

# PRIVATE PRAIRIE AND WOODLAND RESTORATION: UPDATING AN OLDER SUBDIVISION IN ILLINOIS

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**Abstract:** Hopewell Estates, platted on about 640 acres (259 ha) on the west bluff of the Illinois River, was begun in the 1970's. Most of the 420 lots sold, but only 124 residences are now in place. After the developer left, the residents organized as a village, Hopewell, Illinois, and built a new water company. Part of the subdivision (78 acres) was identified as an Illinois Natural Areas Inventory site in 1977. With the residences built on the bluff top, the wooded ravines and 14 hill prairies are still mostly intact but are being degraded by alien plant invasion and the lack of fire. We are restoring the native prairie and woodland on a number of lots we have purchased. Various low cost restoration and erosion control techniques are being used on these lots and on other parcels in Marshall County. These techniques include: 1) reducing alien plants and overstocked native trees to increase light for herbaceous plants, 2) log terracing with cut trees to reduce erosion on the steep slopes (up to 70%), and 3) controlled fire management. To sustain natural ecosystems on the landscape scale in Marshall County, both public and private restorations will be required, including small, private restorations.

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About the same time Hopewell Estates Subdivision (Marshall County, Illinois) was being platted in 1977, the Illinois Natural Areas Inventory identified a 78-acre (32-ha) natural area in the middle of the subdivision that included 14 glacial drift hill prairies. The subdivision's forested lots on the west bluff of the Illinois River (about 20 mi north of Peoria) sold quickly. Then there were problems with the original water system, and then the developer left.

In 1983, the homeowners organized themselves into an incorporated village: Hopewell, Illinois. The homeowners then built a new water facility. Today (1998), there are still only 124 homes on 420 lots on about 640 acres (259 ha). With the residences built on the bluff top, the wooded ravines and 14 hill prairies are still mostly intact, but are being degraded by alien plant invasion and the lack of fire.

### INTENSIVE RESTORATION

We purchased Lot 117 in September 1997 which turned out to be the center of the 3 Grade-A glacial drift hill prairies. About 0.7 acre (.28 ha) of the 1.2 acres (.49 ha) is hill prairie and the balance is oak savanna. In all of Illinois, the 1978 Natural Areas Inventory found only 14 acres (5.67 ha) of Grade-A glacial drift hill prairie.

Because of the high quality of the site, an intensive restoration was undertaken. About 22 days were spent clearing the woody shrubs and tree encroachment at the edges of the prairie. The woody plants removed were autumn olive (*Elaeagnus umbellata*), smooth sumac (*Rhus glabra*), gray dogwood (*Cornus racemosa*), white sassafras (*Sassafras albidum*), poison ivy (*Toxicodendron radicans*), riverbank grape (*Vitis riparia*), sow-teat blackberry (*Rubus allegheniensis*), and black raspberry (*Rubus occidentalis*). The overstocked savanna was thinned of sugar maple (*Acer saccharum*), eastern hop-hornbeam (*Ostrya virginiana*), wild black cherry (*Prunus serotina*), and some oaks (*Quercus* spp.). The woody plants were cut and the exposed cambium was treated with Roundup®.

In November 1997, with volunteer help, the prairie was burned for the first time in 30 years. (A long-term resident said the area used to burn every few years before the subdivision was platted). Preliminary dedication as an Illinois Nature Preserve was accepted in February 1998, and the final dedication of Hopewell Hill Prairies Nature Preserve was completed in May 1998.

In March 1998, the authors were able to purchase the adjacent lot (Lot 116) which included 0.3 acres (0.12 ha) of Grade-A prairie. Another 12 days of

labor were spent in clearing woody vegetation from Lot 116 and the remaining part of the third hill prairie on Lot 117. Lot 116 will be offered as an addition to the nature preserve in October 1998.

In May of 1998, Tom Lerczak, the Illinois Nature Preserve Commission representative, secured an agreement for a natural heritage landmark status for the remaining 0.3 acres (0.12 ha) of Grade-A prairie on Lot 118 from the neighbor who resides there. Tom, Michelle Simone (Illinois DNR) and we put in another 5 man-days work to clear the woody vegetation on Lot 118. The plan is to burn this part of the prairie in fall 1998.

The restoration of the Grade-A hill prairie, about 1.3 acres (.50 ha) required about 39 days of labor. Thirty-five days were from the private owners and 4 days were assistance from agency employees. Most public agencies would not focus this many resources on such a small area. However, some interested individuals with volunteer restoration training and experience could provide the resources to complete this type of project.

## PLANT RESPONSE

After the first burn in 30 years in fall 1997, and the wet spring of 1998, the plant response has been remarkable. The predominate early spring plants were hundreds of hairy puccoon (*Lithospermum carolinense*), prairie phlox (*Phlox pilosa*), and Seneca snakeroot (*Polygala senega*). The dwarf prairie willow (*Salix humilis*) bunches, which were top killed by the fire, sprouted profusely. We counted over 120 one-flowered cancerroot (a.k.a. one-flowered broomrape) (*Orobancha uniflora*). The dominant early grass was Leiberg panicum (a.k.a. prairie panicgrass) (*Panicum leibergii*) with much Pennsylvania sedge (*Carex pennsylvanica*) present.

Next in the season there were large numbers of pale echinacea (a.k.a. pale purple coneflower) (*Echinacea pallida*) blooming. The compass plant (*Silphium laciniatum*), prairie dock (*Silphium terebinthinaceum*) and wholeleaf rosinweed (*Silphium integrifolium*) with only a few blossoms in the previous year, bloomed profusely this year. The grasses present included side-oats gramma (*Bouteloua curtipendula*), prairie dropseed (*Sporobolus heterolepis*), little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*) and several panic grasses (*Panicum* spp.). The goldenrods (*Solidago* spp.) present were early (*S. juncea*), rigid (a.k.a. stiff) (*S. rigida*), gray (*S. nemoralis*), showy-wand (*S. speciosa*), Canada (a.k.a. tall) (*S. canadensis*), and

elmleaf (*S. ulmifolia*). The asters (*Aster* spp.) included azure (*A. azureus*), white (a.k.a. heath) (*A. ericoides*), smooth blue (*A. laevis*), silky (*A. sericeus*) and aromatic (*A. oblongifolius*). Small numbers of green milkweed (*Asclepias viridiflora*), western sunflower (*Helianthus occidentalis*), button snakeroot (a.k.a. rattlesnake master) (*Eryngium yuccifolium*), gay feather (a.k.a. rough blazing star) (*Liatris aspera*), yellow stargrass (*Hypoxis hirsuta*), and downy gentian (*Gentiana puberulenta*) were also present.

Beside the encroaching woody shrubs mentioned previously, there is an abundance of leadplant (*Amorpha canescens*), and many New Jersey tea (*Ceanothus americanus*), American hazelnut (*Corylus americana*), and surrounding shadbush (*Amelanchier laevis*). The co-dominant trees in the surrounding savanna include dwarf chinquapin oak (*Quercus prinoides* var. *acuminata*), white oak (*Q. alba*), red oak (*Q. rubra*), black walnut (*Juglans nigra*), sugar maple, and various hickories (*Carya* sp.) A botanical study by Michael Jones is about to begin to determine the plant list. This study will be supported by the authors and the Illinois Wildlife Checkoff Fund.

## MANAGEMENT PLANS

After the intensive restoration undertaken, only a small amount of annual maintenance time is anticipated. Annual or biennial burns are expected to control woody plant encroachment. Few troublesome weeds are present, although time will be needed to regularly monitor the occurrence of weeds. No garlic mustard (*Alliaria officinalis*) has been found yet and little yellow sweet clover (*Melilotus officinalis*), multiflora rose (*Rosa multiflora*), honeysuckle (*Lonicera* spp.), Canada bluegrass (*Poa compressa*), or Kentucky bluegrass (*Poa pratensis*) has been found in the prairie. Autumn olive seedlings from removed plants or neighbors' lots must be watched for and removed, or cut and treated. Limited amounts of seed may be collected to help restore the 2 Grade-B hill prairies in the natural area.

Some suggestions concerning intensive restorations are as follows:

1. Take out woody vegetation one layer at a time. We started with the autumn olive before seed-drop, then smooth sumac, then sassafras, and finally gray dogwood. By stump-treating in late summer, we were able to kill most of the clonal roots and have seen very little resprouting.

2. Mark trees 1 day, but cut them another day; this gives time for a second opinion. In the savanna border we counted the number of mature oaks and hickories. Then we left standing twice that number of 2- to 4-in dbh saplings, planning that half these would be lost before replacing the mature trees. We have already lost 3 mature red oaks by lightning strike, windstorm, and probably disease. The windfall crushed at least 1 replacement tree; however there is an overall beneficial effect of more light on the prairie.
3. Know your boundaries, we paid for a survey and have moved an encroaching decorative fence and some domesticated shrubs.
4. Know your plants. We have offered matching money to secure a Wildlife Checkoff Fund grant for a professional botanical inventory.
5. Place larger saplings and logs horizontally on steep slopes to reduce soil erosion.
6. Take some time every work session to enjoy the natural area.

## **FUTURE PROSPECTS**

There are other vacant lots in Hopewell, Illinois, and other small parcels in Marshall County with high quality forest and savanna community plants. These areas are generally too small for conservation organizations to be interested in purchasing and maintaining; however, they are not too large for interested individuals to restore. We hope that Hopewell Hill Prairies Nature Preserve will provide a visual model for small restorations even in suburban settings.

As a residential development proceeds in Marshall County, the narrow band of forested river bluffs are at risk of being fragmented to the point of disrupting the natural processes of a woodland. To keep sustainable natural ecosystems in place on the landscape scale in Marshall County, both private and public restorations will be required, including small private restorations.