

**Chicago Botanic Garden**  
**Wildlife Preservation Fund Contract Report**  
**Plants of Concern: Mobilizing Citizen Scientists to Protect Illinois' Rare Plants**  
**through Long-Term Monitoring**  
**Contract # RC09L01W**  
**For July 1, 2008 to June 30, 2009**

Submitted by Susanne Masi, Manager of Regional Floristics, Chicago Botanic Garden, Principal Investigator

This narrative summarizes the Plants of Concern program activities from January 1 to June 30, 2009. It supplements the attached comprehensive program report submitted to Chicago Wilderness which covers the period from January to December 2008.

## **INTRODUCTION**

The long-term program goal of Plants of Concern (POC) is to expand its role as the primary standardized rare plant monitoring program for northeast Illinois and serve as a model for related programs in other parts of the state and region. POC's key purposes are to provide data on rare and listed plant populations so that managers can respond to individual population problems, view the status of populations on a regional scale, and inform state agencies of Element Occurrences (EORs) of listed and other rare species. The program is well-recognized and highly valued by participating agencies and landowners.

A unique value of this program is its public outreach component. Through POC, trained volunteers become citizen scientists, working with public and private landowners to assess and help protect some of the most threatened elements of the state flora. The high level of training and engagement that POC affords enables volunteers to contribute to regional goals for biodiversity and garner their active support for the conservation of rare plants.

## **MATERIALS AND METHODS**

POC volunteers and staff utilize a standardized monitoring data form to count or estimate plant population numbers, provide directions and GPS coordinates to population locations, assess the impact of invasive species and other threats (brush encroachment, deer browse, erosion, etc.), and record observable management activities, such as burning, brush clearing and invasives removal, within populations. Land management forms are completed by managers to provide additional management information. Demographic monitoring on four target species involves taking measurements (e.g. flower and fruit counts, plant height) on individual tagged plants within permanent plots.

## **RESULTS**

In 2008, POC engaged 249 volunteers, and monitored 173 species in 490 EORs at 180 sites. Fifty-eight landowners were involved. From January to June 2009, POC has engaged 97 volunteers and monitored 53 species in 123 EORs at 75 sites. Thirty landowners have been involved. Many more reports are anticipated by the end of the season.

POC program objectives as set forth in the 2008-2009 WPF contract include:

1. Collect standardized monitoring data on rare plants (population size, location, threats, and management) on a cumulative 50-55% of northeastern Illinois' listed EORs.

**Result:** Standardized monitoring data was collected in 2008 on 490 EORs of 173 listed and rare species; through June 30 in 2009, reports have been submitted for 123 EORs. Through 2008, POC had monitored a cumulative 56% of northeastern Illinois listed EORs.

2. Collect Level 2 demographic data on selected populations of target species (*Viola conspersa*, *Cypripedium candidum*, *Cirsium hillii* and *Tomanthera auriculata*)

**Result:** Level 2 demographic data was collected on all four species in 2008; in 2009, through June 30, demographic data has been initiated on *V. conspersa*, *C. candidum* and *C. hillii* and will be continued in July and August. *T. auriculata* will be monitored when it blooms in late August.

3. Hold three volunteer training workshops and support volunteers with further training in the field.

**Result:** In April 2009, three training workshops were held at Ryerson Woods, Volo Bog, and Sand Ridge Nature Center. POC staff has assisted volunteers in the field at 18 sites. Each volunteer is given the Volunteer Training Manual, which is also available on the POC website, [plantsofconcern.org](http://plantsofconcern.org).

4. Increase the number of trained volunteers recruited in cooperation with landowners (an average of five per county in the six counties of northeastern Illinois, with new recruits in Kankakee County).

**Result:** In 2008, POC recruited and trained 90 new volunteers, an average of 14.2 per the six northeastern Illinois counties. In 2009, 40 new volunteers were trained in the workshops and additional volunteers have since joined the program. In 2009, POC contacted landowners and land managers in Kankakee County from the TNC Kankakee Sands holdings and the Master Naturalist program at the University of Illinois Extension in Bourbonnais to bring their volunteers and students into the program. In another development, the Kendall County Forest Preserve District joined the program in 2009; staff there will monitor eight species at three sites.

5. Collaborate with public and private landowners to place volunteer monitors on their sites.

**Result:** In winter 2009, POC held meetings with five Forest Preserve/Conservation Districts and with IDNR staff to plan assignments for volunteers, sites and species. Other landowners were contacted by phone and email for the same purpose. In 2008, 58 public and private landowners were involved in the program.

6. Collaborate with IDNR (Regional Biologists, Natural Heritage Database, Nature Preserves Commission, Illinois Endangered Species Protection Board).

**Result:** In March 2009, all 2008 monitoring data was submitted to the Natural Heritage Database; data for Nature Preserve sites was submitted to the Nature Preserves Commission. POC received 2009 monitoring permits for Nature Preserve and IDNR sites. POC consulted Regional Biologists Brad Semel and Dan Kirk and with Nature Preserves Commission Field Representatives Kim Roman and Steve Byers to plan monitoring on sites within their purviews and to report results. PI Susanne Masi serves on the Illinois Endangered Species Protection Board and reported on POC achievements at its quarterly meetings. During the 2008-2009 listing process, she contributed POC data that helped determine listing recommendations for several species.

7. Prepare summary reports, including analysis of monitoring data, and share data with IDNR, Chicago Wilderness, other state agencies, and landowners that highlights management impacts on populations or concerns about the absence of management (submit data and final report to Wildlife Preservation Fund according to its reporting schedule).

**Result:** A summary report, including analysis, was submitted to Chicago Wilderness in March 2009. It is also included as an attachment to this final report to the Wildlife Preservation Fund. The report includes detailed discussion of management activities and impacts, including individual case studies. Monitoring data was shared with all participating landowners, the Illinois Natural Heritage Database and the Illinois Nature Preserves Commission.

8. Explore with IDNR staff the possibility of exporting POC to other urban centers of Illinois.

**Result:** Preliminary discussions have begun with IDNR staff in southern Illinois through the Nature Conservancy's VSN coordinator, Karen Tharp. She is applying for an Americorps volunteer to staff the initial stages of this process for 2010. IDNR's John Wilker is a strong supporter of the POC export concept. What is needed for this effort is funding and local leadership, which to-date have not been identified. POC is ready to export the program as a model, including the database structure and training assistance.

## Other Results

**GPS:** GPS coordinates using the NAD 27, Decimal Degree, format were recorded for all 490 EORs monitored in 2008 and were reported to the Illinois Natural Heritage Database as well as to landowners and to the Illinois Nature Preserves Commission for nature preserves and land and water reserves. 2009 reports are just coming in and will be reported at the end of the 2009 season, typically in March of 2010.

**POC Website:** The website ([plantsofconcern.org](http://plantsofconcern.org)) has expanded under the expertise of Bianca Rosendorn, Conservation Science Information Manager. Images of POC species are found on the site, as are links to other important plant websites. A list of invasive species encountered through POC monitoring is available. On-line monitoring report submission is a major feature. The number of hits to date for 2009 is 3668 (compared to 2899 for the same period in 2008), and the number of on-line monitoring form submissions to date is 133 (compared to 145 for the same period in 2008). The website is serving as an increasingly important and useful tool for the POC program.

**Public Outreach and Communication:** Many articles were written and presentations made by POC staff and a complete listing for 2008 is included on pages 23 and 24 of the attached report to Chicago Wilderness. A few highlights include:

Susanne Masi participated in the Ecological Society of America's Annual Meeting's Citizen Science Symposium, held in Milwaukee in August 2008 and presented *Plants of Concern: Citizen Scientists Monitor Rare Plants in Chicago Wilderness*, co-authored with Research Assistant Ann Kelly. A POC poster targeted at the training and education of volunteers (what is the purpose of the poster?) was also presented at that meeting.

Wild Things - Chicago Wilderness Biennial Conference for Stewardship. February 3, 2009, University of Illinois, Chicago. POC held an information/recruitment booth, presented a poster, and S. Masi co-presented a talk with Karen Glennemeier of The Habitat Project on monitoring opportunities in the Chicago region.

US Forest Service *Excellence in Botany Partnership Development Award* was presented to Susanne Masi and Eric Ulaszek of Midewin National Tallgrass Prairie at the USFS Headquarters in Washington D.C., May 6, 2009, for the joint POC monitoring program conducted at Midewin.

Rachel Goad, POC Research Assistant, wrote “Chiwaukee Prairie and a Blossoming POC Chapter” published in *The Habitat Herald*, April 2009.

Volunteer Appreciation Event: The “Habitat Hootenanny” was held at the Chicago Botanic Garden for POC volunteers and other Habitat Project volunteers on October 19, 2008. 80 persons participated and 18 award certificates were presented to POC volunteers.

POC - regional expansion into Wisconsin and Indiana: In 2008 and 2009, POC staff collaborated with agencies in northwest Indiana and southeast Wisconsin on monitoring programs in those areas. In Wisconsin, POC conducted an fourth monitor training session; Lori Artiomow’s leadership at Chiwaukee Prairie has engaged almost 15 volunteers and Eric Howe of Wisconsin TNC continues to work with about nine volunteers at Lulu Lake and several neighboring sites. Twenty-two species are being monitored in Wisconsin. In Indiana, botanic contractors David Hamilla and Barbara Plampin are monitoring 27 species in the Indiana Dunes National Lakeshore for the National Park Service. Data from both these states are being shared with POC as part of the Chicago Wilderness regional monitoring program. Data are centrally stored in the POC database at the Chicago Botanic Garden as well as reported to appropriate agencies in those states.

## **DISCUSSION**

The results section above demonstrates that the objectives of the contract have been met and even exceeded in some instances.

In addition, detailed discussion and analysis of the data collected through 2008 can be found in the attached report. Items discussed there include a more detailed presentation of cumulative monitoring results and volunteer statistics; results of a volunteer Focus Group held in March 2008; analysis of ecological threats, threat trends and invasive species trends; observations of management impacts and multiple individual case studies; and analyses of select populations by linear trend analysis and population viability analysis.

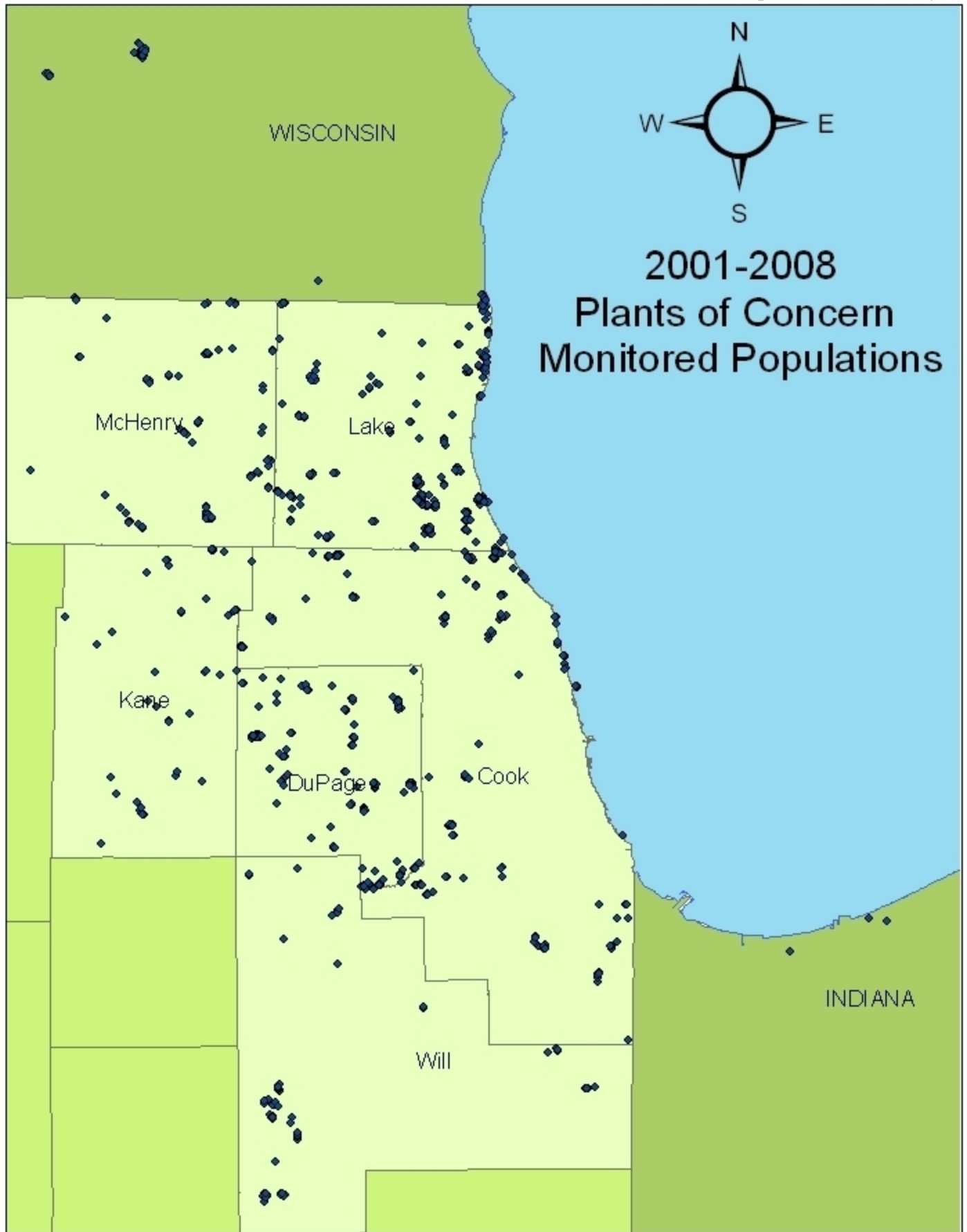
## **SUMMARY/CONCLUSION**

The need for a standardized rare plant monitoring program in Illinois has been amply demonstrated by the success of the Plants of Concern program through the participation of numerous landowners and volunteers and the significant number of EORs reported on within the study. The program’s expansion into neighboring states and to additional Illinois counties provides new opportunities for insights into appropriate land management and the conservation of rare plants. The continuing need for long-term data on Illinois’ rarest elements of plant biodiversity requires the ongoing and broad base of support that has been provided by agencies such as the Illinois Department of Natural Resources through the Wildlife Preservation Fund as well as Chicago Wilderness and the U.S. Forest Service at Midewin National Tallgrass Prairie. Expansion to other parts of Illinois, particularly urban centers, remains a long-term goal, provided local leadership and funding can be identified.

## **ATTACHMENT**

Masi, S. and R. Goad. Plants of Concern: Standardized Rare Plant Monitoring Using Trained Volunteers. Final Report to Chicago Wilderness, Grant FWS 0705. March 2009.

Included in the report are 13 attachments, including a GIS map of POC monitored populations; monitoring form; land management form; Advisory Group listing; POC species list; POC spreadsheet of species, status, county, EORs; POC spreadsheet by county, site, landowner and EORs; and POC spreadsheet by species monitored by six northeast Illinois county frequency.



Note: Most points represent multiple subpopulations and element occurrences.



# Plants of Concern Monitoring Form – 2008

Submitted to POC?

Submitted to Land Manager?

Submitted online?

LEAD MONITOR'S NAME: \_\_\_\_\_

MONITORING DATE: \_\_\_\_\_

Use one form for each subpopulation. Subpops are separated by at least 50 meters between the closest plants in each group. Monitor within 10 days of previous year's monitoring date. Refer to the last recorded monitoring report. Complete every blank. If there are no changes in GPS, associates, or directions, write "Same as last report". Review the guidelines in the Volunteer Manual or at [www.plantsofconcern.org](http://www.plantsofconcern.org).

## SECTION 1: GENERAL SPECIES AND SITE IDENTIFICATION

GENUS: \_\_\_\_\_

EOR #: \_\_\_\_\_

SPECIES: \_\_\_\_\_

COUNTY: \_\_\_\_\_

VARIETY: \_\_\_\_\_

LAND OWNER: \_\_\_\_\_

SITE NAME: \_\_\_\_\_

MANAGER: \_\_\_\_\_

SUBPOPULATION #: \_\_\_\_\_

PLANTS IN  Yes

SUBPOP FOUND?  No\*

\* If plants are **not** found, go to Sections 4, 5, 6 and 7 for information on the area searched.

## SECTION 2: GPS

WHICH COORDINATE SYSTEM ARE YOU USING?

Degree Decimal (e.g. dd.ddddd N) ☆

Degree Minute Second (e.g. dd°dd'dd.dd" N)

UTM (e.g. dddddd)

Minute Decimal (e.g. dd°dd.ddd)

WHICH DATUM?

NAD 27 ☆

WGS-84 (NAD-83)

☆ POC preferred

GPS same as last report?

Yes

No

If "No" or if new or annual subpop, record GPS.

	LATITUDE	LONGITUDE	ACCURACY (m)
CENTER:	°N	°W	
NORTH:	°N	°W	
SOUTH:	°N	°W	
EAST:	°N	°W	
WEST:	°N	°W	

## SECTION 3: POPULATION INFORMATION

DISTANCE COVERED BY POPULATION IN METERS:

E-W: \_\_\_\_\_

N-S: \_\_\_\_\_

TODAY'S SOIL CONDITION?

Flooded

Saturated

Moist, well-drained

Dry

TOTAL NUMBER?\*

(include juveniles if applicable)

#: \_\_\_\_\_

< or = 100

101-200

201-400

401- 800

>800

COUNT ESTIMATED?

Yes

No

If applicable, please describe estimation method in Notes on p.3

GROWTH FORM?

Stems

Clumps

Rosettes

Other: \_\_\_\_\_

REPRODUCTIVE STATE?

Flower

Fruit

Flower & Fruit

Vegetative

% Reproductive: \_\_\_\_\_

JUVENILES PRESENT?

Yes

No

Annual

Don't know how to identify

\* Count or provide a number as close as possible, or select a range. See population estimation exercise in the Volunteer Manual.

**SECTION 4: ASSOCIATE SPECIES INFORMATION**

**ASSOCIATES** - list **dominant native** species. List additional ones if you prefer. Write "same as last report" if no change, and attach list from previous report if available.

**Trees (including saplings and seedlings):**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**Shrubs/Vines:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**Herbaceous Plants:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**SECTION 5: THREATS TO THE POPULATION**

**DEGREE OF THREATS** - Check all that apply, including if none

Invasive brush encroachment < 1 m tall	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Invasive brush/tree encroachment > 1 m tall	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Deer browse (% of stems of study species)	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Deer browse (% of stems of all plants)	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Erosion (% of area with visible signs)	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Other: _____	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Other: _____	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%
Other: _____	<input type="checkbox"/> 0%	<input type="checkbox"/> 1-25%	<input type="checkbox"/> 26-50%	<input type="checkbox"/> 51-75%	<input type="checkbox"/> 76-100%

Are there any **authorized** trails that impact the population?  Yes  No % of impact: \_\_\_\_\_

Are there any **unauthorized** trails that impact the population?  Yes  No % of impact: \_\_\_\_\_

**OTHER THREATS** - If you notice an immediate threat to the population contact the landowner or POC

**INVASIVE SPECIES** - % of invasion of exotic or native plants

**Species:**

- |          |                                |                                 |                                 |                                 |                                  |
|----------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
| 1. _____ | <input type="checkbox"/> 1-20% | <input type="checkbox"/> 21-40% | <input type="checkbox"/> 41-60% | <input type="checkbox"/> 61-80% | <input type="checkbox"/> 81-100% |
| 2. _____ | <input type="checkbox"/> 1-20% | <input type="checkbox"/> 21-40% | <input type="checkbox"/> 41-60% | <input type="checkbox"/> 61-80% | <input type="checkbox"/> 81-100% |
| 3. _____ | <input type="checkbox"/> 1-20% | <input type="checkbox"/> 21-40% | <input type="checkbox"/> 41-60% | <input type="checkbox"/> 61-80% | <input type="checkbox"/> 81-100% |
| 4. _____ | <input type="checkbox"/> 1-20% | <input type="checkbox"/> 21-40% | <input type="checkbox"/> 41-60% | <input type="checkbox"/> 61-80% | <input type="checkbox"/> 81-100% |
| 5. _____ | <input type="checkbox"/> 1-20% | <input type="checkbox"/> 21-40% | <input type="checkbox"/> 41-60% | <input type="checkbox"/> 61-80% | <input type="checkbox"/> 81-100% |







# PLANTS OF CONCERN LAND MANAGEMENT FORM – 2008

## PART 1: MANAGEMENT IN THE PAST YEAR

PERSON COMPLETING FORM: \_\_\_\_\_

DATE SUBMITTED: \_\_\_\_\_

LEAD MONITOR'S NAME: \_\_\_\_\_

DATE POPULATION MONITORED: \_\_\_\_\_

If you previously completed a Land Management Form for the EOR, or for its subpopulations, only fill in this Part 1 Form. If you have never completed a Land Management form for the subpopulation, please fill out Part 2. You may include more than one species (list all species) and subpopulation (list all subpops) per form if they occur in the same management location. Please review the Guidelines, available in the POC manual or on [www.plantsofconcern.org](http://www.plantsofconcern.org).

### SECTION 1: GENERAL SPECIES AND SITE IDENTIFICATION

<b>SITE NAME:</b> _____	1. <b>GENUS, SP., VAR.:</b> _____
_____	<b>SUBPOP#, EOR#:</b> _____
<b>COUNTY:</b> _____	2. <b>GENUS, SP., VAR.:</b> _____
<b>LAND OWNER:</b> _____	<b>SUBPOP#, EOR#:</b> _____
_____	3. <b>GENUS, SP., VAR.:</b> _____
<b>MANAGER:</b> _____	<b>SUBPOP#, EOR#:</b> _____
_____	4. <b>GENUS, SP., VAR.:</b> _____
_____	<b>SUBPOP#, EOR#:</b> _____

### SECTION 2: HYDROLOGY

PLEASE SELECT THE BEST DESCRIPTION FOR THE AREA FOR THE PAST YEAR:

SPRING (Year: _____)	SUMMER (Year: _____)	AUTUMN (Year: _____)	WINTER (Year: _____)
<input type="checkbox"/> Drier than average	<input type="checkbox"/> Drier than average	<input type="checkbox"/> Drier than average	<input type="checkbox"/> Drier than average
<input type="checkbox"/> Average	<input type="checkbox"/> Average	<input type="checkbox"/> Average	<input type="checkbox"/> Average
<input type="checkbox"/> Wetter than average	<input type="checkbox"/> Wetter than average	<input type="checkbox"/> Wetter than average	<input type="checkbox"/> Wetter than average
<input type="checkbox"/> Flooded	<input type="checkbox"/> Flooded	<input type="checkbox"/> Flooded	<input type="checkbox"/> Flooded

### SECTION 3: MANAGEMENT WITHIN THE MONITORED SUBPOPULATION

Submit historical information only once. If historical information was previously submitted, **include only management occurring within the past year since last monitoring date.**

BURNING							
DATE (dd/mm/yy)	% INTENSITY			% AREA AFFECTED			Notes
	1-33	34-66	67-100	1-33	34-66	67-100	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

INVASIVE BRUSH OR TREE REMOVAL OR HERBICIDING								
DATE (dd/mm/yy)	SPECIES	% REMOVAL INTENSITY			% HERBICIDING INTENSITY			Notes
		1-33	34-66	67-100	1-33	34-66	67-100	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

HERBACEOUS INVASIVES REMOVAL OR HERBICIDING								
DATE (dd/mm/yy)	SPECIES	% REMOVAL INTENSITY			% HERBICIDING INTENSITY			Notes
		1-33	34-66	67-100	1-33	34-66	67-100	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

MOWING (for community management; not for trail maintenance)						
DATE (dd/mm/yy)	% INTENSITY			% AREA AFFECTED		
	1-33	34-66	67-100	1-33	34-66	67-100
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DEER REMOVAL		
DATE (dd/mm/yy)	# OF DEER REMOVED	SIZE OF AREA INVOLVED (ACRES)

OTHER MANAGEMENT BEING CONDUCTED WITHIN THE POPULATION, DATES AND DEGREE TO WHICH IT AFFECTS POPULATION:

**SECTION 4: MOST CURRENT GENERAL SITE MANAGEMENT**

THIS YEAR, DID THE SITE HAVE:

- |                                     |                                     |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| BURNING?                            | INVASIVE BRUSH OR TREE REMOVAL?     | HERBACEOUS INVASIVES REMOVAL?       | MOWING?                             | HYDROLOGICAL MODIFICATIONS?         |
| <input type="checkbox"/> Yes        | <input type="checkbox"/> Yes        | <input type="checkbox"/> Yes        | <input type="checkbox"/> Yes        | <input type="checkbox"/> Yes        |
| <input type="checkbox"/> No         | <input type="checkbox"/> No         | <input type="checkbox"/> No         | <input type="checkbox"/> No         | <input type="checkbox"/> No         |
| <input type="checkbox"/> Don't Know | <input type="checkbox"/> Don't Know | <input type="checkbox"/> Don't Know | <input type="checkbox"/> Don't Know | <input type="checkbox"/> Don't Know |

OTHER MANAGEMENT CONDUCTED WITHIN THE SITE THIS YEAR:

**SECTION 5: ADJACENT LAND USE AND NOTES**

NOTES ON CURRENT ADJACENT LAND USE THAT MIGHT AFFECT THE MONITORED SUBPOPULATION:

ADDITIONAL COMMENTS:

Please check to see that the monitoring form is completely filled in. Submit within 3 weeks of receiving the monitoring form, or by September 30<sup>th</sup> if you received the monitoring forms in September. FPD agencies may submit all forms together in conjunction with their internal reporting schedule. An Excel or Access format for submission is available from Bianca Rosenbaum, brosenbaum@chicagobotanic.org, as an alternative. See guidelines for more complete instructions (available in POC manual or at www.plantsofconcern.org).

Please return this form and any changes in the monitoring form to Susanne Masi, smasi@chicagobotanic.org



# Plants of Concern Land Management Form – 2008

## Part 2: History

PERSON COMPLETING FORM: \_\_\_\_\_ DATE SUBMITTED: \_\_\_\_\_

This form only needs to be completed once for each EOR or subpopulation. If you previously completed a Land Management form for the subpopulation, only complete Part 1.

### SECTION 1: GENERAL SPECIES AND SITE IDENTIFICATION

SITE NAME: _____	1. GENUS, SP., VAR.: _____
COUNTY: _____	SUBPOP#, EOR#: _____
LAND OWNER: _____	2. GENUS, SP., VAR.: _____
MANAGER: _____	SUBPOP#, EOR#: _____
	3. GENUS, SP., VAR.: _____
	SUBPOP#, EOR#: _____

### SECTION 2: POPULATION INFORMATION

HABITAT/COMMUNITY TYPE: \_\_\_\_\_  
(CW CLASSIFICATION from Biodiversity Recovery Plan p. 146-161– available at [www.plantsofconcern.org](http://www.plantsofconcern.org))

IS THIS POPULATION:	IF INTRODUCED, INTRODUCED FROM:	IF INTRODUCED:
<input checked="" type="checkbox"/> Naturally occurring	<input type="checkbox"/> Seed	Year Introduced: _____
<input type="checkbox"/> Introduced through restoration	<input type="checkbox"/> Plant	Source: _____
<input type="checkbox"/> Don't know	<input type="checkbox"/> Seed & Plant	

### SECTION 3: ASSOCIATE SPECIES INFORMATION

WERE ANY ASSOCIATES INTRODUCED THROUGH RESTORATION?	ASSOCIATES INTRODUCED THROUGH RESTORATION & YEAR:
<input type="checkbox"/> Yes	_____
<input type="checkbox"/> No	_____
<input type="checkbox"/> Don't know	_____

### SECTION 4: SITE HISTORY OF LAND USE AS IT MAY AFFECT THE POPULATION

PLOWING/AGRICULTURE:	GRAZING:	TILING/DITCHING:	OTHER: _____
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	_____
<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No	_____
<input type="checkbox"/> Don't Know	<input type="checkbox"/> Don't Know	<input type="checkbox"/> Don't Know	_____
Years: _____	Years: _____	Years: _____	Years: _____

### SECTION 5: GENERAL SITE MANAGEMENT HISTORY

YEAR MANAGEMENT BEGAN? Year: _____	BURNING? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	HERBACEOUS INVASIVES REMOVAL? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	WOODY INVASIVES REMOVAL? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	MOWING? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	HYDROLOGICAL MODIFICATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know
---------------------------------------	--	---	--	---	---

OTHER MANAGEMENT CONDUCTED WITHIN THE SITE: \_\_\_\_\_

**Plants of Concern Advisory Group  
Members, 2008**

Debra Antlitz  
Forest Preserve District of Cook County  
536 N Harlem Ave  
River Forest, IL 60305  
[dantli@cookcountygov.com](mailto:dantli@cookcountygov.com)

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## Species List

## Illinois

## Listed Species

Agalinis skinneriana (2004)	Juncus alpinoarticulatus (2002)
Amelanchier interior (2001)	Juniperus communis (2002)
Amelanchier sanguinea (2001)	Lathyrus ochroleucus (2001)
Ammophila breviligulata (2001)	Lechea intermedia (2002)
Asclepias lanuginosa (2002)	Lespedeza leptostachya (2004)
Asclepias meadii (2002)	Liatris scariosa var. nieuwlandii (2004)
Asclepias ovalifolia (2005)	Lycopodium clavatum (2001)
Aster furcatus (2001)	Malvastrum hispidum (2004)
Beckmannia syzigachne (2004)	* Medeola virginiana (2008)
Besseyia bullii (2006)	Menyanthes trifoliata (2004)
Betula alleghaniensis (2006)	Minuartia patula (2001)
Bolboschoenus maritimus (2001)	Oenothera perennis (2001)
Botrychium campestre (2007)	Penstemon tubaeiflorus (2004)
Cakile edentula (2001)	Plantago cordata (2002)
* Calopogon oklahomensis (2008)	Platanthera clavellata (2003)
Calopogon tuberosus (2001)	Platanthera flava var. herbiola (2002)
Carex alata (2004)	Platanthera psycodes (2002)
Carex aurea (2001)	Poa alsodes (2007)
Carex bromoides (2003)	Pogonia ophioglossoides (2001)
Carex brunnescens (2003)	Polygonatum pubescens (2002)
Carex canescens (2007)	Populus balsamifera (2004)
Carex crawfordii (2004)	Potamogeton robbinsii (2002)
Carex cryptolepis (2001)	Ranunculus rhomboideus (2005)
Carex disperma (2003)	Rubus odoratus (2001)
Carex formosa (2004)	Rubus pubescens (2002)
Carex garberi (2007)	Sarracenia purpurea (2004)
Carex intumescens (2001)	Scirpus hattorianus (2001)
Carex oligosperma (2002)	Scirpus microcarpus (2004)
Carex trisperma (2003)	Shepherdia canadensis (2001)
Carex tuckermanii (2001)	Silene regia (2001)
Carex viridula (2001)	Sisyrinchium montanum (2002)
Carex woodii (2001)	Sparganium emersum (2001)
Castilleja sessiliflora (2003)	Spiranthes lucida (2001)
Chamaedaphne calyculata (2002)	Stellaria pubera (2005)
Chamaesyce polygonifolia (2001)	Symphoricarpos albus var. albus (2002)
Cimicifuga racemosa (2007)	Tetraneuris herbacea (2001)
Comptonia peregrina (2002)	Tofieldia glutinosa (2001)
Corallorhiza maculata (2003)	Tomanthera auriculata (2001)
Cypripedium candidum (2001)	Trientalis borealis (2003)
Cypripedium parviflorum var. makasin (2001)	Trifolium reflexum (2002)
Cypripedium reginae (2006)	Triglochin maritima (2004)
Dalea foliosa (2001)	Triglochin palustris (2001)
Dichanthelium boreale (2006)	Trillium cernuum (2004)
Drosera intermedia (2002)	Trillium erectum (2007)
Drosera rotundifolia (2001)	Utricularia cornuta (2002)
Elymus trachycaulus (2001)	Utricularia intermedia (2001)
Epilobium strictum (2004)	Utricularia minor (2001)
Eriophorum virginicum (2006)	* Utricularia subulata (2008)
Filipendula rubra (2002)	* Vaccinium corymbosum (2008)
Geranium bicknellii (2001)	Vaccinium oxycoccos (2003)
Helianthus giganteus (2004)	Valeriana uliginosa (2002)
Hypericum adpressum (2005)	Veronica scutellata (2001)
Hypericum kalmianum (2002)	Viola canadensis (2006)
Isoetes butleri (2002)	Viola conspersa (2001)

**Non-Listed Species**

Actaea rubra (2004)	Lysimachia hybrida (2007)
Adiantum pedatum (2003)	Mitella diphylla (2003)
Arabis hirsuta (2006)	Napaea dioica (2006)
Aristolochia serpentaria (2006)	Ophioglossum vulgatum var. pseudopodum (2005)
Artemisia serrata (2004)	Orchis spectabilis (2002)
Asclepias exaltata (2003)	Orobanche uniflora (2007)
Asclepias hirtella (2007)	Oryzopsis racemosa (2003)
Asclepias perennis (2006)	Panax quinquefolius (2006)
Asclepias viridiflora (2001)	Parnassia glauca (2006)
Baptisia leucophaea (2003)	Penstemon pallidus (2006)
* Betula papyrifera (2008)	Physocarpus opulifolius (2003)
Betula populifolia (2004)	Platanthera hyperborea var. huronensis (2002)
Bidens discoidea (2003)	Platanthera lacera (2005)
Callitriche heterophylla (2006)	Poa sylvestris (2003)
Callitriche palustris (2006)	Polystichum acrostichoides (2006)
Carex crawei (2002)	* Potentilla palustris (2008)
Carex crus-corvi (2007)	Prenanthes aspera (2006)
Carex frankii (2006)	Psoralea tenuiflora (2001)
Carex leptalea (2006)	Pycnanthemum pilosum (2006)
Carex pedunculata (2006)	Pyrola elliptica (2004)
Carex utriculata (2006)	Rhus vernix (2006)
Cassia hebecarpa (2005)	Rudbeckia fulgida var. sullivantii (2004)
* Ceanothus americanus (2008)	Sagittaria calycina (2005)
Cicuta bulbifera (2006)	Salix candida (2004)
Cirsium hillii (2001)	* Scleria verticillata (2008)
Cladium mariscoides (2001)	* Scutellaria ovata var. versicolor (2008)
Collinsia verna (2005)	Silene virginica (2005)
* Conopholis americana (2008)	* Sisyrinchium campestre (2008)
Cypripedium x andrewsii (2007)	Spiranthes ovalis (2007)
Delphinium tricorne (2004)	* Swertia caroliniensis (2008)
Desmodium canescens (2006)	Thuja occidentalis (2002)
Desmodium cuspidatum (2007)	Trillium sessile (2004)
Diarrhena americana (2003)	Valeriana edulis var. ciliata (2006)
Diervilla lonicera (2006)	Viola pallens (2007)
Dirca palustris (2002)	Viola striata (2005)
Echinodorus berteroi var. latifolius (2005)	Zizania aquatica (2005)
Erigeron pulchellus (2006)	
Eriophorum angustifolium (2001)	
Erythronium americanum (2006)	
Galium labradoricum (2002)	
Gentiana flavida (2006)	
Gentiana procera (2006)	
Geum rivale (2002)	
Geum triflorum (2002)	
Goodyera pubescens (2004)	
Gratiola quartermantiae (2006)	
Hepatica nobilis var. obtusa (2005)	
Hybanthus concolor (2005)	
Hydrastis canadensis (2004)	
Ilex verticillata (2003)	
Iodanthus pinnatifidus (2006)	
Jeffersonia diphylla (2004)	
Juglans cinerea (2003)	
* Lespedeza violacea (2008)	
Lonicera dioica (2006)	
Lycopodium complanatum var. flabelliforme (2004)	



## Indiana

### Listed Species

- Botrychium matricariifolium (2006)
- \* Schoenoplectus hallii (2008)
- Tomanthera auriculata (2006)

### Watch List

- Epigaea repens (2006)

### Non-Listed Species

- Jeffersonia diphylla (2007)

## Wisconsin

### Listed Species

- Agalinis skinneriana (2007)
- \* Asclepias ovalifolia (2008)
- Aster furcatus (2007)
- Besseyia bullii (2007)
- \* Calopogon tuberosus (2008)
- Cypripedium candidum (2007)
- Gentiana flavida (2007)
- \* Platanthera flava var. herbiola (2008)
- \* Tofieldia glutinosa (2008)

### Special Concern Species

- Cypripedium parviflorum var. makasin (2007)
- Gentiana procera (2007)
- Orobanche uniflora (2007)
- Penstemon pallidus (2007)
- Triglochin maritima (2007)
- Triglochin palustris (2007)

### Non-Listed Species

- Asclepias hirtella (2007)
- Cypripedium calceolus var. pubescens (2007)
- \* Cypripedium x andrewsii (2008)
- Eriophorum angustifolium (2007)
- Gentianopsis crinita (2007)
- Platanthera lacera (2007)
- Valeriana edulis var. ciliata (2007)

## ATTACHMENT 6

Plants of Concern 2001-2008  
Species, Status, County, EO, by year

## Illinois

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Actaea rubra	Non-Listed	Cook				1			1		1
Actaea rubra	Non-Listed	Lake					1	1	3	4	4
Adiantum pedatum	Non-Listed	DuPage						3		2	3
Adiantum pedatum	Non-Listed	Kane					1		1	1	1
Adiantum pedatum	Non-Listed	Lake			1	1		1	1	1	1
Agalinis skinneriana	Listed	Cook								1	1
Agalinis skinneriana	Listed	Lake				2	2	2	1	2	2
Amelanchier interior	Listed	Cook					3	1	3	2	3
Amelanchier interior	Listed	DuPage	2	2	2	2	2	1	3	4	5
Amelanchier interior	Listed	Kane		1	1				1		1
Amelanchier sanguinea	Listed	Cook	1		1	2	2	2	2	2	2
Ammophila breviligulata	Listed	Cook	3	3	4	5	5	6	7	7	8
Ammophila breviligulata	Listed	Lake					1	1		1	1
Arabis hirsuta	Non-Listed	DuPage						1			1
Aristolochia serpentaria	Non-Listed	DuPage							5		5
Aristolochia serpentaria	Non-Listed	Kane						1		1	1
Artemisia serrata	Non-Listed	Kane				1	1	1		1	1
Asclepias exaltata	Non-Listed	Cook								1	1
Asclepias exaltata	Non-Listed	Lake			2	1	1	1	1	1	2
Asclepias hirtella	Non-Listed	DuPage							1	1	1
Asclepias lanuginosa	Listed	Cook								1	1
Asclepias lanuginosa	Listed	McHenry		1		1	1	1		2	2
Asclepias meadii	Listed	DuPage		1							1
Asclepias ovalifolia	Listed	Cook					1		1	1	2
Asclepias perennis	Non-Listed	Will						1			1
Asclepias viridiflora	Non-Listed	DuPage							3		3
Asclepias viridiflora	Non-Listed	Kane	3			2	1	1	2	3	3
Aster furcatus	Listed	Cook	2	1	1	1	2	1	2	1	2
Aster furcatus	Listed	Kane	2	2	1	2	2	2	2	2	2
Aster furcatus	Listed	Lake		2	2	2	3	2	2	1	3
Baptisia leucophaea	Non-Listed	Cook						1	1		1
Baptisia leucophaea	Non-Listed	DuPage							1		1
Baptisia leucophaea	Non-Listed	Lake			1	1	1	1	1		1
Beckmannia syzigachne	Listed	Cook				1	2	2	2	2	3
Besseyia bullii	Listed	Kane						1	1	1	1
Betula alleghaniensis	Listed	Lake						1		1	1
Betula papyrifera	Non-Listed	Lake								1	1
Betula populifolia	Non-Listed	Will				1					1
Bidens discoidea	Non-Listed	DuPage			1	1		3		1	3
Bolboschoenus maritimus	Listed	DuPage	1	1	1	1		2	3	3	3
Botrychium campestre	Listed	Kane							1	1	1
Cakile edentula	Listed	Cook	3	4	5	6	7	8	13	10	15
Cakile edentula	Listed	Lake	1	1			1	1		2	3
Callitriche heterophylla	Non-Listed	DuPage						2			2
Callitriche palustris	Non-Listed	DuPage						1		1	1
Calopogon oklahomensis	Listed	Will								1	1
Calopogon tuberosus	Listed	Cook	1	1	1	1	1	6	4	5	6
Calopogon tuberosus	Listed	Lake			1	1	1	2	2	1	2
Calopogon tuberosus	Listed	McHenry			1	1	1		1	1	1
Carex alata	Listed	Will				1					1
Carex aurea	Listed	Cook		2	1	1	3	3	3	3	4
Carex aurea	Listed	Kane			1	1	1	1	1	1	1
Carex aurea	Listed	Lake	1	1	4	1	3	1	2	2	5
Carex bromoides	Listed	Cook				1	1	1	1	1	1

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Carex bromoides	Listed	DuPage			1	1	1	1	1	1	1
Carex bromoides	Listed	Lake							2	1	3
Carex brunnescens	Listed	Lake			1			1	1	1	2
Carex canescens	Listed	Lake							1		1
Carex crawei	Non-Listed	Cook		1	1	1	2	2	2	2	2
Carex crawei	Non-Listed	Kane					1				1
Carex crawei	Non-Listed	Lake					1	1	1		1
Carex crawei	Non-Listed	Will				3	3	2	2	3	3
Carex crawfordii	Listed	Will				1					1
Carex crus-corvi	Non-Listed	DuPage							2		2
Carex cryptolepis	Listed	DuPage	1	1				1		1	1
Carex cryptolepis	Listed	Lake			1	1	1	2	2	2	2
Carex disperma	Listed	Lake			1		1			1	2
Carex formosa	Listed	Cook				2	1	2	2	2	2
Carex frankii	Non-Listed	DuPage						3	2	2	4
Carex garberi	Listed	Lake							1		1
Carex intumescens	Listed	Cook	1								1
Carex intumescens	Listed	Lake			1		1	1			1
Carex leptalea	Non-Listed	Lake						1			1
Carex oligosperma	Listed	Kane		1							1
Carex pedunculata	Non-Listed	Lake						1		1	1
Carex trisperma	Listed	Lake			1			1			1
Carex tuckermanii	Listed	DuPage	2	4	3	4	2	2	2	2	4
Carex utriculata	Non-Listed	DuPage						1		1	1
Carex viridula	Listed	Cook		1		1	2	2	2	1	2
Carex viridula	Listed	DuPage	4	4	3	2	1	2	1	1	5
Carex viridula	Listed	Lake			1			1	1	2	2
Carex viridula	Listed	Will			1	1	1	1	1		1
Carex woodii	Listed	Cook		1		1	1	1	1	1	1
Carex woodii	Listed	DuPage	3	6	3	5	3	5	2	5	7
Carex woodii	Listed	Lake			3	4	2	2	4	2	5
Cassia hebecarpa	Non-Listed	Cook					1	1	1	1	1
Castilleja sessiliflora	Listed	Lake			1					1	1
Ceanothus americanus	Non-Listed	Lake								2	2
Chamaedaphne calyculata	Listed	Kane		1							1
Chamaedaphne calyculata	Listed	Lake			1			1		1	1
Chamaedaphne calyculata	Listed	McHenry						1	1	1	1
Chamaesyce polygonifolia	Listed	Cook	2	3	3	7	8	8	8	9	11
Chamaesyce polygonifolia	Listed	Lake		1			1	1		1	1
Cicuta bulbifera	Non-Listed	DuPage						2	1	1	4
Cimicifuga racemosa	Listed	Lake							1	1	1
Cirsium hillii	Non-Listed	DuPage	3	4	3	4	1	4	3	4	5
Cirsium hillii	Non-Listed	Kane	1	1	2	2	1	2	2	2	2
Cirsium hillii	Non-Listed	McHenry	1	1	1	1	1	1	1	3	3
Cirsium hillii	Non-Listed	Pike	1								1
Cirsium hillii	Non-Listed	Will	1	2	2	2	2	2	2	2	2
Cladium mariscoides	Non-Listed	Lake	1				1		1	1	1
Collinsia verna	Non-Listed	Kane					1		1	1	1
Comptonia peregrina	Listed	Cook						2	2	2	2
Comptonia peregrina	Listed	Kankakee		1						1	1
Conopholis americana	Non-Listed	Cook								1	1
Corallorhiza maculata	Listed	Will			1		1				2
Cypripedium candidum	Listed	Cook	5	5	4	6	7	7	10	8	13
Cypripedium candidum	Listed	DuPage	2	4	2	4	3	3	5	6	6
Cypripedium candidum	Listed	Kane	3	2	2	3	2	2	3	3	3
Cypripedium candidum	Listed	Lake	2	2	4	3	4	2	3	3	5
Cypripedium candidum	Listed	McHenry		2	3	4	6	6	11	13	14
Cypripedium candidum	Listed	Will		1	1	1		1	1	1	1

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Cypripedium parviflorum var. makasin	Listed	Lake	1	1	1	1	2	1	1	1	2
Cypripedium parviflorum var. makasin	Listed	McHenry							4	4	4
Cypripedium reginae	Listed	Lake						1	1		1
Cypripedium x andrewsii	Non-Listed	McHenry							2	2	2
Dalea foliosa	Listed	Cook		1			1	1	2	2	2
Dalea foliosa	Listed	DuPage	1	1		1		1		1	1
Dalea foliosa	Listed	Will				1			1		1
Delphinium tricornes	Non-Listed	Cook				1	1	1	1	1	1
Desmodium canescens	Non-Listed	DuPage						1	1	2	2
Desmodium cuspidatum	Non-Listed	DuPage							2		2
Diarrhena americana	Non-Listed	Cook					1	1	1		1
Diarrhena americana	Non-Listed	DuPage			1						1
Dichanthelium boreale	Listed	Cook						1	1	1	1
Diervilla lonicera	Non-Listed	Lake						1		1	1
Dirca palustris	Non-Listed	Kane		1	1		1	1	1	1	2
Drosera intermedia	Listed	Kane		1							1
Drosera intermedia	Listed	Will					1		1		1
Drosera rotundifolia	Listed	Lake	1	1	1	1	1	1	1	1	1
Drosera rotundifolia	Listed	McHenry							1		1
Echinodorus berteroi var. lanceolatus	Non-Listed	Kane					1	1			1
Elymus trachycaulus	Listed	DuPage	1	1	1	1	1	1	1		1
Elymus trachycaulus	Listed	Lake							1		1
Epilobium strictum	Listed	Will				1	1				1
Erigeron pulchellus	Non-Listed	DuPage						2		1	2
Eriophorum angustifolium	Non-Listed	DuPage								1	1
Eriophorum angustifolium	Non-Listed	Kane	2			1	1		2	1	2
Eriophorum virginicum	Listed	Lake						1		1	1
Erythronium americanum	Non-Listed	DuPage						1	1	1	1
Filipendula rubra	Listed	Cook							1		1
Filipendula rubra	Listed	Lake		1	1	1	1	1	1	1	1
Filipendula rubra	Listed	McHenry						1	1	1	1
Galium labradoricum	Non-Listed	Lake		1	1			1	1	4	5
Gentiana flavida	Non-Listed	Cook						1	1		1
Gentiana flavida	Non-Listed	DuPage							1	1	2
Gentiana flavida	Non-Listed	Lake						2		1	2
Gentiana flavida	Non-Listed	McHenry								1	1
Gentiana procera	Non-Listed	Lake						1	1	1	1
Geranium bicknellii	Listed	Lake	1	2	2	2	2	1	2	2	4
Geum rivale	Non-Listed	Kane		1	1						1
Geum triflorum	Non-Listed	Cook								1	1
Geum triflorum	Non-Listed	Lake		1						1	1
Goodyera pubescens	Non-Listed	Kane				1	1	1			1
Gratiola quartermantiae	Non-Listed	Will						1	1	1	1
Helianthus giganteus	Listed	Cook				1					1
Hepatica nobilis var. obtusa	Non-Listed	Lake					1	2	4	5	5
Hybanthus concolor	Non-Listed	Cook					1	1	1	1	1
Hydrastis canadensis	Non-Listed	Cook				1	1	1	1	2	2
Hydrastis canadensis	Non-Listed	Kane					1	1			1
Hydrastis canadensis	Non-Listed	Lake								1	1
Hypericum adpressum	Listed	Will					1	1	1	1	2
Hypericum kalmianum	Listed	Cook						2	1	3	3
Hypericum kalmianum	Listed	Lake		1	3	2	2	3	1	2	4
Ilex verticillata	Non-Listed	DuPage			1	1			1		1
Iodanthus pinnatifidus	Non-Listed	Cook								1	1
Iodanthus pinnatifidus	Non-Listed	DuPage						1	2		2

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Isoetes butleri	Listed	DuPage		1		1	1	1	1	1	1
Isoetes butleri	Listed	Will			1	2	2	2	2	3	3
Jeffersonia diphylla	Non-Listed	Cook				1	1	2	2	2	2
Juglans cinerea	Non-Listed	DuPage				1		3	5	2	6
Juglans cinerea	Non-Listed	Lake			1	1	1	1	2	2	2
Juncus alpinoarticulatus	Listed	Cook						1	1	1	1
Juncus alpinoarticulatus	Listed	DuPage		1	1	1	1	2	2	1	2
Juncus alpinoarticulatus	Listed	Kane					1				1
Juncus alpinoarticulatus	Listed	Lake				1			1	2	2
Juniperus communis	Listed	Cook								1	1
Juniperus communis	Listed	Lake		1			1	1			1
Lathyrus ochroleucus	Listed	Cook					1	1	1	1	1
Lathyrus ochroleucus	Listed	DuPage					1		1	1	1
Lathyrus ochroleucus	Listed	Lake	2	4	2	6	6	4	7	5	9
Lathyrus ochroleucus	Listed	McHenry					1	1	1	3	3
Lechea intermedia	Listed	Kane		1	1	1				1	1
Lespedeza leptostachya	Listed	McHenry				2	2		2	2	2
Lespedeza violacea	Non-Listed	Lake								4	4
Liatris scariosa var. nieuwlandii	Listed	Cook				2	3	2	4	4	4
Liatris scariosa var. nieuwlandii	Listed	Will				1	1	1	1	1	1
Lonicera dioica	Non-Listed	Lake						1		1	1
Lycopodium clavatum	Listed	DuPage	1						1		1
Lycopodium complanatum var. flabelliforme	Non-Listed	DuPage				1	1	3	1	2	5
Lycopodium complanatum var. flabelliforme	Non-Listed	Kane				1	1	1			1
Lysimachia hybrida	Non-Listed	DuPage							1		1
Malvastrum hispidum	Listed	Will				1	1	1	1	1	1
Medeola virginiana	Listed	Cook								1	1
Menyanthes trifoliata	Listed	Kane				1		1	2		2
Menyanthes trifoliata	Listed	Lake					1	1	1	3	3
Minuartia patula	Listed	Cook				1	2	2	2	2	2
Minuartia patula	Listed	DuPage	1	1		1		1	1	1	1
Minuartia patula	Listed	Will			1	3	2	3	2	2	3
Mitella diphylla	Non-Listed	Cook								1	1
Mitella diphylla	Non-Listed	Lake			1	1	1	2	1	2	2
Mitella diphylla	Non-Listed	McHenry						1		1	1
Napaea dioica	Non-Listed	Will						1	1		1
Oenothera perennis	Listed	Cook	1			4	6	5	5	7	10
Oenothera perennis	Listed	DuPage			1	1	1	1	1	1	1
Oenothera perennis	Listed	Lake	2	3	5	7	7	7	6	7	10
Oenothera perennis	Listed	Will				1			1	1	1
Ophioglossum vulgatum var. pseudopodium	Non-Listed	Cook					1	1	1		1
Orchis spectabilis	Non-Listed	DuPage								1	1
Orchis spectabilis	Non-Listed	McHenry		1	1	1	1			1	1
Orobanche uniflora	Non-Listed	Lake							1	1	2
Oryzopsis racemosa	Non-Listed	DuPage			1	1	1	1	1	1	1
Oryzopsis racemosa	Non-Listed	Lake			1		1	1		1	2
Panax quinquefolius	Non-Listed	DuPage						2	2	2	3
Panax quinquefolius	Non-Listed	Lake								1	1
Parnassia glauca	Non-Listed	Lake							1	2	2
Parnassia glauca	Non-Listed	McHenry						2	2	1	2
Penstemon pallidus	Non-Listed	DuPage						2	1	1	2
Penstemon tubaeformis	Listed	DuPage				2		3	1	2	3
Physocarpus opulifolius	Non-Listed	Lake			1		1				1
Plantago cordata	Listed	Cook								1	1
Plantago cordata	Listed	DuPage		1	1	1	1	1	1	1	1

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Plantago cordata	Listed	Will					1				1
Platanthera clavellata	Listed	Lake			1	1	1	1	1	1	1
Platanthera flava var. herbiola	Listed	Cook						1	1	1	1
Platanthera flava var. herbiola	Listed	Lake		2	3	3	3	2	4	3	4
Platanthera flava var. herbiola	Listed	Will					1	1	1	1	2
Platanthera hyperborea var. huronensis	Non-Listed	McHenry		1	1	1	1	2	1	2	2
Platanthera lacera	Non-Listed	Will					1				1
Platanthera psycodes	Listed	Lake		2	3	3	3	3	3	3	3
Poa alsodes	Listed	Lake							1	1	1
Poa sylvestris	Non-Listed	DuPage			1	1			1	1	2
Pogonia ophioglossoides	Listed	Cook	1								1
Pogonia ophioglossoides	Listed	Lake								1	1
Pogonia ophioglossoides	Listed	McHenry			1			1	1	1	1
Polygonatum pubescens	Listed	Cook				1	2	1	1	3	4
Polygonatum pubescens	Listed	Lake		1				1		1	1
Polystichum acrostichoides	Non-Listed	DuPage							1	2	2
Polystichum acrostichoides	Non-Listed	McHenry						1		1	1
Populus balsamifera	Listed	Cook				1					1
Potamogeton robbinsii	Listed	Lake		1							1
Potentilla palustris	Non-Listed	McHenry								1	1
Prenanthes aspera	Non-Listed	Cook						1		1	1
Prenanthes aspera	Non-Listed	Kane							1	1	1
Prenanthes aspera	Non-Listed	Will								1	1
Psoralea tenuiflora	Non-Listed	DuPage							1	1	2
Psoralea tenuiflora	Non-Listed	Kane	1			1	1	1	1	1	1
Psoralea tenuiflora	Non-Listed	Lake							1	1	1
Pycnanthemum pilosum	Non-Listed	DuPage						1		1	1
Pyrola elliptica	Non-Listed	Cook							1		1
Pyrola elliptica	Non-Listed	Lake				1	1	2			2
Ranunculus rhomboideus	Listed	Kane					1	1	1	1	1
Rhus vernix	Non-Listed	McHenry						2	2	2	2
Rubus odoratus	Listed	DuPage	1	1	1	1		1	1	1	1
Rubus odoratus	Listed	Kane		1	1	1	1	1	1	1	1
Rubus odoratus	Listed	Lake		1				1	1	1	1
Rubus pubescens	Listed	Cook			1	1	3	3	3	4	4
Rubus pubescens	Listed	Lake		1	2	1	1	1	1	2	4
Rudbeckia fulgida var. sullivantii	Non-Listed	Will				1	1	1	1	1	1
Sagittaria calycina	Non-Listed	Kane					1	1			1
Salix candida	Non-Listed	DuPage								1	1
Salix candida	Non-Listed	Kane				1			1	1	1
Sarracenia purpurea	Listed	Lake						1	1	2	2
Sarracenia purpurea	Listed	McHenry				1			2	2	3
Saxifraga pensylvanica	Non-Listed	Kane								1	1
Scirpus hattorianus	Listed	DuPage	2	2	1	1	1	1	2	1	2
Scirpus hattorianus	Listed	Lake		1	1	1	1	1	1	1	1
Scirpus microcarpus	Listed	Lake				1	1	3	3	2	3
Scleria verticillata	Non-Listed	Lake								2	2
Scutellaria ovata var. versicolor	Non-Listed	Lake								1	1
Shepherdia canadensis	Listed	Lake	1	1	1		1	1			1
Silene regia	Listed	Cook		1	1	1	1	1	1	1	1
Silene regia	Listed	Kane	2			2	2	2	2	3	3
Silene virginica	Non-Listed	Cook					1		1		1
Silene virginica	Non-Listed	Lake						1	1	1	1
Sisyrinchium campestre	Non-Listed	Cook								1	1
Sisyrinchium montanum	Listed	Cook			1	2	3	2	3	4	5
Sisyrinchium montanum	Listed	DuPage							1	1	1
Sisyrinchium montanum	Listed	Lake		1	1						1

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Sparganium emersum	Listed	DuPage	1	2		2		1	1	2	2
Sparganium emersum	Listed	Kane			1		1		1		1
Spiranthes lucida	Listed	Cook	1	2	2	2	2	2	2	1	2
Spiranthes ovalis	Non-Listed	Cook							1	1	1
Stellaria pubera	Listed	Cook					1	1	1	1	1
Swertia caroliniensis	Non-Listed	Cook								2	2
Symphoricarpos albus var. albus	Listed	Kane		1	1				1		1
Tetranneuris herbacea	Listed	Cook						1	1	2	2
Tetranneuris herbacea	Listed	DuPage	1	1		1		1		1	1
Thuja occidentalis	Non-Listed	Kane		1							1
Thuja occidentalis	Non-Listed	Lake		1							1
Tofieldia glutinosa	Listed	Cook	1	1	1	1	1	1	1	1	1
Tofieldia glutinosa	Listed	Lake					1	1	1	1	1
Tomanthera auriculata	Listed	Cook	3	3	3	5	6	7	5	8	8
Tomanthera auriculata	Listed	DuPage	1	1	2	1	1	1	1	2	2
Tomanthera auriculata	Listed	Lake					1			1	1
Tomanthera auriculata	Listed	Will	2	3	3	4	4	4	4	4	4
Trientalis borealis	Listed	Cook						1	1	1	1
Trientalis borealis	Listed	Lake			1		1	2	1	1	2
Trifolium reflexum	Listed	Will		1	1	1	1	1	1	1	1
Triglochin maritima	Listed	Lake				1	2	2	2	3	3
Triglochin maritima	Listed	McHenry				1	1	1	1	2	2
Triglochin palustris	Listed	Cook	1	1	1	1	1	1	1	1	1
Triglochin palustris	Listed	Kane			1		1		1	1	2
Triglochin palustris	Listed	Lake						2	2	2	2
Triglochin palustris	Listed	Will				1	1				1
Trillium cernuum	Listed	McHenry				1	1	1	3	3	3
Trillium erectum	Listed	Lake							1	1	1
Trillium sessile	Non-Listed	Cook				1	1	1	1	1	1
Trillium sessile	Non-Listed	DuPage						1	2	2	2
Utricularia cornuta	Listed	McHenry		1	1	1	1	1	1	1	1
Utricularia intermedia	Listed	Cook	1	1	1	2	2	2	2	2	2
Utricularia intermedia	Listed	Kane			1						1
Utricularia intermedia	Listed	Lake			1	1	1	1	1		1
Utricularia intermedia	Listed	McHenry		1	1	1	1	1	1	3	3
Utricularia minor	Listed	Cook	1								1
Utricularia minor	Listed	McHenry								1	1
Utricularia subulata	Non-Listed	Lake								1	1
Vaccinium corymbosum	Listed	Lake								1	1
Vaccinium oxycoccos	Listed	Lake			1			1			1
Valeriana edulis var. ciliata	Non-Listed	DuPage							1		1
Valeriana edulis var. ciliata	Non-Listed	Lake								2	2
Valeriana edulis var. ciliata	Non-Listed	Will						1	1	1	1
Valeriana uliginosa	Listed	McHenry		1	1		2	2	2	2	2
Veronica scutellata	Listed	Cook				1	2	2	2	3	4
Veronica scutellata	Listed	DuPage	2	4	2	4	1	3	1	1	6
Veronica scutellata	Listed	Lake		2	3	2	3	2	3	2	7
Veronica scutellata	Listed	Will			1		1	1	1	1	1
Viola canadensis	Listed	Cook						1	1	1	1
Viola conspersa	Listed	Cook	1	1	1	2	4	3	2	2	4
Viola conspersa	Listed	DuPage	1	1	1	1	1	1	1	1	1
Viola conspersa	Listed	Lake	4	6	8	7	7	7	7	7	10
Viola conspersa	Listed	McHenry			1		1	1	1	1	1
Viola pallens	Non-Listed	Lake							1		1
Viola striata	Non-Listed	Cook					1	1	1	1	2
Zizania aquatica	Non-Listed	Kane					1				1
		<b>TOTAL:</b>	<b>96</b>	<b>153</b>	<b>178</b>	<b>244</b>	<b>281</b>	<b>362</b>	<b>406</b>	<b>469</b>	<b>405</b>

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
<b>Indiana</b>											
Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Botrychium matricariifolium	Listed	Porter						1	1		1
Epigaea repens	Watch List	Porter						1			1
Jeffersonia diphylla	Non-Listed	Porter							1		1
Schoenoplectus hallii	Listed	Lake								1	1
Schoenoplectus hallii	Listed	Porter								1	1
Tomanthera auriculata	Listed	Lake						1			1
<b>TOTAL:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>6</b>

## Wisconsin

Species	Status	County	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Agalinis skinneriana	Listed	Kenosha							1	1	1
Asclepias hirtella	Non-Listed	Kenosha							1		1
Asclepias ovalifolia	Listed	Walworth								1	1
Aster furcatus	Listed	Walworth							1	1	1
Besseyia bullii	Listed	Waukesha							1	1	1
Calopogon tuberosus	Listed	Kenosha								1	1
Cypripedium calceolus var. pubescens	Non-Listed	Walworth							1	2	2
Cypripedium candidum	Listed	Walworth							1	2	2
Cypripedium parviflorum var. makasin	Special Concern	Walworth							1	1	1
Cypripedium x andrewsii	Non-Listed	Walworth								1	1
Eriophorum angustifolium	Non-Listed	Kenosha							1		1
Gentiana flavida	Listed	Walworth							2	2	2
Gentiana flavida	Listed	Waukesha							1		1
Gentiana procera	Special Concern	Kenosha							1		1
Gentianopsis crinita	Non-Listed	Kenosha							1		1
Orobanche uniflora	Special Concern	Walworth							1		1
Penstemon pallidus	Special Concern	Kenosha							1	1	1
Platanthera flava var. herbiola	Listed	Walworth								1	1
Platanthera lacera	Non-Listed	Kenosha							1		1
Tofieldia glutinosa	Listed	Kenosha								1	1
Triglochin maritima	Special Concern	Walworth							1	1	1
Triglochin palustris	Special Concern	Kenosha							1	1	1
Triglochin palustris	Special Concern	Walworth								1	1
Valeriana edulis var. ciliata	Non-Listed	Kenosha							1		1
<b>TOTAL:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>27</b>



## ATTACHMENT 7

**Plants of Concern 2001-2008**  
**Counties, Sites, Landowners and Element Occurrences**

Illinois											
County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Cook	Bemis Woods	FPD Cook County					1	1	1	1	1
Cook	Bergman Slough	FPD Cook County				2	2	2	2	2	2
Cook	Black Partridge Fen	FPD Cook County					1	1	1	1	1
Cook	Black Partridge Woods	FPD Cook County					1	1	1	1	1
Cook	Bluff Spring Fen	FPD Cook County and City of Elgin	9	6	7	8	7	7	7	9	12
Cook	Brookfield Woods Prairie/Salt Creek Prairie	FPD Cook County					3	3	4	4	5
Cook	Bunker Hill Prairie and Savanna (Clayton F. Smith Woods)	FPD Cook County				1	1				1
Cook	Bunker Hill Prairie and Savanna (Sidney R. Yates Flatwoods)	FPD Cook County				1	1		1		1
Cook	Camp Sagawau	FPD Cook County				4	6	6	6	7	7
Cook	Camp Sagawau (CCC Quarry)	FPD Cook County				3	3	3	3	3	3
Cook	Cap Sauers Holdings	FPD Cook County					1		1	1	1
Cook	Chicago Ridge Prairie	Oak Lawn Park District	1	1	1	1	1	1	1		1
Cook	Clark Street Beach	City of Evanston								1	1
Cook	Deer Grove	FPD Cook County				1	3	2	3	2	4
Cook	Dixon Prairie, Chicago Botanic Garden	FPD Cook County	1	3	2	3	3	4	5	9	9
Cook	Dropseed Prairie	TNC				1	1	1		1	1
Cook	Edgebrook Woods	FPD Cook County				1	1				1
Cook	Gensburg Markham Prairie	TNC, Northeastern IL Univ, Nat'l Land Institute	1	1	1	1	1	2	1	3	3
Cook	Glenbrook North High School Prairie Nature Preserve	Glenbrook School District 225						3	2	1	3
Cook	Glencoe Botanical Area (Shelton Park)	Glencoe Park District				1					1
Cook	Glenview Naval Air Station Prairie	Village of Glenview		2	3	3	3	3	3	3	3
Cook	Harms Flatwoods	FPD Cook County					1	1	1	2	2
Cook	Harms Woods	FPD Cook County					1	1		3	4
Cook	Howard Street Beach	Chicago Park District							1		1
Cook	Jarvis Avenue Park Beach	Chicago Park District							1		1
Cook	Juneway Terrace Beach	Chicago Park District							1		1
Cook	Jurgensen Prairie	FPD Cook County						3	2	3	3
Cook	Kennicotts Grove	Glenview Park District	1								1
Cook	Kloempken Prairie and Savanna	FPD Cook County				1		1	1	1	1
Cook	Lake Ave. Woods East	FPD Cook County							1	1	1
Cook	Lake Cook Metra Station (Metra Prairie)	Deerfield Associates				1	1		1		1
Cook	Lloyd Park Beach Boat Launch	Village of Winnetka				1					1
Cook	Loyola Beach (Pratt Beach)	Chicago Park District	1	1	1	2	2	3	3	3	3
Cook	McCormick Woods	FPD Cook County					1		1		1
Cook	McDonald Woods East, Chicago Botanic Garden	FPD Cook County	1	1	1		1	1	1	1	1
Cook	McDonald Woods West, Chicago Botanic Garden	FPD Cook County	1			1	1		1		1
Cook	McDonald Woods, Chicago Botanic Garden	FPD Cook County	1	2	2	2	3	3	3	3	3
Cook	McMahon Fen	FPD Cook County							1	1	1

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Cook	Miami Woods Prairie	FPD Cook County					1	1		1	1
Cook	Montrose Beach Dunes	Chicago Park District	3	3	3	4	5	6	6	7	7
Cook	Northwestern University North	Northwestern University						3	2	3	3
Cook	Northwestern University South	Northwestern University					1	2	2	2	2
Cook	Oakton Community College Woods	Oakton Community College				3	3	3	3	4	4
Cook	Paintbrush Prairie	TNC	1	1	1	1	1	1	1	2	2
Cook	Palatine Prairie	Palatine Park District + MWRD	1	1	1	1	1	1	1		1
Cook	Palos Fen	FPD Cook County							2	1	2
Cook	Pioneer Woods	FPD Cook County								1	1
Cook	Plum Creek Preserve	FPD Cook County					1				1
Cook	Poplar Creek	FPD Cook County					2	2	3	3	4
Cook	Powderhorn Prairie	FPD Cook County					2	2	1		2
Cook	Private Property - Forest Park	Privately Owned 2						1	1	1	1
Cook	Rainbow Beach	Chicago Park District		3	2	3	3	3	3		3
Cook	Rogers Park Beach	Chicago Park District							1		1
Cook	Sand Ridge Nature Center	FPD Cook County						3	3	2	3
Cook	Sand Ridge Prairie Nature Preserve	FPD Cook County						3	3	3	3
Cook	Sante Fe Prairie	Civic Center Auth of I&M Canal Natl Herit Corridor	1	1	1	1	1	1	1	1	1
Cook	Sauganash Prairie Grove	FPD Cook County							1	2	2
Cook	SEPA Station - Calumet River	MWRD	1								1
Cook	Sheridan Lakeside Condominium Association Beach/Berger F	Sheridan Lakeside Condominium Association and Owners/Chicago Park District	1		3	3	3	3	3		3
Cook	Shoe Factory Road Prairie	FPD Cook County								1	1
Cook	Somme Prairie Grove	FPD Cook County				4	5	4	5	6	6
Cook	Somme Prairie Nature Preserve	FPD Cook County				2	3	1	3		3
Cook	South Boulevard Beach	City of Evanston					2	2	2	2	2
Cook	St. Paul Woods	FPD Cook County					1	1		1	1
Cook	Sundrop Prairie	TNC								1	1
Cook	Superior Street Land and Water Reserve	Calumet Memorial Park District						1	2		2
Cook	Surfside Condominium Beach/Kathy Osterman Beach	Surfside Condominium Association/Chicago Park District	3	3	3	3	3	3	3		3
Cook	Theodore Stone Prairie	FPD Cook County						2	3	8	8
Cook	Thornton-Lansing Road Nature Preserve (Zanders)	FPD Cook County						3	2	5	5
Cook	Tower Road Park Beach	Village of Winnetka				3	3		3	3	3
Cook	Watersmeet	FPD Cook County					2	2	2	2	2
Cook	Wayside Woods Prairie	FPD Cook County					1	1			1
Cook	William Powers Conservation Area (Wolf Lake)	IDNR		3	1	1	3	3	3		3
Cook	Williams/Becker Ravine	Nicole Williams/Larry Becker								4	4
Cook	Wolf Road Prairie	Village of Westchester	1	1		1	1	1	1	1	1

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
DuPage	Belmont Prairie	Downer's Grove Park District	2	2	2	2				2	2
DuPage	Big Woods Forest Preserve	FPD DuPage County				2			1	1	3
DuPage	Blackwell Forest Preserve	FPD DuPage County	1	2	2	3	1	4	3	3	4
DuPage	Brush Hill Forest Preserve	FPD DuPage County							2		2
DuPage	Churchill Woods	FPD DuPage County	1			1	1	1	3	6	6
DuPage	Des Plaines Riverway	FPD DuPage County				1		2	2		3
DuPage	East Branch Forest Preserve	FPD DuPage County						1		1	1
DuPage	East Branch Forest Preserve (East Branch Marsh)	FPD DuPage County		2	2	2	1	1	1	1	2
DuPage	Fischer Woods	FPD DuPage County	1	2	7	7	3	5	7	4	8
DuPage	Fullersburg Woods	FPD DuPage County	3	3	3	3	3	2	3	2	3
DuPage	Fullerton Park	FPD DuPage County								1	1
DuPage	Goodrich Woods	FPD DuPage County						2	2	2	2
DuPage	Greene Valley	FPD DuPage County						3	3	3	4
DuPage	Hawk Hollow	FPD DuPage County	1	1	1	1		2	1	2	2
DuPage	Hickory Grove	FPD DuPage County							1		1
DuPage	Hidden Lake	FPD DuPage County		1		1		1			1
DuPage	James Pate Philip State Park	IDNR		1		1		3	1	1	3
DuPage	Knoch Knolls Park	Village of Naperville							1	1	1
DuPage	Lyman Woods	FPD DuPage County	3	3	1	1	1	5	5	4	8
DuPage	Mallard Lake	FPD DuPage County	1	1				2	1	2	2
DuPage	Maple Grove	FPD DuPage County		2	2	2	2	3	2	4	5
DuPage	McDowell Grove	FPD DuPage County						1	1	1	1
DuPage	Meacham Grove	FPD DuPage County		1		1		1			1
DuPage	Pratts Wayne Woods	FPD DuPage County	2	3	2			2	2	2	5
DuPage	Pratts Wayne Woods (Brewster Creek)	FPD DuPage County	1	1		1				1	1
DuPage	Saint James Farm	FPD DuPage County						1		1	1
DuPage	Swift Prairie (Swift Road Meadow)	FPD DuPage County		1	1	2	1	2	3	3	4
DuPage	Timber Ridge	FPD DuPage County	1	1	1	1	1	4	2	2	5
DuPage	Warrenville Grove Forest Preserve	FPD DuPage County		1	1	1	1	1	1	1	1
DuPage	Waterfall Glen	FPD DuPage County	5	9	1	8	4	12	7	7	17
DuPage	West Branch Forest Preserve	FPD DuPage County	1	1	1	1	1	1	1	1	1
DuPage	West Chicago Prairie	FPD DuPage County	2	3	2	3	2	3	5	7	12
DuPage	West DuPage Woods	FPD DuPage County	2	1	2	1	2	1	2	1	5
DuPage	West DuPage Woods (Elsens Hill)	FPD DuPage County	2	1	1	1	1	1	4	4	5
DuPage	Willowbrook Wildlife Center	FPD DuPage County							2	2	2
DuPage	Wood Dale Grove	FPD DuPage County	2	2	2	2		2			4
DuPage	Wood Ridge	FPD DuPage County						4	3	4	7
Kane	Almon Underwood Forest Preserve	FPD Kane County	1						1	1	1
Kane	Big Rock	FPD Kane County						1		1	1
Kane	Bliss Woods Forest Preserve	FPD Kane County				1	3	2	1	2	3
Kane	Brunner Woods	Privately Owned 1					1	1		1	1
Kane	Burlington Prairie	FPD Kane County	1	1	1	1	3	1	1	1	3
Kane	Burnidge Forest Preserve	FPD Kane County				2	2	2			2
Kane	Campton Forest Preserve	FPD Kane County								1	1

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Kane	Campton Hills Land and Water Reserve	St. Charles Park District	1		1	1	1	1	1	1	1
Kane	Dick Young Forest Preserve	FPD Kane County					3	2			3
Kane	Dick Young Forest Preserve (Nelson Lake Marsh)	FPD Kane County			3	1	1	1	1	1	3
Kane	Dixie Briggs Fromm Nature Preserve	Dundee Township		1	1	1	1	2	2	2	2
Kane	Fox River Bike Trail and Trout Park	FPD Kane County/City of Elgin	1	1	1	1	1	1	1	1	1
Kane	Freeman Kame	FPD Kane County	1			3	1	1	4	2	4
Kane	Hannaford Forest Preserve	FPD Kane County	1			1	1	1	1	1	1
Kane	Helm Road Woods (Barrington Hills Botanical Area)	FPD Kane County/ComEd	1	1		1	1	1	1	1	1
Kane	Jon Duerr Forest Preserve	FPD Kane County							1	1	1
Kane	LeRoy Oakes Forest Preserve	FPD Kane County	2			2	1	2	3	3	3
Kane	LeRoy Oakes Forest Preserve (Murray Prairie)	FPD Kane County	2			2	2	2	2	2	2
Kane	McLean Road Fen	FPD Kane County					1		1	1	1
Kane	Meissner-Corron (Russell Fen)	FPD Kane County	2	1	1	1	2	1	2	2	2
Kane	Mooseheart Ravine	Loyal Order of Moose		3	3				3		3
Kane	Rohrsen Prairie	Burlington Township							1	1	1
Kane	Rutland Bog	Chicago Title and Trust		3							3
Kane	Sauer Family Prairie Kame FP	FPD Kane County	1			1				1	1
Kane	Schweitzer Forest Preserve (Pothole Marsh)	FPD Kane County			1		1		2		2
Kane	Sleepy Hollow Ravine	Glen Speigler		1	1	1				1	1
Kane	Trout Park Nature Preserve	City of Elgin		3	2	1	1	1	1	1	3
Kankakee	Sweet Fern Savanna	Marianne Hahn		1							1
Lake	Baker's Lake	Village of Barrington								3	3
Lake	Berkeley Prairie	FPD Lake County		2	3	3	3	3	5	2	5
Lake	Beulah Park	City of Zion						1	1		1
Lake	Biltmore Way Easement	Citizens for Conservation					1				1
Lake	Buffalo Grove Prairie	Commonwealth Edison			1	1	1	1	1	1	1
Lake	Cuba Marsh	FPD Lake County		1					1	2	2
Lake	East Skokie Nature Preserve	Lake Forest Open Lands Association		1				1	1	1	1
Lake	EJ&E Tracks - Barrington	FPD Lake County/RR Right of Way								1	1
Lake	Elm Road Forest	FPD Lake County			4	2		1	5		6
Lake	Ethels Woods	FPD Lake County		1		1	1		1	1	1
Lake	Farm Trails North Nature Preserve	Citizens for Conservation					1				1
Lake	Florsheim Park/North Park	Village of Lincolnshire	1	2	2	3	3	4	5	5	5
Lake	Fort Sheridan Bluff (Ft. Sheridan Golf Course)	FPD Lake County	2	7	3		8	11	2	11	18
Lake	Fourth Lake Fen	FPD Lake County			1				1	2	2
Lake	Gander Mountain	FPD Lake County					3	2	3	6	6
Lake	Gavin Bog and Prairie	FPD Lake County	2	3	8	4	4	10	4	7	11
Lake	Grainger Flatwoods	FPD Lake County	1	3	6	3	5	5	6	4	8
Lake	Grant Woods Forest Preserve	FPD Lake County	1	1	1	2	2	2	1	1	2
Lake	Grassy Lake (Wagner Fen NP) CFC	Citizens for Conservation								3	3
Lake	Grassy Lake (Wagner Fen NP) FPD	FPD Lake County	1				1	1	2	3	3

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Lake	Grassy Lake (Wagner Fen NP) FPD	FPD Lake County and DNR								1	1
Lake	Greenbelt Forest Preserve	FPD Lake County			2	1	2	1	1	2	2
Lake	Heller Nature Center	Highland Park/Park District			1	2	2	2	2	3	3
Lake	Highmoor Prairie	Highland Park/Park District				1	1	2	1	2	2
Lake	Hosah Prairie	Zion Park District								1	1
Lake	Illinois Beach State Park (North Unit)	IDNR				1	1	1	1	1	1
Lake	Illinois Beach State Park (North Unit) and Hosah Prairie	IDNR + Zion Park District				3	3	5	4	6	6
Lake	Illinois Beach State Park (South Unit)	IDNR	2	3	6	6	8	9	9	10	12
Lake	Independence Grove	FPD Lake County				2			1	3	4
Lake	Jerry Kolar Property	Jerry Kolar								1	1
Lake	Lake Barrington - Flint Creek Savanna	Citizens for Conservation							2	3	3
Lake	Lake Barrington - Lake Barrington Shores	Lake Barrington Community Homeowner's Association							1	2	2
Lake	Lakewood Forest Preserve	FPD Lake County							3	1	3
Lake	Leonardi Park	Highland Park/Park District			1	1	1	2	1	1	2
Lake	Liberty Prairie	Libertyville Township						2	3	3	3
Lake	Lyons Prairie and Marsh	CD McHenry County			2		2		1	3	3
Lake	Lyons Woods	FPD Lake County			2	1	1			2	2
Lake	MacArthur Woods	FPD Lake County		4	6	5	5	1	2	2	6
Lake	Marl Flats Forest Preserve	FPD Lake County				2	2	2	3	2	3
Lake	McCormick Ravine	City of Lake Forest								1	1
Lake	Middlefork Savanna	FPD Lake County		2	1					2	4
Lake	North Chicago Wetland Mitigation	IDOT						1	1		2
Lake	Red Oak Woods	North Shore School District 112				1	1	1	1	1	1
Lake	Reed-Turner Woodland and Woodland Ridge Lot 2	Village of Long Grove	1	1	1	1	1	2	3	2	4
Lake	Rollins Savanna	FPD Lake County			1			3	3	3	3
Lake	Rosewood Park	Highland Park/Park District								1	1
Lake	Ryerson Conservation Area	FPD Lake County	1	4	8	7	6	8	8	9	12
Lake	Singing Hills	FPD Lake County			1		1				1
Lake	Spring Bluff	FPD Lake County		2	4	2	2	3	3		5
Lake	Sun Lake	FPD Lake County		2							2
Lake	Thunderhawk Golf Course	FPD Lake County								1	1
Lake	Turner Lake	IDNR	1	1	1	1				1	2
Lake	Volo Bog	IDNR					2	3	3	4	4
Lake	Wadsworth Prairie	FPD Lake County	1	1	1	1	1				1
Lake	Wadsworth Prairie	FPD Lake County/RR Right of Way	1	1	1		1				1
Lake	Wauconda Bog	FPD Lake County	1				1	4	2	6	9
Lake	Waukegan Beach	City of Waukegan			2	2	3	3	3		3
Lake	Wright Woods	FPD Lake County	1	1	2	3	2	2	1	1	3
McHenry	Alden Sedge Meadow	CD McHenry County			1	2	1		2	3	3

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
McHenry	Amberin Ash Ridge	Staley Family						1		1	1
McHenry	Bailey Easement: Boone Creek	Bailey Family		1	1		1				1
McHenry	Barber Fen	CD McHenry County				1	1	1	1	1	1
McHenry	Boloria Fen and Sedge Meadow	Boone Creek Watershed Alliance						3	2	3	4
McHenry	Boone Creek Fen	O'Donnell Family			1			1		1	1
McHenry	Bystricky Prairie	CD McHenry County							3	3	3
McHenry	Cotton Creek Marsh	CD McHenry County						2	2	3	3
McHenry	Frank and Margo Blair Property	Frank and Margo Blair		1	1	1	1	1		1	1
McHenry	Glacial Park	CD McHenry County		1	2	1	2	4	4	5	5
McHenry	Gladstone Fen	Lorna Gladstone						1	1	2	2
McHenry	Hickory Grove Tszurz	CD McHenry County					1		1	1	1
McHenry	HUM 58-59	CD McHenry County				1			1	1	1
McHenry	HUM 61	CD McHenry County				2	2		2	2	2
McHenry	HUM Coyne Station East	CD McHenry County				2	2	2	2	2	2
McHenry	HUM Railroad Prairie West	CD McHenry County				1	1		1	1	1
McHenry	Kloempken Prairie	CD McHenry County							3	3	3
McHenry	Lake Elizabeth	CD McHenry County							3	2	4
McHenry	Lake in the Hills Fen	IDNR/Village of Lake in the Hills	1	5	5	4	5	6	5	6	6
McHenry	Lind Woods	CD McHenry County							1	1	1
McHenry	Manuk-Sook Land and Water Reserve	John Clemetsen						2	3	3	3
McHenry	Moraine Hills State Park	IDNR								2	2
McHenry	Nippersink Canoe Base	CD McHenry County					1	1	1	1	1
McHenry	North Branch Preserve	CD McHenry County							1	1	1
McHenry	Oakwood Hills Fen	Village of Oakwood Hills					2	2	2	2	2
McHenry	Silver Creek (Bates Fen)	CD McHenry County							1	2	2
McHenry	Solon Prairie (Keenan section)	Keenan Family								1	1
McHenry	Solon Prairie (Marsh section)	Marsh Family								1	1
McHenry	Stickney Run	CD McHenry County								1	1
McHenry	The Hollows	CD McHenry County								1	1
McHenry	Tom Burroughs Property	Tom Burroughs		1	1	1	1			1	1
Pike	Walnut Grove Hill Prairie	Privately Owned 3	1								1
Will	Blodgett Road Dolomite Prairie (Des Plaines River Conservati	IDNR		1	1	1	1	1	1	2	2
Will	Braidwood Dunes and Savanna	FPD Will County					4		3	2	4
Will	Dellwood West Nature Preserve	Lockport Township Park District				4	2	2	3	2	4
Will	Four Seasons Park	Plainfield Park District			1	1	1	1	1		1
Will	Goodenow Grove Nature Preserve	FPD Will County				3	2	1	1	1	4
Will	Grant Creek Prairie	IDNR	1	1	1	1	1	2	2	2	2
Will	Grant Creek Prairie and Midewin National Tallgrass Prairie	IDNR + U.S. Forest Service		1	1	1		1	1	1	1
Will	Hickory Creek Barrens	FPD Will County				1			1	1	1
Will	Hitt's Siding Prairie	IDNR								1	1

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Will	Messenger Woods	FPD Will County					1				1
Will	Midewin National Tallgrass Prairie (Blodgett Road)	U.S. Forest Service	1	1	1	1	1	1	1	2	2
Will	Midewin National Tallgrass Prairie (Drummond Prairie)(Joliet)	U.S. Forest Service			2	3	3	4	4	4	4
Will	Midewin National Tallgrass Prairie (Joliet Army Ammunition P)	U.S. Forest Service				2	2	3	3	2	3
Will	Midewin National Tallgrass Prairie and Des Plaines River Con	U.S. Forest Service/IDNR	1	1	1	1	1	1	1	1	1
Will	Plum Creek Preserve	FPD Will County				1					1
Will	Romeoville Prairie Nature Preserve	FPD Will County		1	1	5	5	3	2	3	5
Will	Sand Ridge Savanna	FPD Will County						2			2
Will	Thorn Creek Woods	FPD Will County, IDNR, Villages of Park Forest and University Park			2		1	1	1	1	2
Will	Thorn Grove Forest Preserve	FPD Will County				1	1	2	1	1	2
Will	Vermont Cemetery	FPD Will County		1	1	1	1	1	1	1	1
<b>TOTAL:</b>			<b>96</b>	<b>153</b>	<b>178</b>	<b>244</b>	<b>281</b>	<b>360</b>	<b>400</b>	<b>459</b>	<b>679</b>

### Indiana

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Lake	Cressmoor Prairie	Shirley Heinze Land Trust						1			1
Lake	Indiana Dunes National Lakeshore (Tolleston A)	National Park Service								1	1
Porter	Cowles Bog Trail (Indiana Dunes National Lakeshore)	National Park Service						1	1		1
Porter	Indiana Dunes National Lakeshore (Beverly Shores)	National Park Service						1			1
Porter	Indiana Dunes National Lakeshore (Furnessville F)	National Park Service								1	1
Porter	Swanson Woods	Susan Swanson et.al.							1		1
<b>TOTAL:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>6</b>

### Wisconsin

County	Site Name	Land Owner	2001	2002	2003	2004	2005	2006	2007	2008	Total EORs
Kenosha	Chiwaukee Prairie	Chiwaukee Prairie State Natural Area Landowners							9	5	11
Walworth	Kettle Moraine State Forest - Southern Unit	WDNR							1	1	1
Walworth	Lulu Lake Preserve	TNC							6	9	10
Walworth	Lulu Lake SNA	WDNR							1	3	3
Waukesha	Natura property (Private Property)	Heidi and Dan Natura							2	1	2
<b>TOTAL:</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>27</b>

## ATTACHMENT 8

Plants of Concern 2001-2008  
Species EO Frequency per County - A Regional View

Number of Counties	Species	Status	Cook	DuPage	Kane	Lake	McHenry	Will	Total EO's
6	<i>Cypripedium candidum</i>	Listed	13	6	3	5	14	1	42
4	<i>Carex crawei</i>	Non-Listed	2		1	1		3	7
4	<i>Carex viridula</i>	Listed	2	5		2		1	10
4	<i>Cirsium hillii</i>	Non-Listed		5	2		3	2	12
4	<i>Gentiana flavida</i>	Non-Listed	1	2		2	1		6
4	<i>Juncus alpinoarticulatus</i>	Listed	1	2	1	2			6
4	<i>Lathyrus ochroleucus</i>	Listed	1	1		9	3		14
4	<i>Oenothera perennis</i>	Listed	10	1		10		1	22
4	<i>Tomanthera auriculata</i>	Listed	8	2		1		4	15
4	<i>Triglochin palustris</i>	Listed	1		2	2		1	6
4	<i>Utricularia intermedia</i>	Listed	2		1	1	3		7
4	<i>Veronica scutellata</i>	Listed	4	6		7		1	18
4	<i>Viola conspersa</i>	Listed	4	1		10	1		16
3	<i>Adiantum pedatum</i>	Non-Listed		3	1	1			5
3	<i>Amelanchier interior</i>	Listed	3	5	1				9
3	<i>Aster furcatus</i>	Listed	2		2	3			7
3	<i>Calopogon tuberosus</i>	Listed	6			2	1		9
3	<i>Carex aurea</i>	Listed	4		1	5			10
3	<i>Carex bromoides</i>	Listed	1	1		3			5
3	<i>Carex woodii</i>	Listed	1	7		5			13
3	<i>Chamaedaphne calyculata</i>	Listed			1	1	1		3
3	<i>Dalea foliosa</i>	Listed	2	1				1	4
3	<i>Filipendula rubra</i>	Listed	1			1	1		3
3	<i>Hydrastis canadensis</i>	Non-Listed	2		1	1			4
3	<i>Minuartia patula</i>	Listed	2	1				3	6
3	<i>Mitella diphylla</i>	Non-Listed	1			2	1		4
3	<i>Plantago cordata</i>	Listed	1	1				1	3
3	<i>Platanthera flava</i> var. <i>herbiola</i>	Listed	1			4		2	7
3	<i>Pogonia ophioglossoides</i>	Listed	1			1	1		3
3	<i>Prenanthes aspera</i>	Non-Listed	1		1			1	3
3	<i>Psoralea tenuiflora</i>	Non-Listed		2	1	1			4
3	<i>Rubus odoratus</i>	Listed		1	1	1			3
3	<i>Sisyrinchium montanum</i>	Listed	5	1		1			7
3	<i>Valeriana edulis</i> var. <i>ciliata</i>	Non-Listed		1		2		1	4
2	<i>Actaea rubra</i>	Non-Listed	1			4			5
2	<i>Agalinis skinneriana</i>	Listed	1			2			3
2	<i>Ammophila breviligulata</i>	Listed	8			1			9
2	<i>Aristolochia serpentaria</i>	Non-Listed		5	1				6
2	<i>Asclepias exaltata</i>	Non-Listed	1			2			3
2	<i>Asclepias lanuginosa</i>	Listed	1				2		3
2	<i>Asclepias viridiflora</i>	Non-Listed		2	3				5
2	<i>Baptisia leucophaea</i>	Non-Listed	1			1			2
2	<i>Cakile edentula</i>	Listed	15			3			18
2	<i>Carex cryptolepis</i>	Listed		1		2			3
2	<i>Carex intumescens</i>	Listed	1			1			2
2	<i>Chamaesyce polygonifolia</i>	Listed	11			1			12
2	<i>Cypripedium parviflorum</i> var. <i>makasin</i>	Listed				2	4		6
2	<i>Diarrhena americana</i>	Non-Listed	1	1					2
2	<i>Drosera intermedia</i>	Listed			1			1	2
2	<i>Drosera rotundifolia</i>	Listed				1	1		2
2	<i>Elymus trachycaulus</i>	Listed		1		1			2
2	<i>Eriophorum angustifolium</i>	Non-Listed		1	2				3
2	<i>Geum triflorum</i>	Non-Listed	1			1			2
2	<i>Hypericum kalmianum</i>	Listed	3			4			7



Number of Counties	Species	Status	Cook	DuPage	Kane	Lake	McHenry	Will	Total EO's
2	Iodanthus pinnatifidus	Non-Listed	1	2					3
2	Isoetes butleri	Listed		1				3	4
2	Juglans cinerea	Non-Listed		5		2			7
2	Juniperus communis	Listed	1			1			2
2	Liatris scariosa var. nieuwlandii	Listed	4					1	5
2	Lycopodium complanatum var. flabelliforme	Non-Listed		5	1				6
2	Menyanthes trifoliata	Listed			2	3			5
2	Orchis spectabilis	Non-Listed		1			1		2
2	Oryzopsis racemosa	Non-Listed		1		2			3
2	Panax quinquefolius	Non-Listed		3		1			4
2	Parnassia glauca	Non-Listed				2	2		4
2	Polygonatum pubescens	Listed	4			1			5
2	Polystichum acrostichoides	Non-Listed		2			1		3
2	Pyrola elliptica	Non-Listed	1			2			3
2	Rubus pubescens	Listed	4			4			8
2	Salix candida	Non-Listed		1	1				2
2	Sarracenia purpurea	Listed				2	3		5
2	Scirpus hattorianus	Listed		2		1			3
2	Silene regia	Listed	1		3				4
2	Silene virginica	Non-Listed	1			1			2
2	Sparganium emersum	Listed		2	1				3
2	Tetraneuris herbacea	Listed	2	1					3
2	Thuja occidentalis	Non-Listed			1	1			2
2	Tofieldia glutinosa	Listed	1			1			2
2	Trientalis borealis	Listed	1			2			3
2	Triglochin maritima	Listed				3	2		5
2	Trillium sessile	Non-Listed	1	2					3
2	Utricularia minor	Listed	1				1		2
1	Amelanchier sanguinea	Listed	2						2
1	Arabis hirsuta	Non-Listed		1					1
1	Artemisia serrata	Non-Listed			1				1
1	Asclepias hirtella	Non-Listed		1					1
1	Asclepias meadii	Listed		1					1
1	Asclepias ovalifolia	Listed	2						2
1	Asclepias perennis	Non-Listed						1	1
1	Beckmannia syzigachne	Listed	3						3
1	Besseyia bullii	Listed			1				1
1	Betula alleghaniensis	Listed				1			1
1	Betula papyrifera	Non-Listed				1			1
1	Betula populifolia	Non-Listed						1	1
1	Bidens discoidea	Non-Listed		2					2
1	Bolboschoenus maritimus	Listed		3					3
1	Botrychium campestre	Listed			1				1
1	Callitriche heterophylla	Non-Listed		2					2
1	Callitriche palustris	Non-Listed		1					1
1	Calopogon oklahomensis	Listed						1	1
1	Carex alata	Listed						1	1
1	Carex brunnescens	Listed				2			2
1	Carex canescens	Listed				1			1
1	Carex crawfordii	Listed						1	1
1	Carex crus-corvi	Non-Listed		1					1
1	Carex disperma	Listed				2			2
1	Carex formosa	Listed	2						2
1	Carex frankii	Non-Listed		4					4
1	Carex garberi	Listed				1			1
1	Carex leptalea	Non-Listed				1			1
1	Carex oligosperma	Listed			1				1

Number of Counties	Species	Status	Cook	DuPage	Kane	Lake	McHenry	Will	Total EO's
1	Carex pedunculata	Non-Listed				1			1
1	Carex trisperma	Listed				1			1
1	Carex tuckermanii	Listed		4					4
1	Carex utriculata	Non-Listed		1					1
1	Cassia hebecarpa	Non-Listed	1						1
1	Castilleja sessiliflora	Listed				1			1
1	Ceanothus americanus	Non-Listed				2			2
1	Cicuta bulbifera	Non-Listed		4					4
1	Cimicifuga racemosa	Listed				1			1
1	Cladium mariscoides	Non-Listed				1			1
1	Collinsia verna	Non-Listed			1				1
1	Comptonia peregrina	Listed	2						2
1	Conopholis americana	Non-Listed	1						1
1	Corallorhiza maculata	Listed						2	2
1	Cypripedium reginae	Listed				1			1
1	Cypripedium x andrewsii	Non-Listed					2		2
1	Delphinium tricorne	Non-Listed	1						1
1	Desmodium canescens	Non-Listed		2					2
1	Desmodium cuspidatum	Non-Listed		2					2
1	Dichanthelium boreale	Listed	1						1
1	Diervilla lonicera	Non-Listed				1			1
1	Dirca palustris	Non-Listed			2				2
1	Echinodorus berteroi var. latifolius	Non-Listed			1				1
1	Epilobium strictum	Listed						1	1
1	Erigeron pulchellus	Non-Listed		2					2
1	Eriophorum virginicum	Listed				1			1
1	Erythronium americanum	Non-Listed		1					1
1	Galium labradoricum	Non-Listed				5			5
1	Gentiana procera	Non-Listed				1			1
1	Geranium bicknellii	Listed				4			4
1	Geum rivale	Non-Listed			1				1
1	Goodyera pubescens	Non-Listed			1				1
1	Gratiola quartermaniae	Non-Listed						1	1
1	Helianthus giganteus	Listed	1						1
1	Hepatica nobilis var. obtusa	Non-Listed				5			5
1	Hybanthus concolor	Non-Listed	1						1
1	Hypericum adpressum	Listed						2	2
1	Ilex verticillata	Non-Listed		1					1
1	Jeffersonia diphylla	Non-Listed	2						2
1	Lechea intermedia	Listed			1				1
1	Lespedeza leptostachya	Listed					2		2
1	Lespedeza violacea	Non-Listed				4			4
1	Lonicera dioica	Non-Listed				1			1
1	Lycopodium clavatum	Listed		1					1
1	Lysimachia hybrida	Non-Listed		1					1
1	Malvastrum hispidum	Listed						1	1
1	Medeola virginiana	Listed	1						1
1	Napaea dioica	Non-Listed						1	1
1	Ophioglossum vulgatum var. pseudopodium	Non-Listed	1						1
1	Orobanche uniflora	Non-Listed				2			2
1	Penstemon pallidus	Non-Listed		2					2
1	Penstemon tubaeiflorus	Listed		2					2
1	Physocarpus opulifolius	Non-Listed				1			1
1	Platanthera clavellata	Listed				1			1
1	Platanthera hyperborea var. huronensis	Non-Listed					2		2
1	Platanthera lacera	Non-Listed						1	1
1	Platanthera psycodes	Listed				3			3

Number of Counties	Species	Status	Cook	DuPage	Kane	Lake	McHenry	Will	Total EO's
1	<i>Poa alsodes</i>	Listed				1			1
1	<i>Poa sylvestris</i>	Non-Listed		2					2
1	<i>Populus balsamifera</i>	Listed	1						1
1	<i>Potamogeton robbinsii</i>	Listed				1			1
1	<i>Potentilla palustris</i>	Non-Listed					1		1
1	<i>Pycnanthemum pilosum</i>	Non-Listed		1					1
1	<i>Ranunculus rhomboideus</i>	Listed			1				1
1	<i>Rhus vernix</i>	Non-Listed					2		2
1	<i>Rudbeckia fulgida</i> var. <i>sullivantii</i>	Non-Listed						1	1
1	<i>Sagittaria calycina</i>	Non-Listed			1				1
1	<i>Scirpus microcarpus</i>	Listed				3			3
1	<i>Scleria verticillata</i>	Non-Listed				2			2
1	<i>Scutellaria ovata</i> var. <i>versicolor</i>	Non-Listed				1			1
1	<i>Shepherdia canadensis</i>	Listed				1			1
1	<i>Sisyrinchium campestre</i>	Non-Listed	1						1
1	<i>Spiranthes lucida</i>	Listed	2						2
1	<i>Spiranthes ovalis</i>	Non-Listed	1						1
1	<i>Stellaria pubera</i>	Listed	1						1
1	<i>Swertia caroliniensis</i>	Non-Listed	2						2
1	<i>Symphoricarpos albus</i> var. <i>albus</i>	Listed			1				1
1	<i>Trifolium reflexum</i>	Listed						1	1
1	<i>Trillium cernuum</i>	Listed					3		3



CAROL FREEMAN PHOTOGRAPHY  
2516 Waukegan Road, #333 | Glenview, IL 60025

**INVOICE: C620**  
September 2, 2008  
Terms: Payment due upon receipt

TO: Chicago Botanic Garden  
1000 Lake Cook Road  
P.O. Box 400  
Chicago, IL 60022  
ATTN: Susanne Masi

PROJECT DESCRIPTION: Second half of the photography fee for Plants of Concern photos for 2008. Photos to be used on the POC website and for POC presentations with copyright info of ©Carol Freeman.

Plants photographed 1st part:

*Hepatica nobilis var. obtusa*  
*Jeffersonia diphylla*  
*Trillium sessile*  
*Hydrastis canadensis*  
*Amelanchier sanguinea*  
*Hybanthus concolor*  
*Delphinium tricorne*  
*Stellaria pubera*  
*Mitella diphylla*  
*Trientalis borealis*  
*Menyanthes trifoliata*  
*Minuartia patula*

Reshoots:

*Sisyrinchium montanum*  
*Carex formosa*

Plants photographed 2nd part:

*Trillium erectum*  
*Valeriana uliginosa*  
*Lathyrus ochroleucus*  
*Isoetes butleri*  
*Dichanthelium boreale*  
*Asclepias lanuginosa*  
*Utricularia intermedia*  
*Plantanthera psycodes*  
*Platanthera clavellata*  
*Utricularia cornuta*

Reshoots:

*Aster furcatus*  
*Asclepias ovalifolia*  
*Minuartia patula*  
*Veronica scutellata*

Photography

\$2,050.00

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**TOTAL DUE: \$2,050.00**

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Thank-you!

Please make check payable to Carol Freeman Photography

Tax ID # 36-3906438

# The Habitat HERALD

September 2008

Volume 9, Issue 3

## Citizen Monitors Rescue a Rare Violet

By Rachel Goad

**B**ad news is everywhere. Disturbing images and stories vie for our attention each day. But there is good news to be shared; we just may need to pay attention to the subtleties that surround us. Take, for example, the case of dog violet (*Viola conspersa*): a rare, spring-blooming wildflower that Plants of Concern (POC) has been monitoring closely since 2001.



At one such site, dog violet was discovered eking out survival underneath a dense canopy of buckthorn with only poison ivy for company. Despite its flexible nature, its distribution is limited, occurring in fewer than 20 locations in Illinois. In fact, the state lists it as threatened, indicating a likelihood of endangered status in the near future.

At that site where buckthorn and poison ivy had taken a stranglehold, data collected by monitors has played an important role in restoring the local ecosystem. In response to the plight of these wildflowers, park staff has removed



Photos: Carol Freeman

Flags abound as Plants of Concern monitors mark the many locations of the rare dog violet, *Viola conspersa*, which has proliferated at this site thanks to their work.

“They are like little humps in the woodland floor where it’s damp but not flooded. And their leaves are the freshest green around”, says Mary Borecki, a POC volunteer who has monitored *Viola conspersa* for the last seven years. These leafy-stemmed violets aren’t restricted to woodlands, however. They’re also found in wetlands and in prairies.

“Data collected by monitors has played an important role in restoring the local ecosystem.”

buckthorn and other invasive plants, allowing sunlight to reach the ground, permitting native species like dog violet to thrive. In this developing prairie where discreet patches of dog violet were previously recorded, POC staff and volunteers recently found it difficult to determine independent groups of plants; they had proliferated across the entire eight acre site!

While many things about this little violet remain a mystery, it is clear that where monitors dedicate our time and attention, we make a difference. The resurgence of a rare wildflower may not rivet the nation, but it is good news nonetheless, and proof that efforts to protect and restore the earth do result in success.



**Plants of Concern Focus Group March 6, 2008  
Participant Information**

Age \_\_\_\_\_ Gender (pls. circle): M F

Education Level: HS College Post-Grad Professional

Year Granted: \_\_\_\_\_

Major \_\_\_\_\_

Profession \_\_\_\_\_ Currently employed? \_\_\_\_\_

Yrs with POC \_\_\_\_\_

Other volunteer activities \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

hobbies etc. \_\_\_\_\_  
 \_\_\_\_\_

**Plants of Concern Focus Group March 6, 2008  
Participant Information**

Age \_\_\_\_\_ Gender M F

Education Level: HS College Post-Grad Professional

Year Granted: \_\_\_\_\_

Major \_\_\_\_\_

Profession \_\_\_\_\_ Currently employed? \_\_\_\_\_

Yrs with POC \_\_\_\_\_

Other volunteer activities \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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Plants of Concern Focus Group  
March 6, 2008

### **Scientific contributions**

- 1) What kinds of contributions do you think volunteers/citizen scientists can make to scientific research? Do you think your involvement with POC contributes? How so? (Understanding status of rare plants, accurate data?)
- 2) Describe what you think of as the “scientific process”. Has your understanding changed since you began POC? If so, how?
- 3) What is your scientific/environmental background? (either your personal academic background or your POC training) (Did you have experience with environmental science before joining POC?)  
**If yes**, what (if any) role did/does your prior experience play in your work with POC  
**If none**, what do you expect to get out of your participation in POC)

### **Conservation Applications**

- 1) What kinds of impacts do you think individuals can have on rare species conservation efforts? Describe what you think are the goals of Plants of Concern, how well do they meet those goals? What is your role?
- 2) Describe how effective you think POC has been in meeting its goal to affect land management activities with the data it provides? How and Why? What do you see as your contribution?
- 3) As either a steward, natural areas volunteer or concerned citizen, since beginning participation in POC, have your management actions or recommendations changed? Yes – how so? Was this in response to experience at POC? If no, why not?
- 4) How would you describe your approach to understanding/analyzing/forming opinions about conservation issues? Has participation in POC shaped or changed your approach?”

**Personal knowledge/awareness/commitment**

- 1) Tell me a little about what you have learned about your plant...(leave open) In terms of populations? (life history, reproductive output?) Where did you look for information and what kind did you look for?
- 2) **Scenario:** In walking for fun through a woods with lovely native spring wildflowers, you start noticing that they are being shaded in by buckthorn or encroached by garlic mustard. What would your reaction be and would you consider any action in response to this situation? If so, what would that be? (some examples would be: contact the land manager, volunteer for a garlic mustard removal workday, tell friends how awful it is.....)

For new people:

- 1) Why did you decide to join POC? What do you expect to get out of your participation?

Old People

- 1) Why did you join POC? Has it met your expectations?
- 2) Describe a particularly meaningful experience (or “ah-ha” moment, good or bad) you have had as a participant in Plants of Concern. Is there something that stands out in your memory? Has this experience, or others with POC, affected your worldview?
- 3) Has participation in plants of concern affected other aspects of your life/self? (work, recreation, political views?) Describe any changes that you see in yourself since beginning work with POC.

**Assumption:** Citizen Scientists can contribute valid, reliable scientific data provided training is clear, protocols are unambiguous, parameters are well established, research questions are clear.

**Basic Question:** how conservation minded people can be effectively engaged in the process of science.

## **Plants of Concern Images**

Chicago Botanic Garden

IL DNR final report contract #RC09L01W

July 2009

1. *Calopogon tuberosus*, monitored by POC at 11 locations. Photo by Cathy Bloome.
2. Monitoring *Aster furcatus*. Photo by Carol Freeman.
3. *Chamaesyce polygonifolia*, monitored at several lakefront locations. Photo by Carol Freeman.
4. DBH Fall Burn: Prescribed fire in a population of *Cirsium hill*. Photo by Kirby Dowiat.
5. *Gratiola quartermaniae*, newly named species monitored by POC at Midewin. Photo by Emily Kapler.
6. Appreciation event for monitors at Chicago Botanic Garden. Photo by Marian Hofherr.
7. *Oenothera perennis*, monitored by POC at 24 locations. Photo by Carol Freeman.
8. Training workshop at Volo Bog, Spring 2009. Photo by Greg Hitzroth.
9. Participants at Volo Bog workshop. Photo by Greg Hitzroth.



1



2



3



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# Plants of Concern: Standardized Rare Plant Monitoring Using Trained Volunteers

Final Report to Chicago Wilderness

**Grant FWS0705**

Chicago Botanic Garden

March 2009

*Covering the period from January 1, 2008 to December 31, 2008*

*with comparative analysis from 2001*

Submitted by:

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Principal Investigator

Co-authored by:

Rachel Goad, Plants of Concern (POC) Research Assistant

With contributions from:

Bianca Rosendorn, Conservation Data Manager

*This project was funded through a grant program supported by the U.S.D.A. Forest Service Northeastern Area, State and Private Forestry, and the U.S. Fish & Wildlife Service, in support of Chicago Wilderness. U.S.F.W.S. and U.S.F.S. grants of federal monies are administered by the Illinois Conservation Foundation.*

**Chicago Botanic Garden  
Report to Chicago Wilderness  
on Plants of Concern:  
Standardized Rare Plant Monitoring Using Trained Volunteers**

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## PLANTS OF CONCERN: CONCEPT AND OBJECTIVES

Plants of Concern (POC) was launched in 2001. This long-term rare plant monitoring initiative is unique to the region in its use of standardized monitoring protocols. The program has now completed eight years of monitoring and has accumulated a substantial base for analyzing long-term data on a significant number of species and Element Occurrences.

POC addresses the following needs, as presented in the Chicago Wilderness (CW) Biodiversity Recovery Plan: to document the locations of rare species, to provide long-term monitoring of the status of rare species populations, and to track their response to management. POC data (research instead of data, as we use data later in the sentence?) provides managers with the scientifically acquired data needed to address management issues on their sites and can be used to understand the status of individual Element Occurrences (EOs) as well as multiple populations of a species across the region. On a regional scale, it builds the basis for collaboration in adapting, developing, and implementing management strategies to ensure the presence of these species on a sustainable and stable basis. This long-term monitoring will allow CW to determine at regular intervals the status of rare plant populations in relation to a monitoring baseline and management practices.

In Chicago Wilderness' 2006 *The State of Our Chicago Wilderness. A Report Card on the Ecological Health of the Region*, POC was cited as playing a key role in measuring the status of rare plants. "The most notable progress toward the Biodiversity Recovery Plan goals for endangered and threatened species is the development of a region-wide monitoring program and common database for rare species ... Plants of Concern."

Species monitored by POC have been selected largely from the 1999 *Chicago Wilderness Biodiversity Recovery Plan's* species priority list because they are state endangered or threatened and are considered by regional land managers and ecologists to be rare and significant within the CW region. The non-listed species monitored by POC are "species of concern" that represent individual landowners' choices of rare species that they wish to track at the county level. This list has been distributed to the Advisory Group, and landowners are encouraged to create new monitoring assignments to track these rare species in their areas.

The geographic area covered by POC since 2001 has been the six counties of NE Illinois, with one site in Kankakee county. Sites in NW Indiana were added in 2006 and 2007 and in SE Wisconsin in 2007. It is the hope of CW and the POC program to see implementation, if not administration, of POC protocols in all areas included within the CW region. (See Map, Attachment 1.)

POC incorporates the following five interrelated elements, all equally important to its success. Through them POC has become recognized as a unique, viable, long-term monitoring program:

- Monitoring rare plants, particularly state-listed species, over time using an expanded census protocol to discern population trends within a management context (see Level 1 form, Attachment 2). Selected species have been targeted for more intensive demographic monitoring (Level 2). Since 2004, a modified Level 2 program has continued, much of it through research projects coordinated by CBG researchers assisted by volunteers.
- Using Advisory Group-approved standardized protocols throughout the region to gain uniform data on a regional basis.
- Monitoring rare species in relation to management activities reported by monitors and land managers to form a feedback loop for short- and long-term adaptive management responses (Attachment 3).
- Training volunteers as citizen scientists to significantly leverage agency resources for monitoring rare species and to create an informed conservation constituency.
- Working collaboratively with public and private landowners, land managers, and agencies, through an Advisory Group (Attachment 4), to generate a shared approach to regional monitoring.

## SUMMARY: CUMULATIVE MONITORING RESULTS 2001 – 2008

In 2008, the project’s eighth year, POC again saw increases in the number of species, sites monitored, and degree of landowner involvement. Retention of Element Occurrences (EOs) was high, with 62.7% of EOs (listed and non-listed) monitored in previous years also monitored in 2008. In 2008, 105 new EOs were monitored, more than doubling the number of new EOs monitored in 2007. Element occurrences of the 107 listed species monitored by POC in the NE Illinois counties represent approximately 56% of the listed EOs in the region, as recorded by the Natural Heritage Database as of 2008. The following graph and table are detailed in the remainder of the report and in Attachments 6-8. *(Note: The statistics in the following figures, tables and attachments were derived from the POC database for analysis on several different dates starting 2/23/09 and may reflect minor discrepancies in numbers.)*

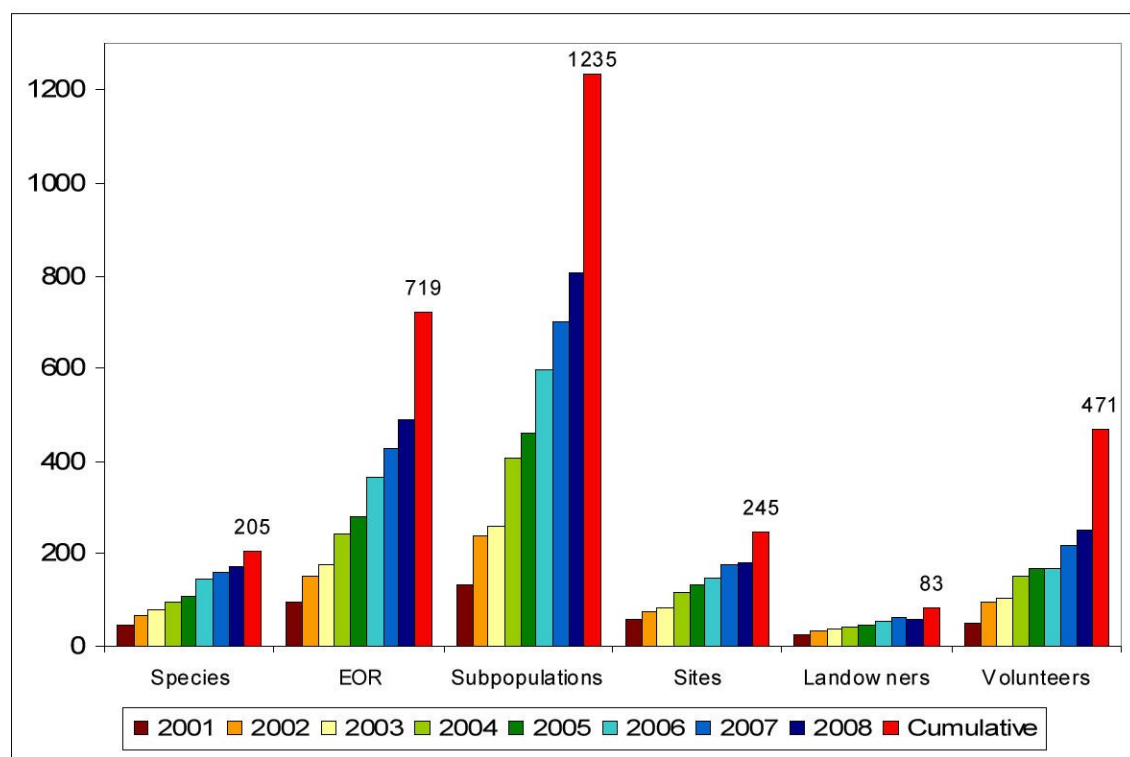


Figure 1. POC accomplishments and participation for all years, 2001-2008. Includes IN and WI.

Year	2001	2002	2003	2004	2005	2006	2007	2008	Cumulative
<b>Species</b>	44	66	77	95	108	144	161	173	205
<b>EOR</b>	96	153	178	244	281	365	427	490	719
<b>Subpopulations</b>	130	239	260	409	460	595	699	806	1235
<b>Sites</b>	57	75	82	114	132	149	178	180	245
<b>Landowners</b>	26	33	38	40	47	54	62	58	83
<b>Volunteers</b>	49	95	102	151	169	168	218	249	472

Table 1. POC accomplishments and participation for all years, 2001-2008, including IN and WI.

\* Includes 110 listed and 95 rare, non-listed species (Attachment 5).

\*\*A subpopulation is defined as a grouping of a species within the same EO that is tracked separately because it is located more than 50 meters from another grouping, or because the grouping is within a different management unit or habitat.

In each annual report, numbers reported in previous reports may shift slightly because of late submission and data entry. These are included in subsequent reports.

**Species monitored in multiple counties** (see Attachment 8 for a breakdown of listed and non-listed species and the number of EOs monitored for each).

*Species (listed and nonlisted) monitored across multiple counties are the basis for a regional assessment of species status.*

<u>Illinois</u>	<u>Wisconsin*</u>	<u>Indiana*</u>
1 species in 6 counties		
1 species in 5 counties		
11 species in 4 counties		
22 species in 3 counties		
48 species in 2 counties	2 species in 2 counties	1 species in 2 counties
117 species in 1 county	20 species in 1 county	4 species in 1 county

\*Five species are only monitored outside of Illinois, two in Wisconsin and three in Indiana. The other species represent an expanded monitoring range for Illinois-monitored species.

**2001-2008 cumulative EOs monitored (listed and non-listed), by IL county:**

Cook County:	183
DuPage County:	142
Kane County:	52
Lake County:	201
McHenry County:	62
Will County:	44

**Volunteer statistics**

*Number of cumulative volunteers by county: 2001-2008 (some monitors have assignments in more than one county).*

<u>Illinois</u>		<u>Wisconsin</u>	<u>Indiana</u>
Cook: 170	Lake: 136	Kenosha: 11	Porter: 3
DuPage: 46	Will: 56	Waukesha: 1	
Kane: 55	McHenry: 77	Walworth: 8	

*New volunteers in 2008 (total: 90; 6 monitored in two or more counties)*

Cook: 24; DuPage: 6; Kane: 3; Lake: 28; McHenry: 18; Will: 6. (IN: 1; WI: 11)

Average: 14.2 new volunteers per IL county.

*Volunteer retention*

Retention from 2007 to 2008: 59.4% (148 of 249)

Retention from 2001 to 2008: 67% (167 of 249 volunteers who monitored in 08 also monitored previously)

Of interest is that 105 of the 249 volunteers (42.2%) who monitored in 2008 had monitored in three or more preceding years, and 167 of 471 volunteers (35.5%) who monitored at any time in the program did so for three or more years.

Volunteers monitoring for 8 years:	16
Volunteers monitoring for 7 years:	18
Volunteers monitoring for 6 years:	20
Volunteers monitoring for 5 years:	24
Volunteers monitoring for 4 years:	50
Volunteers monitoring for 3 years:	39
Volunteers monitoring for 2 years:	85

Volunteers monitoring for 1 year: 220 (includes 90 new volunteers in 2008)		
	<u>2008</u>	<u>2007</u> (for comparison)
Volunteer hours in the field in 2008	2062.7	1599.9
Volunteer hours in workshop training in 2008	501.5	445.0
Volunteer hours in office support in 2008	<u>248.5</u>	<u>307.0</u>
Total	2812.7	2351.9

### *Stewards*

In 2008, 24.1%, or 60 of 249 monitors, were also volunteer stewards. Overall, 19.16%, or 87 of 454 of our volunteers are also stewards. The percentage of stewards monitoring is increasing.

## **THE VOLUNTEER COMPONENT OF POC**

The role of the volunteers in POC cannot be overstated. They are the backbone of the program and POC could not function without them. All the major agencies recognize the importance of volunteers in greatly leveraging their resources for monitoring and management work. At this point, each major agency has one or two staff, usually a volunteer coordinator and/or ecologist, assigned to work with POC in recruitment, training, and other forms of assistance.

### **Recruitment**

Volunteers were recruited through word of mouth (agency volunteer coordinators and current POC monitors), articles and announcements in stewardship newsletters, such as *The Habitat Herald* (see Attachment 10), and staff presentations. The workshops were listed on the POC website and promoted through an email newsletter to (previous and current?) POC volunteers.

On October 19, 2008, POC held a volunteer appreciation event in partnership with the Chicago Wilderness Habitat Project, dubbed the 'Habitat Hootenanny'. Approximately 80 people attended the event at the Chicago Botanic Garden. Eighteen certificates of appreciation were presented to outstanding POC volunteers.

### **Training**

Volunteer training occurred in two different formats: 5 ½ hour workshops and in-field training. Five workshops were offered, one each in Cook, and Will Counties, two in Lake County, and one in Kenosha County, Wisconsin. Ninety-three (93) prospective and some returning volunteers were introduced to POC program objectives and trained in field monitoring techniques for Level 1 protocols. Representatives from county agencies presented information about rare plants to be monitored in their counties, guided volunteer assignments, and discussed the relationships between monitoring and management and the benefits of POC to their work. The sensitivity and confidentiality of rare plant locations was stressed in training sessions, and new volunteers were required to sign a Confidentiality Form. In the field, POC program staff, interns, land managers, site stewards, or experienced volunteer monitors provided new monitors with additional field assistance on protocols and an orientation to sites and populations.

Volunteer retention is important for ensuring continuity of monitoring and consistent application of protocols. Retention rates from year to year have held fairly high, as reported above. Agency staff members also contribute to volunteer continuity and consistency. Since 2001, POC has worked with many of the same staff from the major agencies. Where there has been turnover, a new staff member has been assigned to take on POC responsibilities. It is clear there will continue to be a high level of staff involvement working with the volunteers, as each year new volunteers need support in the field. However, as volunteers are trained, they become more self-sufficient and can mentor recruits, and they have done so successfully.

## Focus Group

On March 6, 2008, a Focus Group of 12 randomly selected POC monitors met with Jennifer Schwarz, Manager of the Center for Teaching and Learning at CBG. (See Attachment 11 for the Informed Consent Form, Attachment 12 for the Participant Information form and Attachment 13 for the Focus Group Question Guidelines). No POC staff members were present, to allow for freedom of expression. The session was video-taped and two transcriptions were made by two POC volunteers.

The purpose of the group was to determine if, through POC, participants:

- understand and use the scientific process
- feel they contribute to scientific knowledge and research
- believe the program contributes to science and conservation
- apply their experience to conservation action
- experience an impact on their personal lives

Participant demographics

- 5 experienced POC monitors, 7 new (1 year or less in the program)
- median age 59, range from 26-68 (6 retired)
- 92% attended college and beyond
- 16% had formal science background; 42% of others took science programs/classes
- 100% had some or much background in conservation activities

Citizen Scientists were involved in the scientific process, through activities including:

- focusing, attending to detail
- learning to use taxonomic keys
- obtaining first-hand, in-situ experience
- collecting data with precision in a repeatable, long-term process
- experiencing non-linear learning, making connections as they observe the context
- analyzing: recognizing the significance of multiple years of data from across the region to understand population trends
- conducting their own research through various resources – experts, books, guides, photography, herbaria, the internet

Conservation impact: participants

- feel they contribute to plant science knowledge base
- appreciate that they expand on limited resources available to professionals
- feel POC contributes to conservation and is recognized
- participate in conservation actions as a result of POC involvement
  - personal sharing/teaching
  - stewardship
  - political activism

*“We’re all acting as stewards of the land as a result of this program.”*

*“With so little wild space left, what we do makes a difference.”*

Personal impact: 100% of participants felt their lives had changed. They:

- want to learn more
- have greater awareness of connections in nature
- obtain social rewards: *“buddies with a common bond.”*

- create spiritual connections with the earth

*“We are life-long learners; I learned more than I thought possible.”*

*“I think POC also addresses the spiritual within us, not just the emotional, intellectual and social, but also the much deeper vital needs in a person. Bringing us back to the earth.”*

The original intention was to have two Focus Groups to determine what differences there might be between new and experienced monitors and how their attitudes may have changed as a result of the program. However, because the numbers were so small, we put the two levels together and tried to determine whether there were differences between those who had little or no experience with POC and those with more experience.

What POC found was that both new and experienced volunteers had a very high level of conservation awareness and commitment, which suggests that volunteers in a program like POC are self-selected among the conservation-minded public. Other studies have shown this as well. The main differences between the new and the experienced group is that experienced people felt 1) their knowledge of plants and the scientific process increased and became more focused as they used the resources of the program, and 2) their involvement in conservation advocacy or activities was better informed and expanded, e.g. through various types of teaching/ mentoring/ stewardship activities.

Susanne Masi presented the results of the focus group at the Citizen Science Symposium at the ESA Annual Meeting in August.

## **LEVEL 1 MONITORING DATA**

### **Database, Data Submission, Storage, Reporting, and Confidentiality**

All Level 1 monitoring data are entered into the CBG-housed Access database developed and managed by Conservation Information Manager Bianca Rosendorn. Because of the sensitive nature of the data on listed species, the Access database is restricted to selected CBG personnel and volunteers. Volunteers must submit field/paper copies of their monitoring forms, but also have the option of submitting reports online on a secure POC website. Individual monitors can access their assigned monitoring reports only by means of a password. In 2008, 52.4% (389 of 742) of forms we received were submitted through our website, saving hours of manual data entry by program staff. Monitoring reports are reviewed for accuracy and completeness both by landowners, who have access to their own site reports, and POC staff. After data entry and analysis are completed, Access-based reports are submitted to the Illinois Natural Heritage Database, to landowners for their sites, and to the Nature Preserves Commission for nature preserve sites.

Through Level 1 work, POC is gathering census data about the status of individual populations, such as the number of individual plants and the area covered by each population, as well as a record of the threats and invasive plants impacting populations. Monitors record observable management activities that have occurred within the previous year; additionally, monitors who are also volunteer stewards or land managers may choose to provide management information from their own records.

Level 1 protocols (Attachment 2) were essentially finalized by 2002, having been evaluated by the Advisory Group after the first year of monitoring. In subsequent years, only minor modifications were made. This standardization of protocols is important for data consistency across years and counties.

### **Results, Data Analysis and Discussion**

The Level 1 analysis below reflects information based on subpopulation reports entered in the database through March 3, 2008. Each EO may have one or multiple subpopulations, defined as separate groupings of plants spaced at least 50m apart, or distinguished from each other by habitat, management applications, or



other factors. For each category of analysis, only reports with data in that category were included in the percentages given. Forms with no data (NA) for a particular field were excluded from the percentages given in the analysis, but, where possible, the percentages of the total forms that were excluded due to a NA answer are shown in order to provide a perspective on sample size.

It is important to note that in the analyses presented below, data for each year are not based on an equivalent set of populations monitored. Each year, new populations and subpopulations are added to the program, and previously monitored populations/subpopulations may not be monitored in that year. Therefore, yearly increases or decreases in values do not necessarily reflect a cumulative change. In addition, as populations move and grow, it sometimes becomes necessary to merge formerly separate subpopulations. Mergers were particularly common in 2007 and 2008, which reduced the total number of subpopulations. The overall value of this data is to reveal general levels of threats, management activity, and recruitment throughout POC populations. More direct assessment of change is possible when the analysis is applied to the same group of populations over time. Examples of this kind of analysis are included here and are identified as “trends”. In these analyses, the same subset of subpopulations is examined over time. Usually only those with 5 to 7 years of data are used for this type of analysis.

### Ecological Threats

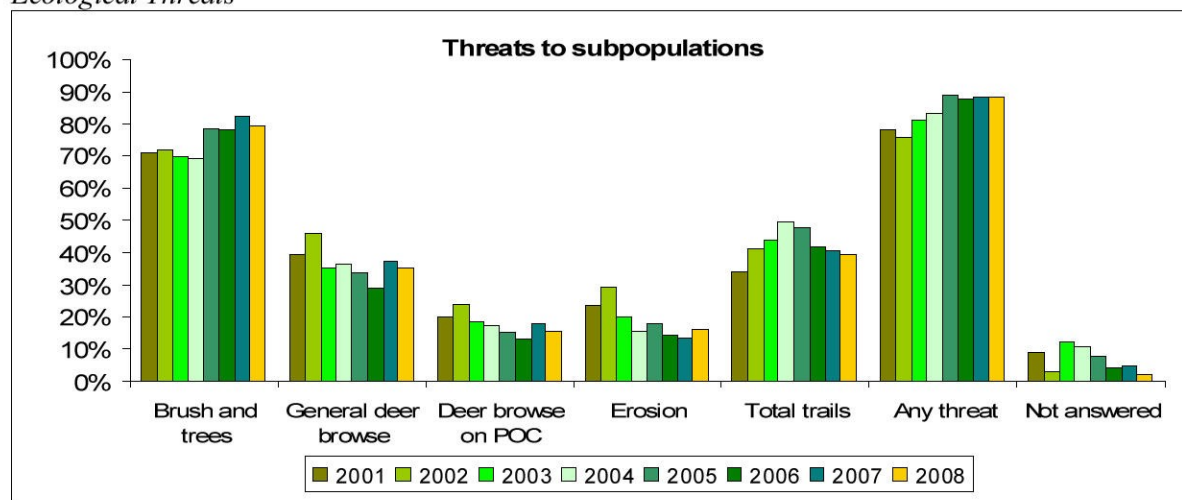


Figure 2. The percent of subpopulations in each year with a given threat present. The analysis of threats presented here does not reflect the percent impact or magnitude of each threat recorded by monitors, but only the presence of the threat. Trends in the percent of impact are presented in Figure 3.

Only unauthorized trails were reported in 2001, so there is no value for authorized trails in 2001. Authorized and unauthorized trails were lumped into ‘total trails’ for this analysis. In 2001 and 2002, no distinction was made between brush encroachment of less than or greater than 1 meter in height, so those two categories are combined here as well. Separated data is available for these lumped values, for most years, upon request. The ‘Not answered’ columns indicate the low percent of reports for which no answer was given for this section.

As shown in the above graph, the percent of subpopulations that were impacted by at least one ecological threat (invasive brush and trees, deer browse, erosion and trails) was: 78% in 2001; 76% in 2002; 81% in 2003; 84% in 2004; 89% in 2005; 88% in 2006; 88% in 2007; 88% in 2008. These numbers are fairly consistent from year to year, with a slow increase over time. The importance of recording threats to populations has been increasingly stressed in POC training. Over all sites, for all years, 90% of subpopulations have had at least one threat reported. This is likely higher than yearly values because it represents all years and all subpopulations, not a subset of subpopulations for a single year.

The monitoring form includes a prompt to record additional threats. The most common threats added to the list in descending order of prevalence are: trampling (by humans, deer, dogs, etc.), trash and pollution, mowing, and browse (such as by insects or small mammals).

Brush and tree encroachment, which can include native species such as *Cornus racemosa*, as well as invasive species, continues to be the most widespread threat to monitored populations, followed by trails and deer browse on all species within the population area. Overall, considering that the set of monitored occurrences is not the same from year to year, the relative percent of subpopulations impacted by each of the recorded threats appears relatively consistent from year to year.

To get a clearer picture of the trends in threats over the years, a linear trend test was conducted on those 274 subpopulations with at least 5 years of data (not necessarily 5 consecutive years) on the magnitude of the threats to the subpopulations. On the forms, monitors pick a range of magnitude of impact. The choices are: 0%, 1-25%, 26-50%, 51-75%, and 76-100%.

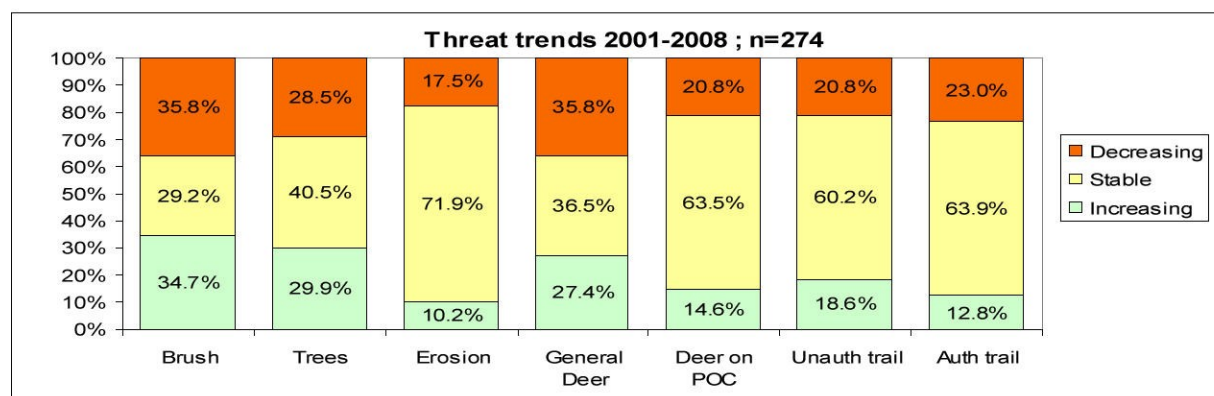


Figure 3. Trends in the magnitude of threat levels for the 274 subpopulations with at least 5 years of data from 2001-2008.

The trends in threat levels present a somewhat similar picture to the analysis of the percent of subpopulations impacted (Figure 2). For all threats except for brush, the greatest percent of subpopulations with that threat show a stable trend, rather than an increasing or decreasing trend. This roughly corresponds to the relatively stable nature of threats shown in Figure 2.

Because of the large threat they pose to Plants of Concern, we closely examined the effect of invasive species. The invasive analysis presented in Figure 4 is based on data indicating the presence of the top 10 most reported species each year, rather than on the percent of subpopulations affected.

Invasive species

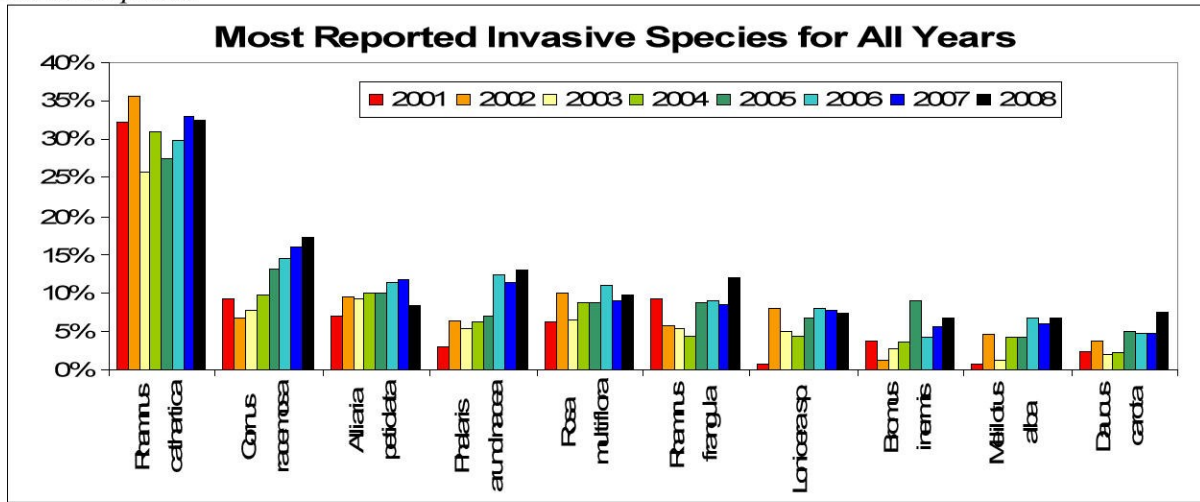


Figure 4. Top 10 most reported invasive plant species documented by POC monitors from all years. Percentages are based on the ratio of reports indicating presence of an invasive species to the total number of subpopulations with reports submitted that year.

Monitors have identified 243 distinct species as invasive plants over eight years, many of these having a minor or contextual presence. Of all monitored subpopulations, 90% had at least one invasive species present in 2008. As with threats (Figure 2), this analysis does not look at the magnitude of impact on the individual subpopulations, but it focuses on the percent of subpopulations impacted to any degree. The magnitude of invasive impact is examined below (Figure 5).

Monitors occasionally record plants by genus if they are unsure of the species (e.g., *Rhamnus* sp.). In order to incorporate these unidentified species with their identified conspecifics, the invasive list was collapsed for analysis to a generic list by combining the individual species of each genus (e.g., *Rhamnus cathartica*, *Rhamnus frangula*, and *Rhamnus* sp. were combined into *Rhamnus*). In this way, we examined the magnitude of impact of these taxa. For the 40 genera (Table 2) for which we have at least 5 years of monitoring data, 28.5% are annually increasing in magnitude at the subpopulations where they occur, while 62% are decreasing and 9.5% are stable.

<i>Acer</i>	<i>Dipsacus</i> (2*)	<i>Phalaris</i>	<i>Sedum</i>
<i>Agropyron</i>	<i>Elaeagnus</i>	<i>Phragmites</i>	<i>Solanum</i>
<i>Alliaria</i>	<i>Elymus</i>	<i>Pinus</i> *	<i>Solidago</i> (2)
<i>Berberis</i>	<i>Fraxinus</i> *	<i>Poa</i>	<i>Sporobolus</i>
<i>Bromus</i>	<i>Helianthus</i>	<i>Populus</i> (2)	<i>Taraxacum</i>
<i>Celastrus</i>	<i>Lonicera</i> (3*)	<i>Rhamnus</i> (3*)	<i>Typha</i>
<i>Chrysanthemum</i>	<i>Lysimachia</i>	<i>Rhus</i>	<i>Ulmus</i>
<i>Cirsium</i>	<i>Lythrum</i>	<i>Robinia</i>	<i>Viburnum</i>
<i>Cornus</i>	<i>Melilotus</i>	<i>Rosa</i>	<i>Xanthium</i>
<i>Coronilla</i>	<i>Oenothera</i>	<i>Rumex</i>	
<i>Daucus</i>	<i>Pastinaca</i>	<i>Salix</i> (2*)	

Table 2. Invasive genera recorded by POC for at least 5 years. Genera are assumed to include one taxon unless parenthetically noted otherwise. A star (\*) indicates that a general 'sp.' designation is included as one of the taxa included for that genus (i.e. the (2\*) for *Salix* means that it includes *Salix* sp. and *S. interior*).

In order to further examine the trend of decreasing magnitude for these invasive genera, the preceding table was first ranked by prevalence (number of subpopulations reporting that genus as invasive). This narrowed the list to 16 genera that have been reported from more than five subpopulations for five or more years. Then we examined the magnitude of impact over time for these 16 genera, and found that 13 of them are decreasing in overall magnitude (Figure 5). The reason for this trend is unclear, but may be attributable to a

greater awareness of these taxa by land managers—in part because of POC monitoring reports—or greater resources devoted to their control. Three genera, *Lonicera*, *Xanthium*, and *Populus*, are still increasing.

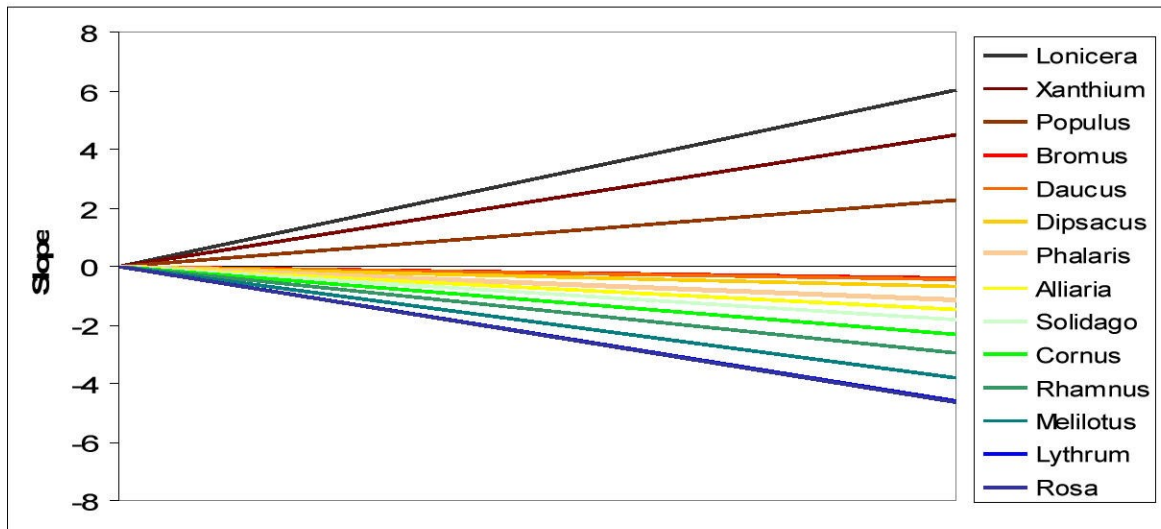


Figure 5. Slope of the magnitude of the 16 most prevalent invasive species. The legend reads from greatest slope (*Lonicera*) to smallest slope (*Rosa*).

Despite this overall decreasing trend in magnitude, there is an increase in the number of invasive species reported. If the data are analyzed from the perspective of the monitored subpopulations instead of the invasive species, we see that, of 274 subpopulations with 5 or more years of data, 62.6% of these have an increasing number of invasive species present, while 28.9% have a decreasing number, and 8.4% are stable. Additionally, the percent of subpopulations reported with no invasive species is declining each year, from 22.3% in 2001 to 9.8% in 2008. A variety of factors may contribute to the apparent increase in number of invasive species, including the expansion of POC monitoring into less managed and lower-quality areas, the spread of invasive species throughout the Chicago region, a growing awareness of invasive species among our monitors, and a broadening definition of what constitutes an ‘invasive species.’

### Reproduction

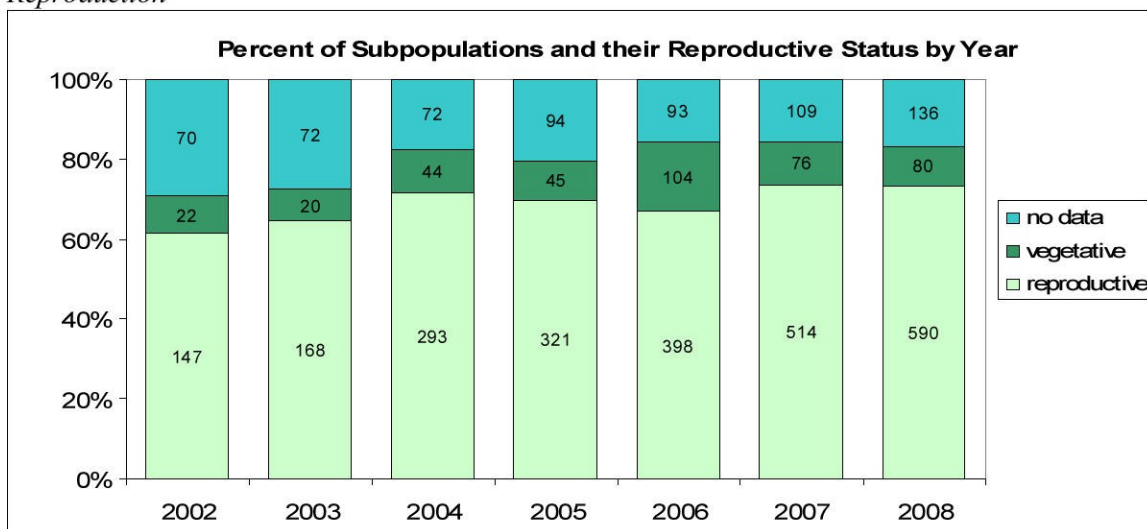


Figure 6. The percent of subpopulations reported as reproductive (i.e. flowering and/or fruiting), vegetative, or for which no reproductive data was available for all years. Total number of reports per category and year is shown in each bar. The total number of reports varies each year (see Table 1). In 2001 forms did not include a field for flowering and fruiting and could not be analyzed in a similar way.

Our data indicate that a large percentage of monitored subpopulations are reproducing (Fig.6). This becomes clearer when forms missing reproductive data are excluded; in such an analysis, we see that over all years, an average of 86% of subpopulations are reported as reproductive (range: 79-89%). Monitors ideally make their observations during flowering time, but in some instances this is not feasible and fruit presence is recorded. With annual species it is not unusual to find plants in both flower and fruit at the time of monitoring. Level 1 numbers do not reflect full reproductive status of populations, i.e., whether fruits are produced (for most reports), whether seed is viable, and whether juvenile recruitment is taking place. Annuals, which are reproductive every year, are included in the percentages above. About 10% of all subpopulations are designated as annuals each year. The average percent of non-annual reproductive subpopulations over 8 years is 74.8% (range: 68-79%).

### Management

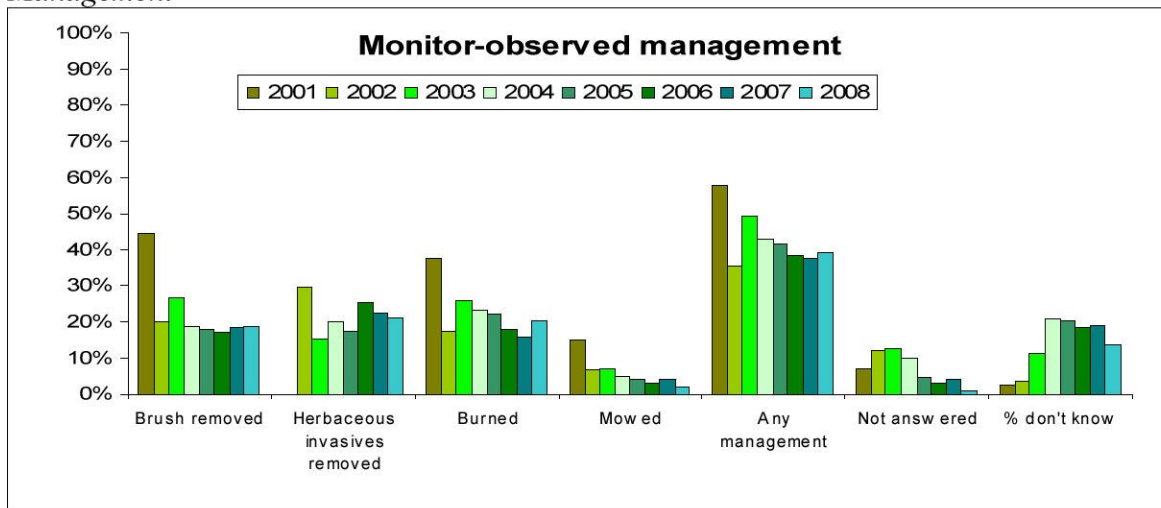


Figure 7. Management observed by monitors for all years. Percentages for individual management techniques are based on only those reports for which a “yes” or “no” answer was given for each management activity (as observed or known by the monitor). The percent of reports with blanks or a “don’t know” response are shown separately. Herbaceous invasive removal was not recorded in a field in 2001, although it was mentioned in the notes section on the forms.

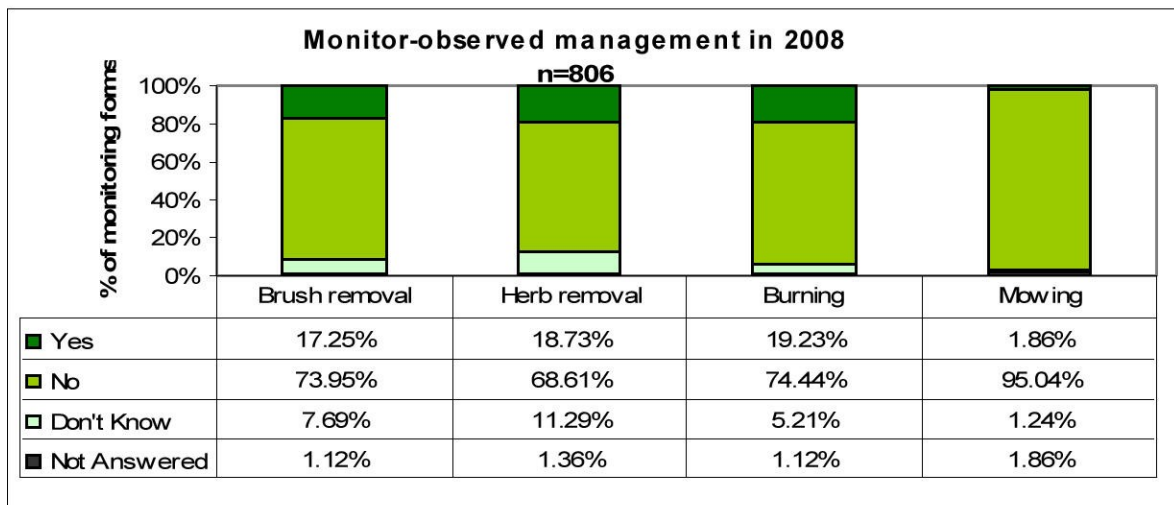


Figure 8. Monitor-observed management for 2008, including all reports.

### Evidence of Management

Based on monitors' observations, 39.1% of POC populations showed evidence of some type of management activity in 2008 (out of 806 total reports). Only .99% of the monitoring forms submitted were left completely blank in the Land Management section. It is worth noting that a significant number of monitors are also staff, stewards or restoration volunteers at the sites they monitor, and as a consequence, these individuals are knowledgeable about the management activities on-site, often through direct participation.

Overall, after a notable decrease in percentages from 2001 to 2002 (Fig. 7), levels of management for all activities appear relatively stable, despite the changing set of subpopulations monitored each year. With further investigation we may find that, in 2001, volunteers were largely assigned to known species locations at sites that were under an active management schedule. See page 15 for a discussion of management reports from land managers.

Burning is the most frequently reported management activity, followed closely by herbaceous and brush removal. It should be noted that brush removal or burning within the same population is seldom done annually, so these percentages may seem low due to a multi-year cycle for these activities. Mowing was high in 2001 possibly because monitors considered mowing for trail or roadside maintenance to be a management strategy. This type of mowing, however, usually poses a threat to the population. We have since stressed in training a difference between mowing as a management strategy (i.e. to control invasives or brush, or as a substitute for burning), and unintentional mowing of the population, which may pose a threat. Other management activities recorded in an open-ended question without quantification, include deer culling, fencing/deer exclosures, and hydrological modifications.

In addition to answering 'yes', 'no' or 'don't know' for a given management technique, monitors are asked to report the percent of the subpopulation affected by the management technique. For example, if a prairie is burned, was the whole monitored subpopulation burned, or only 50% of it? In Figure 9 this is called 'magnitude of impact'. It should be noted that monitors may be unable to provide this level of detail regarding management that has occurred on site if they haven't participated in it, so these data are not a complete record of management impact. Accordingly, the availability of magnitude of impact data varies over time (Table 3).

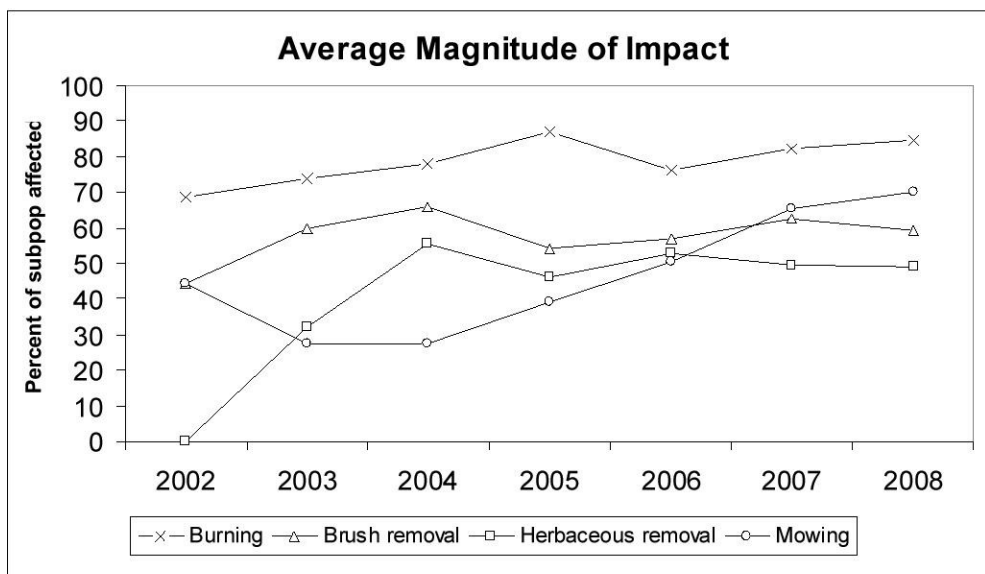


Figure 9. Average magnitude of impact for four management techniques based on available data. For instance, in 2002, the average magnitude of impact on all subpopulations from burning was 68%. These percentages are based only on reports for which this data was available (see Table 3). Magnitude of impact was not recorded in 2001.

	2002	2003	2004	2005	2006	2007	2008
<b>Burning</b>	77.78%	81.48%	70.51%	82.61%	73.40%	84.21%	79.35%
<b>Brush removal</b>	37.50%	57.89%	45.16%	79.17%	74.73%	70.91%	68.35%
<b>Herbaceous removal</b>	0.00%	36.67%	59.32%	55.56%	76.23%	48.03%	60.26%
<b>Mowing</b>	75.00%	73.33%	83.33%	66.67%	52.94%	92.59%	73.33%

Table 3. Percent of reports that include the magnitude of impact for a given management technique. For instance, in 2008, of the reports where burning was reported as occurring (155 of 806 records), 79% of them also gave a percent indicating how much of that subpopulation was affected (123 of 155 reports). Magnitude of impact was not recorded in 2001.

Looking at these data, we see that burning has the most widespread and regularly observable effect on POC subpopulations. Since most of Illinois' ecosystems have historically depended on fire, it makes sense that this technique is often used in accordance with rare species management. Its use often results in broad, dramatically affected areas, which are likely to be recognized by volunteers, whereas brush and herbaceous plant removal often have more localized effects that may not be as observable. Data analysis from land managers' reports will provide additional information about actual known management practices within monitored populations.

### Land Management Reports from Managers

In conjunction with the Level 1 monitoring forms, since 2002, POC has asked land managers to complete Land Management (LM) forms detailing the types of management that take place both within the populations and on the site, as well as land use history (Attachment 3). This form provides more detailed information than volunteers can be expected to provide about current and past management of the specific areas where populations occur. While managers report about activities in the area or management unit where the populations occur, they may or may not know precisely how management affects specific population areas as well as monitors do. Therefore, the two reports serve to complement each other.

Overall, POC is building up a valuable management record. On Part 2 of the LM form, we ask for land use history, general management history before monitoring began, information about adjacent land use, and whether a population has been introduced. These historical aspects do not change year to year, and managers only need complete this section once. In Part 1, we ask annual questions about the precipitation regime (e.g. flooding or drought) and site and population management in the past year, to record site level and population level burning, mowing, invasive species management, and deer removal. We hope that as data accumulates we will be able to construct a picture of the cycles of land management to compare with the population cycles of the plants we monitor to uncover the influence of management on the plants of concern.

All submitted LM reports have been entered into the database. In 2007 and 2008, POC staff undertook a concerted effort to gather LM reports from managers and offered them alternate methods of completing the information on the form, including an Excel spreadsheet, an Access database format, or using a single form for multiple species within an area. In addition, the LM form was significantly simplified and clarified in 2008, while still requesting essentially the same data. This effort is being met with cooperation on the part of managers, who are eager to see the impacts of management on their rare plant populations. For example, in 2007 POC received 325 LM reports (46 % of monitoring reports submitted) and in 2008 we received 257 reports (32 % of monitoring reports submitted, with more expected during the coming months after landowners have reviewed their 2008 reports. Cumulatively, POC has received at least one report for 390 of all subpopulations monitored, or 31.6% of the total subpopulations monitored. Managers comment that completing additional forms is challenging in light of their other responsibilities. We have begun discussing with some managers the possibility of having monitors who are also stewards complete the LM form, which would then be reviewed by the manager.

POC did not conduct a comprehensive analysis of these data as projected during 2008, mainly due to time constraints and the emphasis given to analysis of monitoring reports. Given the growth of the program, and this year the loss of one staff position due to decreased funding, it appears that we will only be able to undertake limited analysis in the foreseeable future. It is our hope to attract other researchers or graduate students to look closely at the patterns being reported. Meanwhile, continued collection of this data is imperative, and managers are encouraged to review these data for their own sites – POC can share tailored queries from the database for individual sites to show multiple years of population counts and changes in threats and invasive species in conjunction with management activities undertaken.

Despite these challenges, specific management responses to POC monitoring are already being reported in observational ways. Some examples are presented:

\* At Somme Prairie Grove, Stephen Packard and his volunteers have successfully caged several monitored species prone to deer browse. They are currently developing caging to inhibit vole herbivory which has been shown to take a significant toll on one threatened species.

\* At Illinois Beach State Park, Brad Semel recently responded to reports of brush encroachment on a monitored orchid by clearing the brush around half of the population. Monitoring reports over the next two years should suggest whether brush clearing will lead to increases in population counts.

\* At Midewin National Tallgrass Prairie, firebreak mowing has been rerouted and rescheduled to protect a threatened species in an area in which a new population was discovered by monitors two years ago. Also at Midewin, brush clearing was positively related to increases in population numbers of this species, and additional clearing is planned to determine whether the population will move into cleared areas.

\* Bill Sullivan, a steward at Ryerson Woods, became a POC volunteer in 2008, monitoring 6 species in his first year. As he is already involved with management at Ryerson, his monitoring efforts are attuned to the needs of the populations he monitors and he is able to take steps to meet those needs. At one point this summer, he came across other POC volunteers monitoring a rare orchid at the site. They presented him with immediate management concerns (brush and herbaceous encroachment), which he returned to the area to address.

\*At West Chicago Prairie, level 1 data collected by volunteers indicated that deer were a serious threat to some of the rare species growing there. POC data was instrumental in helping the land managers decide to pursue permits to cull deer from the site in order to decrease that threat. In two nights, managers were able to remove 25 deer, further demonstrating that there were far too many deer on site. This action will greatly reduce pressure on rare plants at this site for the years to come.

*“Data that we receive from POC does not merely populate a database. The information on plant populations and demographics helps us to develop management plans for rare plants and to evaluate the success of our current management methods.”*

-Sam Flood, Acting Director, Illinois Department of Natural Resources

## **Population Analyses: Added Approach to Level 1 Analysis**

### *Types of Analyses*

With the long term data that POC is collecting, there are several questions that the program hopes to investigate. In general, POC wants to know how rare plant populations are changing over time and to decipher the important factors determining these trends. These questions can be viewed from a regional, species, community type, or element occurrence basis. Each of these foci can reveal interesting trends. Ultimately, POC hopes to help land managers determine best management practices for rare species populations both on a regional scale and within individual populations. To this end, linear trend analysis has been conducted for the past three years. Population viability analysis examples also have been created for the



past three years, though a full analysis of this type has yet to be completed. An updated example of PVA is presented below.

### Linear Trend Analysis

The linear trends of each subpopulation's counts were analyzed by drawing a line through the counts of each subpopulation across the years (trend line) and observing the slope. If the line is horizontal or rising, the subpopulation is stable or increasing. If the line is declining, the subpopulation is decreasing. The trend line is the product of a linear regression, which fits a straight line to the given population values. It does not originate from the first data point or terminate in the last data point of the set because it draws one straight line factoring in all of the data points in the set. This trend line is a model of the relationship between the data points. Below (Figure 10) is an *example* showing the linear trend for a *Cakile edentula* subpopulation, where the trend line goes between the data points, highlighting the slope in population counts from 2001-2008 to show that as the number of individuals rises, the line slants upward from left to right.

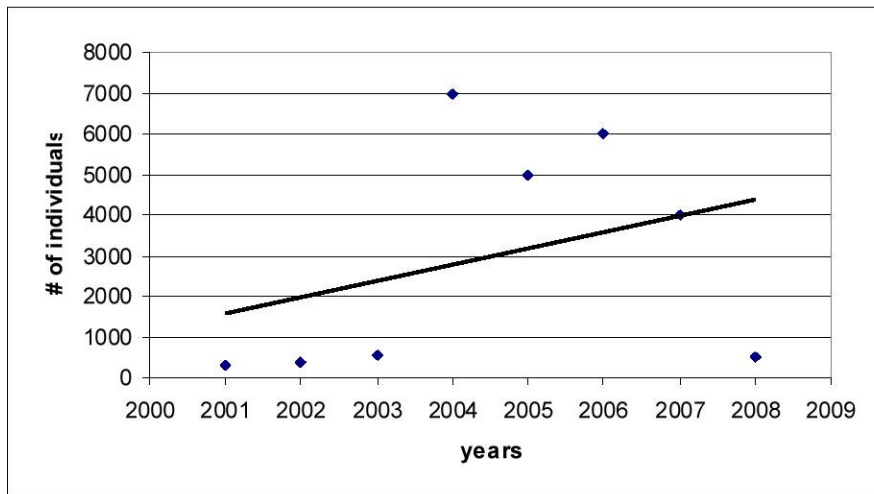


Figure 10. Graph of linear trend analysis for *Cakile edentula* at Site A.

The data used for the linear trends are only for subpopulations that were monitored for five or more years. Plant counts were used when available, but if a population was estimated, the mean of the estimation was used (*i.e.*, if estimated at 101-200 plants, 150 is the count). These data incorporate 258 subpopulations of all monitored species or 20.8% of our total data set. 52.7% of the subpopulations analyzed are generally increasing in number, 2.3% are stable, and 44.9% are generally declining in number. An analysis of region-wide trends by species has been conducted for the past three years, but no continuity has emerged from these yearly analyses, so they are not included here.

### Population Viability Analysis (PVA)

A population viability analysis is useful for looking at individual element occurrences or subpopulations because it predicts the probability of extinction of an individual population. These data can be used to infer which element occurrences are doing well and which are doing poorly. The benefits of this type of analysis are that we can look at an individual population, and can compare among sites. The drawback is that the analysis is slightly complicated and requires a long-term set of data. In order to make solid predictions, at least ten years of data are needed. At present, POC has 40 subpopulations that have been monitored for all eight years.

Two subpopulations were selected to display the *kind* of analysis that POC data will eventually be useful for. The following graphs are by no means a prediction of extinction or survival, but they are merely best guesses based on the data we have. It is also important to note that PVAs rely upon several assumptions that must be tested because this is only a sample set. The major assumptions of this analysis derive from the fact that it

relies solely upon population counts. It does not factor in the seed bank or any sort of stochastic event. It does not factor in management intervention or impact of threats, but assumes a trend isolated from other influences. It looks at current trends and makes a prediction of the viability of that population in the future. While simplistic, a general sense of the viability of populations could help managers prioritize more efficiently. For instance, is it worth putting resources into a small, failing population if there are other populations of the same species which may benefit from management?

One *Cypripedium candidum* and one *Viola conspersa* subpopulation were chosen to illustrate the potential for PVA analysis because they were either clearly increasing or decreasing across the years at their respective sites.

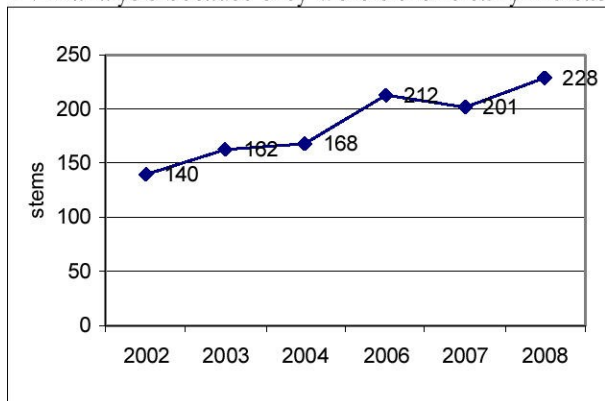


Figure 11 – Plant counts of *C. candidum* at site #1.

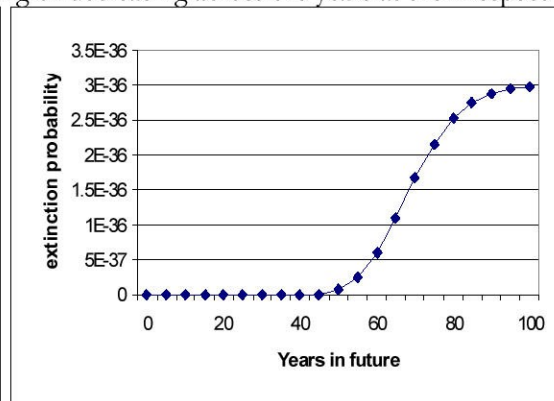


Figure 12 – Population Viability Analysis of *C. candidum* at site #1.

Linear trend tests indicate that *Cypripedium candidum*, which is monitored in 88 subpopulations, is increasing across the region. This species has been doing especially well at site #1 (Figure 11). The PVA for *C. candidum* at site 1 (Figure 12) shows that there is only a  $2.97 \times 10^{-36}$  chance that this population will go extinct within the next 100 years given current trends in population counts (in Figure 12, the notation is 5E-37 is the scientific notation for  $5 \times 10^{-37}$ ).

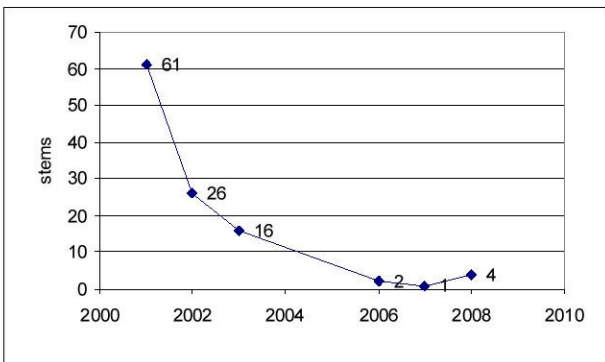


Figure 13 – Plant counts of *Viola conspersa* at site #2.

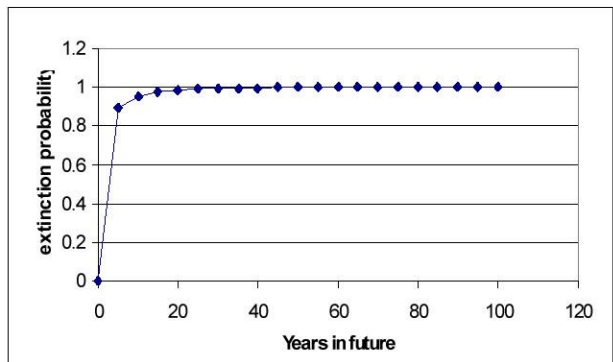


Figure 14 – Population Viability Analysis of *Viola conspersa* at site #2.

We know from the linear trend test that *Viola conspersa* is faring moderately well across the region. POC monitors 58 subpopulations of *V. conspersa*, and over half of these subpopulations (65%) are increasing while the others are decreasing. At site #2, the subpopulation is doing poorly (Figure 13). The PVA for *V. conspersa* at site #2 (Figure 14) shows that there is a 99% chance that this population will go extinct within the next 30 years.

While population viability analysis is promising, its complexity and the breadth of available data present a daunting challenge to current program staff. Due to budget cuts, program staff was cut from four staff

members to three staff members in 2008. A comprehensive PVA analysis of this type will require additional assistance, either from a dedicated student, intern, or an additional research assistant.

### Other Research/Level 1

With a growing Level 1 data set and the involvement of the Chicago Botanic Garden in graduate programs at Northwestern University, the University of Illinois at Chicago, and Loyola University, the potential is growing for attracting graduate students and other researchers to assist with data analysis. This important step would allow us to gain more information from the data than current POC staff have the resources to undertake.

For example, Diane Huebner, graduate student at Northwestern University, provided the following update about her work on *Cakile edentula*, a threatened beach species in Illinois that has been monitored by POC since 2001.

### A molecular, morphological, and experimental assessment of the conservation status of American sea-rocket (*Cakile edentula*, *Brassicaceae*)

The re-emergence of natural dunes along the shores of the Great Lakes in recent years is of particular interest in that these habitats not only provide natural erosion control but also support populations of locally rare taxa, including Great Lakes sea-rocket (*Cakile edentula* ssp. *edentula* var. *lacustris*). A century of shipping trade through the Great Lakes may be responsible for bringing a close Atlantic relative, *Cakile edentula* ssp. *edentula* var. *edentula*, to the shores of Lake Michigan as a ballast weed, and var. *lacustris* may now be hybridizing with var. *edentula*. I used a combination of morphological, molecular, and ecological approaches to test whether *edentula* and *lacustris* have distinct differences in fruit size and shape that correlate with other morphological characters, and in populations where they co-occur, morphological intermediacy was expected to be shown in putative hybrid individuals. Analysis of Variance of size traits of 357 plants and 114 offspring representing 9 Lake Michigan and 3 Maine sites, DNA sequencing of microsatellite gene regions of 56 plants, germination studies of 2,552 seeds, and one generation of open-pollinated plants grown in a common garden produced the following results:

- Fruit size showed intermediacy in both in-situ plants and offspring and was statistically significant in Lake Michigan plants: 13% *edentula* fruit morphs, 33% *lacustris* fruit morphs, 45% intermediate. Only *edentula* fruit morphs were found at Maine sites.
- Maine plants had significantly lower germination (*edentula*=49%, *lacustris*=44%, putative hybrids=44%, Maine *edentula*=17%)
- Initial molecular analysis showed low genetic variation across all sites
- The effects of generation on offspring were significant in seven of ten traits and insignificant in fruit dimensions, demonstrating that *Cakile* fruit morphology persists through generations
- Plant size, flower size, and number of fruits appear to be environmentally rather than genetically determined
- Maine offspring were significantly smaller and bore smaller and less fruits than parents, demonstrating a possible cost to salt tolerance, and not supporting the idea that Atlantic *Cakile* can establish itself in the Great Lakes

## LEVEL 2 DEMOGRAPHIC MONITORING UPDATE

Level 2 demographic monitoring of four species (*Viola conspersa*, *Cypripedium candidum*, *Cirsium hillii* and *Tomanthera auriculata*) was initiated in 2001, and includes tagging individual plants in permanent plots in order to track them over time. In the case of *Tomanthera auriculata*, an annual species, plants are newly tagged each year, and those tags are followed throughout the season. Specific protocols vary by species, but plant height,

leaf measurements (width or length), number of blooms, and seed set are all common measurements. Level 2 monitoring was partly discontinued in 2005 after a seed viability study was completed in 2004 and upon discussion with the Advisory Group. However, that year some Level 2 monitoring took place through related projects, such as Pati Vitt's *Viola conspersa* and *Tomanthera auriculata* research and Jeremie Fant's *Cirsium billii* genetic studies. In 2006, 2007, and 2008 several populations of all four species were monitored at Level 2. This further research activity demonstrates the ripple effect Plants of Concern has had in stimulating additional work on species for which a large amount of data is already available. Research can build on that data, thereby increasing its robustness and value. Program staff believe that ongoing Level 2 work, guided by researchers and assisted by volunteers, can result in a long term data set, relatively rare in ecological studies, that provides significant information on population dynamics unavailable through Level 1 work. University researchers, including graduate and post-doctoral students, as well as CBG staff can be and have been attracted to this work. Examples of more recent studies that have built on Level 2 demographic data include the following:

CBG geneticist, Jeremie Fant, and colleagues are working on a manuscript on the demography of *Cirsium billii*, using eight years of Level 2 data. No demography currently exists for this species, and a greater understanding of the life history of this rare thistle could improve management and therefore the health of populations across the region. Already though this work, it has become clear that this species is not a monocarpic perennial (a plant that exists perennially until it flowers, after which point it dies), as was previously assumed.

Brenda Molano-Flores (Illinois Natural History Survey) is combining data derived from POC Level 2 *Tomanthera auriculata* monitoring with her work on reproductive ecology, population genetics and host-plant determinations on that species. She presented, as first author with POC's Susanne Masi, at the BSA conference in July, 2008: "Rare Plant Conservation in USDA Forest Service Lands," as part of a symposium, Pollination to Population Structure – How Understanding Reproductive Biology Can Inform Conservation of Rare Plants. A follow-up article for a peer reviewed journal, such as *Conservation Biology*, is planned.

## PROGRAM EVALUATION

*POC met or greatly exceeded nearly all the goals and objectives and delivery of products as outlined in the grant proposal and listed below. Most have already been discussed in detail in the preceding text.*

**Objective 1:** Collect standardized monitoring data (population size, location, threats, and management) on rare plant populations in formerly monitored groups and five to ten additional occurrences per county of listed and unlisted rare species in northeast Illinois. The POC Advisory Group and individual agencies will determine specific monitoring goals and create a prioritized list of other rare and indicator species to be monitored.

*POC collected standardized monitoring data on 173 species in 490 occurrences, which included an additional 105 occurrences this year (a 17.1% increase from 2007). The number of EOs monitored increased in three out of six counties, and remained stable in the rest. POC now monitors approximately 56.2% of the Illinois listed EOs in NE Illinois, based on 2007 data from the Natural Heritage Database. The POC Advisory Group reviewed the species list at its December 2007 meeting and individual agencies met with POC staff in winter 2008 to determine agency specific monitoring goals for the 2008 season.*

	Cook	DuPage	Kane	Lake	McHenry	Will	Wisconsin	Indiana
2007	127	78	30	102	42	27	19	2
2008	140	78	30	135	58	27	19	2
% change	10.2%	0.0%	0.0%	32.4%	38.1%	0.0%	0.0%	0.0%

*Table 4. Percent change in monitored element occurrences in six Illinois counties, and in all counties for Wisconsin and Indiana. Different EOs may be monitored from year to year, so % change indicates the difference in the total number of EOs monitored.*

*Additional Indiana EOs were monitored in '07 and '08, but reports are still pending, having been submitted first to Indiana Dunes National Lakeshore.*

*Level 2 demographic data was collected for Viola conspersa, Cypripedium candidum, Cirsium hillii and Tomanthera auriculata on several of the formerly monitored plots for each species. All data have been entered into Excel spreadsheets or an Access database for future analysis.*

**Objective 2:** Organize and conduct three or four volunteer training workshops.

*Five training workshops were held: Volo Bog (Lake County); Midewin National Tallgrass Prairie (Will County); Chicago Botanic Garden (Cook County), Lake Forest Open Lands Association (Lake County) and UW Parkside (Wisconsin). A total of 93 volunteers attended.*

**Objective 3:** Recruit, train, and assign an increased number of volunteers (approximately five per county) with input from landowners.

*90 new volunteers were recruited and subsequently conducted monitoring in 2008, an average of 14.16 per Illinois county. All counties except for Kane recruited more than 5 volunteers (3 new volunteers in Kane Co.). In addition, POC recruited 11 new volunteers in Wisconsin this year.*

*In addition the volunteer retention rate from 2007 to 2008 was 59.4%. 105 of the 249 volunteers who monitored in 2008 had monitored for three or more years (42.2%). This level of retention increases data reliability.*

**Objective 4:** Continue collaboration with public and private landowners to place volunteer monitors on their sites.

*In 2008, POC worked with 58 public and private landowners for whom active monitoring took place.*

**Objective 5:** Continue collaboration with IDNR (Regional Biologists, Natural Heritage Database, Nature Preserves Commission)

*POC continues to have a strong partnership with IDNR. Six IDNR personnel are on the Advisory Group (Attachment 4), which also includes members from the Illinois Endangered Species Protection Board. Regional Biologists Brad Semel and Dan Kirk, have provided information and guidance for sites under their purview; 2008 monitoring reports were submitted to the Natural Heritage Database in March 2009; the Nature Preserves Commission issued permits for 2008 monitoring, after 2007 reports were submitted to the Commission (reporting and permitting takes place in April and May of each year).*

**Objective 6:** Convene an annual meeting of the Advisory Group to plan program direction.

*An Advisory group meeting was held in December 2007 to review the program and begin planning the 2008 season. Due to budget cuts and staff shortages both at POC and at Advisory Group member agencies, the December 2008 Advisory Group meeting was not held.*

*In January and February of 2009, POC met separately with five Forest Preserve District staff, IDNR staff, and Wisconsin POC partners to evaluate the 2008 season and plan for the 2009 season.*

**Objective 7:** Submit a summary report to CW in March 2009, including analysis of monitoring data, and as appropriate, share data with state agencies and landowners, highlighting management impacts on populations or concerns resulting from the absence of management.

*The summary report to CW is hereby submitted, with detailed discussion. Agencies and other landowners receive monitoring reports each year as part of the reporting cycle. All major NE Illinois agencies have received the 2008 monitoring reports and other agencies and landowners will have reports by the end of March 2009. This summary report will be shared with all members of the Advisory Group.*

**Objective 8:** Continue supporting POC affiliate programs with CW partners in southeast Wisconsin and northwest Indiana and store monitoring data from those programs in the POC master database.

*Both the Wisconsin and Indiana programs were continued into 2008, with the Wisconsin program significantly expanding the number of species and subpopulations monitored.*

*A workshop was held in Wisconsin at UW Parkside, near Chiwaukee Prairie, where much of Wisconsin POC monitoring takes place. Lori Artiomow continues to provide leadership for this chapter. Eric Howe has also continued his successful work in Walworth County, primarily at Lulu Lake. Since 2007, 22 species have been monitored in Wisconsin, with five species added in 2008. This year, 34 subpopulations were monitored, bringing the cumulative number of subpopulations to 51 for that state. This work has been done at 5 sites by 19 volunteers. The total number of EOs did not change from 2007 to 2008 (see page 19), due to a different set of 19 EOs monitored. Eight new EOs were monitored in Wisconsin in 2008.*

*David Hamilla and Barbara Plampin again worked with the Indiana Dunes National Lakeshore (Dan Mason) with contractual funding to monitor 24 species at 13 sites as part of the National Lakeshore's own monitoring program. The relevant data will also be submitted to the POC database for both 2007 and 2008. Monitoring was done at two additional Indiana sites, reports are pending.*

**Objective 9:** Retain photographer Carol Freeman for a second year to enhance photo gallery of POC-monitored rare plant images in electronic and paper formats for educational and outreach purposes.

*See Attachment 9 for Carol Freeman's report and invoice for 2008. Carol attended most POC workshops to explain her goals to volunteers and has provided images for 28 species for the POC website and other POC publications and posters.*

## PROGRAM PRODUCTS

**Product 1:** Monitoring Results: standardized Level 1 monitoring data on rare plant populations (location – including GPS coordinates, size, threats, management) for formerly monitored and additional occurrences.

*Accomplished. See Objective 1 above.*

**Product 2:** All field data entered and analyzed on the Access database.

*Accomplished. All field data that was received was entered and analyzed on the Access database. The details are discussed in this report.*

**Product 3:** Three (minimum) field training workshops.

*Accomplished. Five training workshops were held. See Objective 2 above.*

**Product 4:** Advisory Group meeting to evaluate, plan and implement program.

*Not accomplished in 2008; however, regular communication was maintained with the Advisory Group members, including separate meetings with major landowners in winter 2008 and 2009. See Objective 6 above.*

**Product 5:** List of monitored species reviewed to include: listed species, rare species of special concern, and indicator species identified by the Regional Monitoring Plan. All monitored species reviewed for potential rotational monitoring.

*Accomplished, except for the Regional Monitoring Plan input, due to cessation of the formal regional monitoring process. At meetings with all major agencies in Winter 2008, all species were reviewed for appropriate rotational monitoring.*

**Product 6:** Images of at least 20 POC-monitored species captured by Carol Freeman, processed and made available on the POC website and POC outreach materials and articles.

*Accomplished. See Objective 9 above and Attachment 9. Freeman provided images of 28 species. In addition, Freeman's 2008 and 2009 calendars displayed images of POC species. Her work was featured in a new POC brochure and in PowerPoint presentations.*

**Product 7:** Involvement and inclusion of POC (rare and indicator species monitoring) in the CW Regional Monitoring Plan.

*No further activity on the Regional Monitoring Plan took place in 2008. POC is ready to participate when that project resumes.*

**Product 8:** Public Communication: the broader public will be made aware of the importance of monitoring, the POC project, and the training workshops through promotion in the Garden's membership publication, *Garden Talk*, as well as through the public relations vehicles of the Chicago Botanic Garden, Audubon-Chicago Region, and presentations to volunteer and professional groups. Articles will be submitted to volunteer newsletters, the Chicago Wilderness Journal, and local newspapers.

*Accomplished. Highlights of the extensive public communication and outreach for Plants of Concern are presented here, starting with a discussion of the POC website. Several items are also included as attachments.*

#### 1. Plants of Concern Website

The POC web site ([www.plantsofconcern.org](http://www.plantsofconcern.org)) was created in late 2003. Conservation Data Manager Bianca Rosendorn manages the web site design and content. The intent of the web site is many-fold. It is a way to spread the word about rare plants and the POC program, recruit new volunteers, and provide news and monitoring resources such as downloadable forms, form submittal, and plant information to monitors.

In 2008, from January to December, the website averaged 484 visitors per month, for a total of 5813 visits, compared with 5415 visits in 2007, an increase of 7%. The highest traffic month was July, with 611 visitors.

There are eight sections on the web site:

- **Home** (home page) contains introductory paragraphs about the POC program.
- **About** POC lists background information about the program, its goals and achievements and statistics from previous years.
- **News** posts newspaper articles about the program as well as announcements of events, such as workshops, plant outings and meetings.
- **Staff and Volunteers** lists the entire POC staff and their contact information.

- **Forms & Protocols** lets monitors download up-to-date monitoring forms, land management forms, and guidelines and instructions on GPS usage, pacing and population estimation guidelines. The Plants of Concern Volunteer Manual is also available for download in this section.
- **Plant Resources** includes the Plants of Concern Species List, Species Bloom Times Table, and the Plants of Concern Plant Gallery, comprising individual web pages for each plant monitored by POC. These web pages contain photos of the species by Carol Freeman and volunteers and links to various plant resources.
- **Funders** provides a list of partner websites and programs that have funded POC.
- **View and Submit Forms** allows monitors the opportunity to view and submit their monitoring forms on-line. Also allows Land Managers to view all the monitoring and land management forms pertaining to all the sites they manage. In 2008, 50% of all forms were submitted on-line for a total of 392 on-line submissions, an increase of 16% from 2007.

Website goals for future development include completing the Species Pages for POC-monitored plants, beginning to build the Invasive Species Plant Gallery, and beginning to build more detailed staff and volunteer pages.

## 2. Publications.

- Artiomow, L. 2008. Come Monitor Rare Plants! *The Prairie News*. A newsletter of the Chiwaukee Prairie Preservation Fund. December: p. 5.
- Drekich, D. 2008. Plants of Concern is Back! *Midewin Meadowlark Messenger* e-newsletter, June: p. 7
- Drekich, D. 2008. The Limestone hedge-hyssop, *Gratiola quartermaniae*, a Midewin exclusive. *Midewin Meadowlark Messenger* e-newsletter, July: p. 4
- Drekich, D. 2008. Round Two for POC at Midewin. *Midewin Meadowlark Messenger* e-newsletter, August: p. 2-3
- Drekich, D. 2008. The Limestone hedge-hyssop, *Gratiola quartermaniae*, a Midewin exclusive. *Prairie Telegraph*. July-August: p. 1-2
- Drekich, D. 2008. Hats off to our Plants of Concern volunteers! *Prairie Telegraph*. January-February: p. 6-7
- Fant, J., R. Holmstrom, E. Sirkin, J. Eттerson, and S.Masi. 2008. Genetic Structure of Threatened Native Populations and Propagules Used for Restoration in a Clonal Species, American Beachgrass (*Ammophila breviligulata* Fern.). *Restoration Ecology*. 16 (4): pp.594-603.
- Freeman, C. December 2008. *In Beauty, I Walk*, 2009 calendar by Carol Freeman Photography. *A statement by Susanne Masi for POC appears on the back cover of the calendar, as does a description of the program. A number of the images used are of POC species.*
- Goad, R. 2009. Chiwaukee Prairie and a Blossoming POC Chapter. *The Habitat Herald*. Accepted for April 2009.
- Goad, R. 2008. Citizen Monitors Rescue a Rare Violet. *The Habitat Herald*. 9 (3): pp.1. September (Attachment 10).
- Hofherr, M. 2008. Welcome Rare Plant Enthusiasts! *Prairie Telegraph*. March-April: p.8
- Susanne Masi and Pati Vitt coordinated with the Communications department to create a new brochure, entitled, "Plants of Concern: A Citizen-Science Rare Plant Monitoring Program".

## 3. Presentations, Posters, and Events regarding Plants of Concern

- Masi, S. and A. Kelly. 2008. *Ravine Flora: Tracking the Health of a Unique Plant Community*. For Symposium: Reclaiming the Ravines: Protecting Lake Michigan's Ecological Treasures, April 24. Chicago Botanic Garden.
- Masi, S. and A. Kelly. 2008. *Citizen Scientists Monitor Rare Plants in Chicago Wilderness*. For Citizen Science in Ecology at the 93<sup>rd</sup> ESA Annual Meeting, Aug.3-8. Milwaukee, WI.
- Masi, S., B.M. Flores, and E. Kapler. 2008. *Rare Plant Conservation in USDA Forest Service Lands*. Presentation at Pollination to Population Structure—How Understanding Reproductive Biology Can



Inform Conservation of Rare Plants. At the Botanical Society of America annual meeting, July 26-30. Vancouver, British Columbia.

- Masi, S. and R. Goad. 2008. *Plants of Concern: Volunteers Monitor Rare Plants in a Standardized Regional Program*. Presentation to Northwestern University Graduate Students, October 31, Chicago Botanic Garden.
- Masi, S. and R. Goad. February 7, 2009. Poster, Booth and Panel at Wild Things, Chicago Wilderness Stewardship Conference, University of Illinois, Chicago, IL.
- Susanne Masi and Dani Drekich attended the Midewin National Tallgrass Prairie volunteer appreciation banquet on November 5.
- Susanne Masi and the Division of Plant Science and Conservation hosted the Illinois Endangered Species Protection Board on November 14. Susanne is a member of the board. Pati Vitt presented an overview of the department's research work on rare species, particularly as related to climate change. Kay Havens, Rachel Goad and Dani Drekich also attended.
- POC hosted a rare violet search (or foray) on May 5. All volunteers were invited to attend.
- POC hosted the Habitat Project Volunteer Appreciation Event on October 19 at CBG. Marian Hofherr was responsible for the arrangements. Eighteen certificates were awarded to POC volunteers for their excellent monitoring efforts this past year. The Nature Conservancy Volunteer Stewardship Network awarded a small grant to support POC in hosting this event.

#### 4. POC Related Articles and Events

- Bourque, J. Volunteer Profile: Kathleen Garness. In *Gatherings Online: A bi-monthly email newsletter of the Volunteer Stewardship Network, published by the Nature Conservancy*. July/August 2008.
- Garness, K.M. Losing Paradise? The Status of Wild Orchids in Illinois. *Illinois Audubon*. 306: pp. 5-8. Fall 2008. *Kathy is a POC volunteer who volunteers native orchids extensively. In this article, she stresses the POC monitoring effort in tracking populations of orchids in NE Illinois.*
- Masi, S. Interviewed by A.M. Pearson for *Chicago Wilderness Magazine* article: "10 Years, 10 Trends" on POC's role in long-term monitoring. Winter 2008: pp. 30-37.
- Masi, S. Interviewed by K. Zaworski for *Chicago Wilderness Magazine* article: "Shedding Light on the North Shore Ravines". Fall, 2008: pp. 26-29.
- Sutter, E. Plants of Concern Rare Plant Monitoring. *Brush Piles: A Newsletter of the North Branch Restoration Project*. Spring 2008: pp.1-2.
- Saving Rare Plants: Restoring and Protecting Nature. In *Chicago Wilderness: Annual Report*. 2008. pp.16-17. *The Plants of Concern project is discussed and cited as an example of a collaborative effort to protect the region's biodiversity.*
- Three forays were organized by Ken Klick of the Forest Preserve District of Lake County, in cooperation with Plants of Concern monitoring efforts. All POC volunteers were notified of these events, and many attended. Rare plants were searched for on each occasion and monitoring forms filled out.
- Vitt, P., K. Havens, B. Kendall, and T. Knight., Effects of community level grassland management of the non-target rare annual *Agalinis auriculata*. *Biological Conservation*. In Press, 2009.

#### 5. Grants

- POC received notification of a Cost-Share Agreement of \$17,500 from the US Forest Service for its 7<sup>th</sup> season of monitoring work at Midewin National Tallgrass Prairie.
- POC received an Illinois Wildlife Preservation Fund Grant (\$14,000).
- POC development staff submitted a grant to the National Fish and Wildlife Foundation for \$53,000 on November 17, 2008.
- POC development staff submitted a grant to the Disney Foundation for \$38,785 on January 23, 2009.

- Plants of Concern's Wisconsin Chapter was awarded a \$5000 grant to monitor rare plants at Chiwaukee Prairie from the Citizen-based Monitoring Network of Wisconsin.

Other promotion and outreach efforts included email "newsletters", mailings and announcements in stewardship newsletters such as *The Habitat Herald*, *Gatherings Online* (VSN), *McHenry County Volunteer Newsletter*, and *Grounds Cover* (CBG).

6. POC also has active links to the following regional projects and research: The Habitat Project (Audubon-Chicago Region); New Invaders Watch List (The Nature Conservancy and the Forest Preserve District of Lake County); Chicago Wilderness Natural Resources Management Team and the Carol Freeman Photography Endangered Species Project.

## CONCLUSION AND FUTURE DIRECTIONS

As the above discussions demonstrate, Plants of Concern continues to grow and show its strength as an essential source of data on rare plants that serves land managers and engages trained volunteers to make a meaningful contribution to the regional understanding of biodiversity, its status, and threats. Three dedicated staff (Coordinator, Program Assistant/Volunteer Coordinator and Research Assistant) manage the program. However, the Program Assistant/Volunteer Coordinator position was discontinued in July 2008 due to lack of projected funding from C2000. A second nine-month Research Assistant worked exclusively in 2008 at Midwin National Tallgrass Prairie on POC-based monitoring and studies. The work initiated in 2006 with Indiana and Wisconsin to export the program to the Chicago Wilderness regions of those states has borne fruit. The Wisconsin POC program, under the leadership of Lori Artiomow at Chiwaukee Prairie and in collaboration with Eric Howe at Lulu Lake, has submitted reports for two years on 27 element occurrences. Ms. Artiomow is developing an Access database of Wisconsin occurrences that will export data both to POC and to the Wisconsin Natural Heritage Inventory. Indiana monitoring has been conducted at several sites since 2006, most notably through the contractual work of David Hamilla and Barbara Plampin at Indiana Dunes National Lakeshore. National Lakeshore staff has agreed to share that data with POC.

POC has been able to provide valuable data to the Endangered Species Protection Board as it prepared for its 2009 listing recommendations to the State. The Chicago Park District has invited Susanne Masi, representing POC, to be on an Advisory Group for the development of the District's management plans for their Natural Areas. POC will contribute to the monitoring component essential to measuring success of management activities. The listings under Product 8, Public Communication, in this report ( pp.23-25) demonstrate other examples of POC contributions on a regional as well as national scale. As Citizen Science becomes more prominent on the national level, POC is being recognized as a successful and established monitoring program. Susanne Masi participated in a Citizen Science Symposium in August 2008 at the Ecological Society of America Annual Meeting.

At present the POC data reservoir is very large, with eight years of monitoring data in an Access database format. These data can be mined for far more analysis than POC staff can provide with the current resources available. The exploration of these data has great potential to benefit land managers as they make decisions to protect and manage rare plant populations as a parallel effort to managing communities. POC will continue to be a resource for attracting researchers to further tap into the data and is already working with individuals from several institutions, as described in this report. These opportunities, only made possible with a stable long-term monitoring program, should be made more widely available in order to maximize the benefits of POC.

Overall, one of the greatest benefits of POC is the collaboration between the many agencies and their volunteers in monitoring rare species. In addition to six forest preserve districts, the Chiwaukee Prairie Preservation Fund, Indiana Dunes National Lakeshore, U.S. Forest Service and IDNR, 73 other landowners

are involved in the program, many of whom would not otherwise have the resources to engage in a rare plant monitoring program.

POC, as a priority project of the CW Resource Management Team, has played an important role in the Chicago Wilderness Biodiversity Recovery Plan and also falls within two priority initiatives for 2009: restoration and management, and climate change. Monitoring is essential for tracking the progress of effective management and the information generated by POC will also be particularly valuable for documenting and identifying the effects of climate change, its impacts on the region's flora, and potential mitigating factors.

The future and scope of Plants of Concern are closely linked to funding. It is essential that this long term monitoring program continues to provide these regional benefits. In the current economic climate, funding is becoming increasingly uncertain. The program has secured partial funding from the Illinois Wildlife Preservation Fund through June, 2009, and from the US Forest Service (at Midewin) through January 2010. POC has a pending grant proposal with CW that will be used by CW staff to seek funding from various sources. Also pending are grants submitted by the Chicago Botanic Garden to the National Fish and Wildlife Foundation Great Lakes Restoration Program and the Disney Foundation. The Garden is actively seeking other grant opportunities and corporate funding, but without additional funding for 2009 the program is likely to be curtailed in scope.

## **ATTACHMENTS**

1. GIS map of POC monitored subpopulations
2. Level 1 monitoring form
3. Level 1 land management form, Parts 1 and 2
4. Advisory Group listing
5. Plants of Concern Species List
6. Plants of Concern 2001-2008. Species, Status, County, Element Occurrences (Excel)
7. Plants of Concern 2001-2008. County, Site, Landowner & Element Occurrences (Excel)
8. Plants of Concern 2001-2008. Species Monitored by Six NE IL County Frequency - A Regional View (Excel)
9. Carol Freeman Photography Report
10. Rachel Goad: Article in Habitat Project
11. Focus Group Informed Consent Form
12. Focus Group Participant Information Survey
13. Focus Group Question/Discussion Outline