,* and *Xanthoxylum americanum.*
Comments on population size: Small number of plants in a confined area.
Information published elsewhere: Locality information in Herkert and Ebinger (2002) – based on this collection.
Significance: New county record – State Endangered Species (Illinois Endangered Species Protection Board 1999).
Species Native or Alien: Native

Scientific Name: *Scirpus hattorianus* Makino
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Early Dark Green Rush
Family: Cyperaceae
County: Kendall
Date of Collection: 4 August 2001
Collector's Name: Scott N. Kobal
Collection Number: SNK 01-17
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152691
Locality information: Maramech Woods Nature Preserve
Habitat: The plants were found growing along the edge of a small swale in a northern flatwoods forest.
Associates: *Aster lateriflorus, Boehmeria cylindrica, Carex trichocarpa, Cicuta maculata, Eupatorium maculatum,* and *Solidago patula.*
Comments on population size: Very small number of plants in a confined area
Information published elsewhere: No
Significance: New county record – State Endangered Species (Illinois Endangered Species Protection Board 1999, Herkert and Ebinger 2002).
Species Native or Alien: Native

Scientific Name: *Scirpus paludosus* A. Nelson
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Alkali Bulrush
Family: Cyperaceae
County: DuPage
Date of Collection: 3 July 1997
Collector's Name: Scott N. Kobal
Collection Number: 97-13
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 135752
Locality information: Fischer Woods Forest Preserve
Habitat: Marshy area along the shoulder of Route 83 (Kingery Highway).
Associates: *Hordeum jubatum, Phalaris arundinacea, Scirpus validus* var. *creber,* and *Typha angustifolia.*
Comments on population size: Small number of plants confined to the edge of the marsh where competition from taller vegetation was minimal.
Information published elsewhere: Locality information in Herkert and Ebinger (2002) based on this collection.
Significance: New county record – State Endangered Species (Illinois Endangered Species Protection Board 1999).
Species Native or Alien: Alien – introduced from farther west.

Scientific Name: *Scirpus paludosus* A. Nelson
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Alkali Bulrush
Family: Cyperaceae

County: Kendall
Date of Collection: 19 September 2004
Collector's Name: Scott N. Kobal
Collection Number: SNK 04-05
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 116166
Locality information: Collected at the Morgan Creek Prairie Wetlands owned by the Oswegoland Park District. The plants were found growing near the intersection of Danbury Drive and Windsor Drive in Oswego.
Habitat: This bulrush grew in a wetland area that had salt encrusted on the soil surface and plant growth was sparse.
Associates: *Agrostis alba, Cyperus ferruginescens, Echinochloa crusgalli, Hordeum jubatum, Leersia oryzoides, Panicum dichotomiflorum, Phragmites australis, Polygonum lapathifolium, P. pensylvanicum,* and *Puccinellia distans.*
Comments on population size: Numerous plants were noted in this wetland area.
Information published elsewhere: No
Significance: New county record. State Endangered Species (Illinois Endangered Species Protection Board 1999, Herkert and Ebinger 2002).
Species Native or Alien: Alien–introduced from farther west.

Scientific Name: *Solanum sarachoides* Sendtn.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Hairy Nightshade
Family: Solanaceae
County: DuPage
Date of Collection: 18 July 2000
Collector's Name: Scott N. Kobal
Collection Number: SNK 00-07
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 148866
Locality information: On the grounds of the Morton Arboretum.
Habitat: The plants were found growing in a nursery area by the maintenance buildings on the east side of the arboretum.
Associates: *Abutilon theophrasti, Agropyron repens, Arctium minus, Chenopodium album, Cirsium arvense, Convolvulus sepium, Erigeron canadensis, Hibiscus trionum, Leonurus cardiaca, Lactuca serriola, Oenothera biennis, Polygonum persicaria, P. scandens, Robinia pseudoacacia, Setaria faberi, S. glauca,* and *Sonchus asper.*
Comments on population size: Approximately 12 plants noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from South America

Scientific Name: *Sorghum halepense* (L.) Pers.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Johnson Grass
Family: Gramineae (Poaceae)
County: Kendall
Date of Collection: 2 September 2002
Collector's Name: Scott N. Kobal
Collection Number: SNK 02-09
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155043
Locality information: Collected at Silver Springs State Park near Yorkville.
Habitat: The plants were found growing along a road shoulder in the park.
Associates: *Ambrosia artemisiifolia* var. *elatior, Asclepias syriaca, Bromus inermis, Cichorium intybus, Daucus carota, Oenothera biennis,* and *Solidago canadensis.*
Comments on population size: One small colony noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from the Mediterranean region

Scientific Name: *Spiranthes lacera* Raf.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Slender Ladies' Tresses
Family: Orchidaceae
County: DuPage
Date of Collection: 9 September 2001
Collector's Name: Wayne A. Lampa and Scott N. Kobal
Collection Number: FPD 01-23
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152709
Locality information: Greene Valley Forest Preserve
Habitat: The plants were found growing in a dry portion of a stabilized old field that was taken out of agricultural production in approximately 1970.
Associates: *Achillea millefolium, Andropogon gerardii, Ambrosia artemisiifolia* var. *elatior, Antennaria neglecta, A. plantaginifolia, Aster ericoides, A. novae-angliae, Chrysanthemum leucanthemum* var. *pinnatifidum, Cornus racemosa, Danthonia spicata, Daucus carota, Eupatorium altissimum, Liatris pycnostachya, Medicago lupulina, Panicum implicatum, Plantago lanceolata, Poa pratensis, Prunella vulgaris* var. *lanceolata, Ratibida pinnata, Scutellaria parvula* var. *leonardii, Solidago juncea, S. nemoralis, Trifolium pratense,* and *Vernonia missurica.*
Comments on population size: Only two plants were observed.
Information published elsewhere: No
Significance: New county record. *Spiranthes lacera* is listed as a rare orchid, restricted to the northern half of the

state in 22 counties (Mohlenbrock and Ladd 1978, Mohlenbrock 2002). Swink and Wilhelm (1994) report this orchid from Lake, Kane, Cook, Will, and Kankakee Counties in northeastern Illinois. Sheviak (1974) reported a hybrid between this species and *S. magnicamporum* Sheviak from DuPage County that indicated the presence of *S. lacera* in the area.
Species Native or Alien: Native

Scientific Name: *Tripsacum dactyloides* (L.) L.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Eastern gama-grass
Family: Gramineae (Poaceae)
County: DuPage
Date of Collection: 13 September 1995
Collector's Name: Patricia Armstrong
Collection Number: s.n.
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127864
Locality information: Along Santa Fe Railroad trails by Dolomite Prairie in Waterfall Glen Forest Preserve.
Habitat: Railroad ballast edge and cattail marsh edge.
Associates: *Verbascum thapsus, Erigeron canadensis, Cirsium discolor, Erechtites hieracifolia, Muhlenbergia frondosa, Eupatorium serotinum, Vitis riparia,* and *Nepeta cataria.*
Comments on population size: Small colony noted
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Typha* X *glauca* Godr.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Hybrid Cattail
Family: Typhaceae
County: DuPage
Date of Collection: 27 June 1995
Collector's Name: Scott N. Kobal
Collection Number: 95-25
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 127544
Locality information: Waterfall Glen Forest Preserve
Habitat: Cattail Marsh
Associates: *Acorus calamus, Boehmeria cylindrica, Calamagrostis canadensis, Carex suberecta, Convolvulus sepium, Cornus obliqua, Eupatorium maculatum, Polygonum amphibium* var. *stipulaceum, Spartina pectinata,* and *Vitis riparia.*
Comments on population size: Very abundant in this marsh – very prevalent in the county now.
Information published elsewhere: No
Significance: New county record. *Typha* X *glauca* is a hybrid between *T. angustifolia* L. and *T. latifolia* L. This hybrid is not recorded by Mohlenbrock (1970) or Mohlenbrock and Ladd (1978). Mohlenbrock (2002) reports this species as rare and known only from the northern quarter of Illinois. Swink and Wilhelm (1994) record it from Lake, Cook, Kane, and DeKalb counties
Species Native or Alien: Native

Scientific Name: *Verbena* X *engelmannii* Moldenke
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Engelmann's Vervain
Family: Verbenaceae
County: DuPage
Date of Collection: 24 August 2001
Collector's Name: Scott N. Kobal
Collection Number: FPD 01-19
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 152690
Locality information: Waterfall Glen Forest Preserve near Lemont.
Habitat: Near a thicket at the edge of a dry prairie.
Associates: *Agrimonia grypsosepala, Agrostis alba, Aster sagittifolius, Crataegus mollis, Eupatorium rugosum, Helianthus strumosus, Lonicera maackii, Oenothera biennis, Rhamnus cathartica, Rosa multiflora, Solidago canadensis, S. gymnospermoides,* and *Verbena urticifolia.*
Comments on population size: Approximately 5 or 6 plants seen
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Native

Scientific Name: *Vinca major* L.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Greater Periwinkle
Family: Apocynaceae
County: DuPage
Date of Collection: 20 November 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-34
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 155115
Locality information: Maryknoll Forest Preserve in Glen Ellyn.
Habitat: An apparently spontaneous colony in a weedy area along a spoilpile on the former Maryknoll Seminary site just east of Illinois Route 53 and north of Abbey Drive.
Associates: *Acer negundo, Dipsacus laciniatus, Phalaris arundinacea, Populus deltoides, Rhamnus cathartica, Rhus glabra,* and *Solidago canadensis.*

Comments on population size: A fairly large colony was noted – it has now been destroyed.
Information published elsewhere: No
Significance: New county record
Species Native or Alien: Alien – introduced from southern Europe

Scientific Name: *Wolffia papulifera* C. H. Thomps.
Identification Manual (Source of nomenclature): Swink and Wilhelm 1994
Common Name: Nippled Water Meal
Family: Lemnaceae
County: DuPage
Date of Collection: 17 September 2002
Collector's Name: Scott N. Kobal
Collection Number: FPD 02-23
Herbarium where specimen is deposited: Morton Arboretum, Lisle, IL
Accession Number: 154710
Locality information: Basic Life Forest Preserve in Oak Brook
Habitat: Open water marsh
Associates: *Lemna minor, Spirodela polyrhiza,* and *Wolffia columbiana.*
Comments on population size: Small, mixed with other species of the Lemnaceae.
Information published elsewhere: No
Significance: New county record. Mohlenbrock and Ladd (1978) report nippled water meal only from Lake County in the Chicago region; other reports are from extreme southern or western Illinois. Swink and Wilhelm (1994) report this species from Lake and Cook Counties in northeastern Illinois. This species is found in quiet water, scattered throughout Illinois, usually in association with other species of *Wolffia,* but apparently is not common (Mohlenbrock 1970, Mohlenbrock 2002, Swink and Wilhlem 1994).
Species Native or Alien: Native

LITERATURE CITED

Dirr, M. A. 1998. Manual of woody landscape plants-their identification, ornamental characteristics, culture, propagation and uses. 5th edition. Stipes Publishing L.L.C. Champaign, Illinois.

Ebinger, J. E. 1983. Exotic shrubs a potential problem in natural area management in Illinois. Natural Areas Journal. 3 (1): 3—6.

Gleason, H. A. and A. Cronquist. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. New York Botanical Garden, Bronx, New York.

Jones, G. N. and G. D. Fuller. 1955. Vascular plants of Illinois. Urbana: University of Illinois Press, Springfield. Illinois State Museum.

Herkert, J. R. and J. E. Ebinger, editors. 2002. Endangered and Threatened Species in Illinois: Status and Distribution, Volume 1- Plants. Illinois Endangered Species Protection Board, Springfield, Illinois. 161 pp.

Illinois Endangered Species Protection Board. 1999. Checklist of endangered and threatened plants and animals of Illinois. Endangered Species Protection Board, Springfield, Illinois.

Mohlenbrock, R. H. 1970. Guide to the vascular flora of Illinois: Flowering plants, flowering rush to rushes. Carbondale: Southern Illinois University Press.

_____. 1975. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville.

_____. 1978. The illustrated flora of Illinois: Flowering plants, hollies to loasas. Carbondale: Southern Illinois University Press.

_____. 1980. The illustrated flora of Illinois: Flowering plants, willows to mustards. Carbondale: Southern Illinois University Press.

_____. 1981. The illustrated flora of Illinois: Flowering plants, magnolias to pitcher plants. Carbondale: Southern Illinois University Press.

_____. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville.

_____. 1999. The illustrated flora of Illinois Sedges: Carex. Southern Illinois University Press. Carbondale and Edwardsville.

_____. 2001. The illustrated flora of Illinois: Grasses, *Panicum* to *Danthonia* –2nd Edition. Carbondale: Southern Illinois University Press.

_____. 2002. Vascular flora of Illinois. Southern Illinois University Press. Carbondale and Edwardsville.

_____, and D. M. Ladd. 1978. Distribution of Illinois vascular plants. Carbondale: Southern Illinois University Press.

Sheviak, C. J. 1974. An introduction to the ecology of the Illinois Orchidaceae. Illinois State Museum Scientific Paper 14.

Swink, F. and G. Wilhelm. 1994. Plants of the Chicago Region. 4th ed. Indianapolis: Indiana Academy of Science.

USDA, NRCS. 2004. The Plants Database, Version 3.5 (http./plants.usda.gov). National Plant Data Center, Baton Rouge, LA. 70874-4490. USA.

Winterringer, G. S. 1966. Aquatic vascular plants new for Illinois. Rhodora. 68:221—222.

ILLINOIS FLORA UPDATES 2004

NEW DISTRIBUTION RECORDS AND NOTEWORTHY COLLECTIONS

Illinois Flora Updates 2004: new Distribution Records and Noteworthy Collections
David M. Ketzner
Illinois Natural History Survey

Citation: Ketzner, D. 2004. Illinois Flora Updates: New distribution records and noteworthy collections: *Erigenia* 20:98—104.

Scientific Name: *Antennaria plantaginifolia* (L.) Richards.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Pussy-toes
Family: Asteraceae
County: Clay
Date of Collection: 14 May 1984
Collector's Name: David Ketzner
Collection Number: 258
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 172267
Locality information: Charley Brown Park, 2 miles west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Collected on a dry slope above an artificial lake.
Comments on population size: Many stems present in this colony.
Information published elsewhere: No
Significance: New county record. Occasional to common; scattered in Illinois (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Arctium minus* Schk.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Common Burdock
Family: Asteraceae
County: Clay
Date of Collection: 31 July 1993
Collector's Name: David Ketzner
Collection Number: 1564
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 195059
Locality information: North of Flora. SW 1/4, SE 1/4, Sec. 13, T3N, R6E.
Habitat: Collected in a roadside area.
Comments on population size: Unknown population size.
Information published elsewhere: No
Significance: New county record. Common throughout Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe and Asia

Scientific Name: *Asimina triloba* (L.) Dunal
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Pawpaw
Family: Annonaceae
County: Hardin
Date of Collection: 16 April 1994
Collector's Names: David Ketzner and Steve Olson
Collection Number: 1653
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188682
Locality information: Hollow east of Lamb and south of Brokaw Hill. NE 1/4, Sec. 28, T11S, R10E.
Habitat: Found in mesic upland forest.
Comments on population size: Unknown population size.
Information published elsewhere: No
Significance: New county record. Common in the southern counties, becoming less common northward (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Asparagus officinalis* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Asparagus
Family: Liliaceae
County: Clay
Date of Collection: 14 May 1984
Collector's Name: David Ketzner
Collection Number: 255
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)

Accession Number: 171492-1 and 171492-2 (two sheets)
Locality information: Charley Brown Park, 2 miles west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Collected in waste ground.
Comments on population size: Only a few plants present
Information published elsewhere: No
Significance: New county record. Commonly escaped from cultivation and probably in every county (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Chaenorrhinum minus* (L.) Lange
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Dwarf Snapdragon
Family: Scrophulariaceae
County: Clay
Date of Collection: 7 August 1984
Collector's Name: David Ketzner
Collection Number: 521
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 175312
Locality information: 2 miles north of Flora along the Baltimore and Ohio Railroad. S 1/2, Sec. 11, T3N, R6E.
Habitat: Found along the tracks in railroad ballast.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Adventive in Illinois, particularly along railroads (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Crataegus phaenopyrum* (L. f.) Medik.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Washington Thorn
Family: Rosaceae
County: Clay
Date of Collection: 26 June 1993
Collector's Name: David Ketzner
Collection Number: 1536
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188698
Locality information: Northeast of Flora near Elm Creek. SW 1/4, SW 1/4, Sec. 18, T3N, R7E.
Habitat: Found in a thicket along the creek adjacent to a cultivated field.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional in the southern third of the state as well as Cook County (Mohlenbrock 2002). The Cook County record is based on an escape from cultivation (Swink and Wilhelm 1994). The Clay County record reported here may be from a native population, although the collection site was a rather disturbed area.
Species Native or Alien: Native

Scientific Name: *Euonymus atropurpureus* Jacq.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Wahoo
Family: Celastraceae
County: Clay
Date of Collection: 26 June 1993
Collector's Name: David Ketzner
Collection Number: 1538
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188688
Locality information: Northeast of Flora near Elm Creek. NE 1/4, SE 1/4, SE 1/4, Sec. 13, T3N, R6E.
Habitat: Found in a thicket along the creek adjacent to a cultivated field.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional throughout the state (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Galinsoga quadriradiata* Ruiz & Pavon
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Peruvian Daisy
Family: Asteraceae
County: Alexander
Date of Collection: 14 October 1993
Collector's Names: David Ketzner and Mark Basinger
Collection Number: 1616
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 201190
Locality information: Horseshoe Lake State Conservation Area. E 1/2, SE 1/4, SE 1/4, NE 1/4, Sec. 21, T16S, R2W.
Habitat: Collected in a fallow field; elevation ca. 325 feet.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Scattered throughout Illinois (Mohlenbrock and Ladd 1978).
Species Native or Alien: Alien – introduced from tropical America

Scientific Name: *Galium pedemontanum* All.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Yellow-flowered Bedstraw
Family: Rubiaceae
County: Clay

Date of Collection: 17 May 1993
Collector's Name: David Ketzner
Collection Number: 1486
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188674
Locality information: Charley Brown Park, west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Collected from a roadside area and the adjacent lawn.
Comments on population size: Several dozen plants present, but confined to a relatively small area of only a few square yards.
Information published elsewhere: No
Significance: New county record. Previously reported in Illinois only from Champaign County (Mohlenbrock and Ladd 1978, Mohlenbrock 2002).
Species Native or Alien: Alien - introduced from Europe

Scientific Name: *Geranium pusillum* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Small Cranesbill
Family: Geraniaceae
County: Jackson
Date of Collection: 18 May 1993
Collector's Names: David Ketzner and Mark Basinger
Collection Number: 1492
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220486
Locality information: South of Carbondale on campus of Southern Illinois University. W 1/2, Sec. 28, T9S, R1W
Habitat: Found in a picnic area near Campus Lake.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Scattered in waste ground in Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien - native to Europe

Scientific Name: *Gratiola neglecta* Torr.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Clammy Hedge Hyssop
Family: Scrophulariaceae
County: Clay
Date of Collection: 15 May 1993
Collector's Name: David Ketzner
Collection Number: 1484
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 185084
Locality information: West of Clay City. Sec. 22, T3N, R7E.
Habitat: Found in wet ground at the edge of a fallow field, previous to spring planting.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional to common throughout the state (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Hedyotis crassifolia* Raf.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Tiny Bluets
Family: Rubiaceae
County: Clay
Date of Collection: 4 April 1994
Collector's Name: David Ketzner
Collection Number: 1652
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 201188
Locality information: Charley Brown Park, west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Found growing in a park lawn.
Comments on population size: Numerous plants were observed at this site.
Information published elsewhere: No
Significance: New county record. Occasional in the southern and western counties, absent elsewhere (Mohlenbrock 2002 as *Houstonia crassifolia*).
Species Native or Alien: Native

Scientific Name: *Hesperis matronalis* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Dame's Rocket
Family: Brassicaceae
County: Clay
Date of Collection: 15 May 1993
Collector's Name: David Ketzner
Collection Number: 1479
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188685
Locality information: West of Clay City. SE 1/4, SE 1/4, Sec. 22, T3N, R7E.
Habitat: Found as a weed in a field of alfalfa.
Associates: *Medicago sativa* (planted).
Comments on population size: A few dozen plants present.
Information published elsewhere: No
Significance: New county record. Occasionally escaped from cultivation and scattered in Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien - native to Europe and Asia

Scientific Name: *Hydrophyllum virginianum* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Virginia Waterleaf
Family: Hydrophyllaceae
County: Clay
Date of Collection: 15 May 1984
Collector's Name: David Ketzner
Collection Number: 262
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 171498
Locality information: 1.7 miles north of Flora, near Buck Creek. NW 1/4, Sec. 18, T3N, R7E.
Habitat: Collected in a roadside ditch.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional to common throughout the state (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Kickxia elatine* (L.) Dumort.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Canker-root
Family: Scrophulariaceae
County: Clay
Date of Collection: 7 August 1984
Collector's Name: David Ketzner
Collection Number: 523
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 175320
Locality information: 2 miles north of Flora along the Baltimore and Ohio Railroad. S 1/2, Sec. 11, T3N, R6E.
Habitat: Found along the tracks in railroad ballast.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Not common, but scattered in Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Lamium amplexicaule* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Henbit
Family: Lamiaceae
County: Marion
Date of Collection: 10 April 1998
Collector's Name: David Ketzner
Collection Number: 2270
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220516
Locality information: Northeast of Omega at Stephen A. Forbes State Park, at Circle Drive Picnic Area. NE 1/4, NE 1/4, NE 1/4, Sec. 8, T3N, R4E.
Habitat: Found in the lawn of a picnic area.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional to common throughout Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien - introduced from Europe, Asia and Africa

Scientific Name: *Lepidium campestre* (L.) R. Br.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Field Cress
Family: Brassicaceae
County: Clay
Date of Collection: 17 May 1993
Collector's Name: David Ketzner
Collection Number: 1491
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 185112
Locality information: Charley Brown Park, west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Found in disturbed ground.
Comments on population size: Unknown population size.
Information published elsewhere: No
Significance: New county record. Naturalized in disturbed areas; occasional throughout Illinois (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Linum usitatissimum* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Common Flax
Family: Linaceae
County: Saline
Date of Collection: 11 July 1993
Collector's Names: David Ketzner and Mark Basinger
Collection Number: 1553
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188690
Locality information: South of Delta along the Illinois Central Gulf Railroad. Sec. 6, T10S, R5E.
Habitat: Found along the tracks in railroad ballast.
Comments on population size: Only a few plants present.
Information published elsewhere: No
Significance: New county record. Adventive in disturbed areas; occasional throughout the state (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Myosurus minimus* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Mousetail
Family: Ranunculaceae
County: Clay
Date of Collection: 14 May 1984
Collector's Name: David Ketzner
Collection Number: 260
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 171496
Locality information: Charley Brown Park, 2 miles west of Flora. SE 1/4, SW 1/4, Sec. 28, T3N, R6E.
Habitat: Collected in disturbed soil in a picnic area.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Occasional to common in the southern counties, rare northward (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Ornithogalum umbellatum* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Star-of-Bethlehem
Family: Liliaceae
County: Clay
Date of Collection: 15 May 1993
Collector's Name: David Ketzner
Collection Number: 1480
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188697
Locality information: West of Clay City. SW 1/4, SE 1/4, Sec. 22, T3N, R7E.
Habitat: Found in a fallow field, previous to spring planting.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Common throughout the state (Mohlenbrock 2002).
Species Native or Alien: Alien - native to Europe

Scientific Name: *Polygonum persicaria* L.
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Lady's Thumb
Family: Polygonaceae
County: Clay
Date of Collection: 31 July 1993
Collector's Name: David Ketzner
Collection Number: 1563
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220492
Locality information: North of Flora. SW 1/4, SE 1/4, Sec. 13, T3N, R6E.
Habitat: Found in a roadside area.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Naturalized in waste ground and common throughout the state (Mohlenbrock 2002).
Species Native or Alien: Alien - native to Europe

Scientific Name: *Ranunculus abortivus* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Small-flowered Crowfoot
Family: Ranunculaceae
County: Clay
Date of Collection: 15 May 1993
Collector's Name: David Ketzner
Collection Number: 1482
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188702
Locality information: West of Clay City. SW 1/4, SE 1/4, Sec. 22, T3N, R7E.
Habitat: Found in a fallow field, previous to spring planting.
Comments on population size: Unknown population size.
Information published elsewhere: No
Significance: New county record. Common throughout the state (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Ranunculus sardous* Crantz
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Buttercup
Family: Ranunculaceae
County: Clay
Date of Collection: 17 May 1993
Collector's Name: David Ketzner
Collection Number: 1489
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220485
Locality information: Charley Brown Park, west of Flora. NE 1/4, NW 1/4, Sec. 33, T3N, R6E.
Habitat: Found in disturbed ground.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Naturalized in low fields and disturbed areas in Illinois, where it was previously thought confined to a few counties in the southernmost part of the state (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Ranunculus testiculatus* Crantz
Identification Manual (Source of nomenclature): Gleason and Cronquist 1991
Common Name: Bur Buttercup
Family: Ranunculaceae
County: Kendall
Date of Collection: 6 May 1997
Collector's Names: David Ketzner, Mary Harper and Dennis Keene
Collection Number: 1867
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220512
Locality information: Southeast of Plattville along U. S. Route 52, near bridge over Aux Sable Creek. S 1/2, SW 1/4, SW 1/4, NW 1/4, Sec. 15, T35N, R8E.
Habitat: Found in gravel at the edge of the road.
Comments on population size: Only one plant found.
Information published elsewhere: No
Significance: New county record. Naturalized in waste areas, particularly in campgrounds, in the northeastern counties (Mohlenbrock 2002). Swink and Wilhelm (1994) record it from Grundy, Kankakee, Lake and Will Counties (as *Ceratocephalus testiculatus*).
Species Native or Alien: Alien - introduced from the western United States

Scientific Name: *Robinia pseudoacacia* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Black Locust
Family: Fabaceae
County: Clay
Date of Collection: 15 May 1993
Collector's Name: David Ketzner
Collection Number: 1485
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 188686
Locality information: West of Clay City near Mount Zion Church. S 1/2, SW 1/4, Sec. 23, T3N, R7E.
Habitat: Collected in a roadside thicket.
Comments on population size: Many individuals were present at this site. Black locust was the dominant woody plant in the thicket.
Information published elsewhere: No
Significance: New county record. Black locust is native in extreme southeastern Illinois, but commonly planted and escaped from cultivation elsewhere (Mohlenbrock 2002). Undoubtedly an escape from cultivation at this site.
Species Native or Alien: Alien - introduced from farther south

Scientific Name: *Scutellaria australis* (Fassett) Epling
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Small Skullcap
Family: Lamiaceae
County: Clay
Date of Collection: 15 May 1984
Collector's Name: David Ketzner
Collection Number: 264
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 171500
Locality information: Charley Brown Park, 2 miles west of Flora. S 1/2, Sec. 28, T3N, R6E.
Habitat: Collected on a dry, open slope near the edge of an artificial lake.
Comments on population size: Only a few plants present.
Information published elsewhere: No
Significance: New county record. Occasional in the southern half of Illinois (Mohlenbrock 2002).
Species Native or Alien: Native

Scientific Name: *Styrax americana* Lam.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Storax
Family: Styracaceae
County: Hamilton
Date of Collection: 3 June 1996
Collector's Names: David Ketzner, Allen Plocher and Dennis Keene
Collection Number: 1826
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220507
Locality information: Southeast of Belle Prairie City. S 1/2, NE 1/4, Sec. 2, T4S, R6E.
Habitat: Found in wet floodplain forest; elevation ca. 380 feet.
Comments on population size: Only a few plants present.
Information published elsewhere: No
Significance: New county record. According to Mohlenbrock (2002), storax is rare and confined to extreme southern Illinois, although it is known from Kankakee County (Swink and Wilhelm 1994). It is listed as a threatened species in Illinois (Herkert and Ebinger 2002).
Species Native or Alien: Native

Scientific Name: *Thlaspi perfoliatum* L.
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Perfoliate Penny Cress
Family: Brassicaceae
County: Jackson
Date of Collection: 23 April 1993
Collector's Names: David Ketzner and Mark Basinger
Collection Number: 1476
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 185111
Locality information: Lake Murphysboro State Park, west of Murphysboro.
Habitat: Found in a roadside area.
Comments on population size: Unknown population size
Information published elsewhere: No
Significance: New county record. Previously known only from Effingham and Shelby Counties (Mohlenbrock 2002).
Species Native or Alien: Alien – introduced from Europe

Scientific Name: *Tridens strictus* (Nutt.) Nash
Identification Manual (Source of nomenclature): Mohlenbrock 2002
Common Name: Spicate Purple-top
Family: Poaceae
County: Saline
Date of Collection: 13 October 1995
Collector's Name: David Ketzner
Collection Number: 1742
Herbarium where specimen is deposited: Illinois Natural History Survey (ILLS)
Accession Number: 220504
Locality information: East of Harrisburg, northwest of U. S. Route 45 along levee. SE 1/4, Sec. 10, T9S, R6E.
Habitat: Found in a successional field.
Comments on population size: Only a few plants present.
Information published elsewhere: No
Significance: New county record. Not common, scattered throughout the state (Mohlenbrock 2002).
Species Native or Alien: Native

REFERENCES

Gleason, H. A. and A. Cronquist. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. 2nd Edition. The New York Botanical Garden, Bronx, New York. 910 pp.

Herkert, J. R. and J. E. Ebinger (editors). 2002. Endangered and threatened species of Illinois: status and distribution. Volume 1: plants. Illinois Endangered Species Protection Board, Springfield. 163 pp.

Mohlenbrock, R. H. 2002. Vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville. 490 pp.

Mohlenbrock, R. H. and D. M. Ladd. 1978. Distribution of Illinois vascular plants. Southern Illinois University Press, Carbondale and Edwardsville. 282 pp.

Swink, F. and G. Wilhelm. 1994. Plants of the Chicago region. 4th edition. Indiana Academy of Science, Indianapolis, Indiana. 921 pp.

Invitation for Submission of Articles

Erigenia is a peer-reviewed journal of the Illinois Native Plant Society. We invite the submission of original articles on the biota of Illinois and adjacent states. This is a partial list of articles of interest to society members.

Taxonomy of vascular plants, fungi, lichens, and mosses

Ecology of native species and plant communities; interactions and effects of birds, mammals, and insects on our ecosystem

Natural History of our state, including geology and geography

Ethnobotany of native plants, their use by Native Americans

Cultural History as it intersects with natural history

Botanists, Scientists, Explorers, and Botanical Artists who have played a major role in our understanding of our state and its natural resources

Restoration of our native landscapes, management techniques and results

Horticulture as it relates to native plants in restored or cultural environments

Material for Flora Updates should be sent to:

Marty Vogt
4252 Humphrey Street
St. Louis, Missouri 63116
mvogt@accessus.net
314-771-7593

Please refer to the next column for information on submitting other manuscripts.

Instructions for Authors

Authors may submit material as an e-mail attachment to Gordon Tucker at cfgct@eiu.edu or on diskette sent to

Dr. Gordon C. Tucker
Department of Biological Sciences
Eastern Illinois University
600 Lincoln Avenue
Charleston, Illinois 61920-3099 U. S. A.

Manuscripts must be submitted as an MS Word document in a single font, double-spaced and left-aligned. Tables and illustrations must fit in a 7 x 9 inch area. Authors should retain copies of all material submitted.

The title page of the manuscript should state the affiliation and complete addresses of all the authors; the telephone number of the corresponding author should also be supplied. All papers will be reviewed and copy-edited.

Abstracts

Research and technical papers should include a one-paragraph abstract of not more than 250 words. The abstract should state concisely the goals, principal results, and major conclusions of the paper.

Taxonomic Names

Either a standard taxonomic manual should be cited whose names are followed consistently, or the scientific names should be followed by their authority. Common names, if used, should be referenced to a scientific name. Thereafter, scientific names are recommended, but either may be used if done so consistently.

Proofs

Authors will have the opportunity to review their articles before publication and are expected to correct any errors. The proofs should be returned within one week of receipt.

Page Charges

Page charges of $15 for members and $25 for non-members will be assessed. The fee will be waived for those who sign a statement that they neither have institutional support for publication nor can afford the page charges.

ILLINOIS NATIVE PLANT SOCIETY
FOREST GLEN PRESERVE
20301 EAST 900 NORTH ROAD
WESTVILLE, ILLINOIS 61883

RETURN SERVICE REQUESTED

CONTENTS

ERIGENIA 20, OCTOBER 2004