



## Illinois Nature Preserves Commission

### MANAGEMENT GUIDELINES FOR ILLINOIS NATURE PRESERVES

### VEGETATION MANAGEMENT

#### INTRODUCTION

The primary approach to vegetation management in natural areas should emphasize maintaining or restoring ecological processes that shaped presettlement communities. Management practices that utilize or mimic natural ecological processes are necessary to maintain ecosystem integrity, stability, structure, dynamics, and species diversity. Loss of these ecological processes, or replacement by different processes, has contributed to loss of structure and diversity within natural communities and ecosystems.

Long-term control of problem species (particularly alien or exotic species) ultimately depends upon restoring natural processes that originally maintained the health of the system. In many cases, measures that concentrate solely on mechanical or chemical control of problem species without restoring natural processes, such as fire, merely will treat symptoms, not the underlying causes. Natural area managers should identify the sustaining natural processes (e.g., fire regime, hydrological processes, patterns and methods of dispersal) that affected the formation and maintenance of natural communities to be managed. Once these processes are identified, natural-area managers should work to ensure their persistence, and should use other control measures such as brush cutting or use of herbicides to supplement management efforts where reestablishment of natural forces will not adequately reverse detrimental effects.

Before a management regime is implemented, ambient conditions on the nature preserve should be documented. A natural community map depicting the various plant communities is the minimum necessary for approval of vegetation management activities on a nature preserve. Photographs and vegetation sampling provide useful documentation of on-site ambient conditions.

Any vegetation management undertaken on a dedicated Illinois Nature Preserve must be in accordance with the "Rules for Management of Illinois Nature Preserves" and the master plan for the nature preserve, if such exists. These guidelines identify conditions for Commission approval of management not allowed under the "Rules for Management of Illinois Nature Preserves" unless allowed by a master plan or by specific Commission approval. In addition, these guidelines clarify and further explain management procedures that are allowed under the "Rules for Management of Illinois Nature Preserves" (as per sections 4000.130 and 400.140). Before any management regime is implemented, it should be evaluated with regard to the potential sensitivity of threatened and endangered species in the preserve.

Management activities undertaken on Illinois Nature Preserves require advance approval of the Illinois Nature Preserves Commission. This approval is given when the Commission approves 1) a master plan, 2) a 3-year management schedule (see Records subheading below) and/or 3) individual



requests to conduct management activities. This guideline serves to explain management activities that are allowed on Illinois Nature Preserves and does not negate the need for Commission approval of vegetation management activities.

### **VEGETATION EVALUATION**

Presettlement condition of the site should be established before implementing any management or restoration regime. Restoration of a particular natural community should be based upon the following: 1) Public Land Survey records, 2) soils, 3) 1930's series and later series of aerial photographs of the site, 4) Illinois Natural Areas inventory data on species composition for the given community type, and Natural Division and Section in which it occurs; and/or 5) ambient community composition and structure (e.g., open-grown oak trees, indicating a possible savanna) that indicate the historical presence of a particular community. The Public Land Surveys, soil maps, and the 1930's (and later) series of aerial photographs of the site are particularly useful in setting objectives for community restoration and management. In addition, neighbors or previous owners of the property may contribute valuable information on previous land use and condition.

### **RECORDS**

Once management is implemented, records should be kept of the management techniques used and the location within the preserve where applied. These records should include a description of techniques used; a natural community map showing the management units; a map of the areas from which specific species were removed or cut, along with records listing these species; a map with exact locations of restorations (if any); and a description of the effects of the management. Records of management activities should be provided to the Nature Preserves Commission annually. A three-year management schedule for the site, approved by the Commission, would constitute an accurate record of management activities. In addition, records of whether the management was performed as scheduled and the management effects should be provided to the Nature Preserves Commission annually.

### **MANAGEMENT METHODS**

#### *A. Prescribed Fire*

Fire is necessary to maintain the structure, diversity, and integrity of many communities (e.g., prairies, savannas, barrens, glades, marshes, sedge meadows) and should be the primary management technique employed in fire-adapted communities. It is the most natural and one of the most cost-effective tools available.

Lack of periodic fire contributes to decline of fire-adapted plant species and to invasion of alien (exotic) and woody species that often thrive in the absence of fire. Consequently, fire must be restored to the site to ultimately achieve long-term control of problem species.

The use of spring and/or fall prescribed fire is considered a standard management technique for management of prairies, marshes, sedge meadows, savannas, barrens, and glades. Fall burns may be used in communities with low fuel loads in spring (e.g., glades, oak forests, and barrens). However, fall burns on thin-soil areas increase frost heaving of naturally shallow rooted plants and should be avoided whenever possible on thin-soil sites.

Most oak or oak-hickory woodlands (savannas, barrens, and forests) burned in presettlement times. As a result of cultural suppression of fires in woodlands, many oak-hickory woodlands suffer from a predominance of sugar maple in the understory and lack of oak regeneration. Consequently, the natural character of such forests is being altered significantly. Management techniques for reversing these effects are as yet not well developed, but the reintroduction of fire to these woodlands often is appropriate. The Commission may approve a restoration program in such situations if the program includes a monitoring strategy to evaluate effects of that management. This management regime may include use of prescribed fire, cutting, and/or direct herbicide application.

The following criteria apply to all prescribed fires:

1. No high-quality natural community (Grade A or B) should be burned in its entirety in a single season unless the preserve is very small or else including the entire preserve in a single burn unit is necessitated by safety considerations.
2. A given community or a specific portion of a community should not be burned 2 years in a row unless a remedial situation exists (e.g., invasion by alien (exotic) plants or shading poses an imminent threat to the natural community).
3. Prescribed fires on nature preserves must be in accordance with section 4000.450 of the “Rules for Management of Illinois Nature Preserves”.
4. Open-burning permits from the Illinois Environmental Protection Agency are required prior to all prescribed burns. Permits from the county and/or a municipality also may be required.

## *B. Woody Vegetation Management*

### 1. Brush Management

Invasion of woody plants most often is a problem in fire-adapted communities such as prairies, sedge meadows, savannas and barrens, where fire has been suppressed. Use of fire should always be considered first when planning removal of brush from fire-adapted natural communities. However, woody plants with a diameter greater than approximately 1 inch may not always be killed by fire. A woody plant’s vulnerability to fire and ability to resprout after fire differs by plant species. Control of brush invasion is discussed in Section 4000.470 (a) of the Rules for Management of Illinois Nature Preserves.

Native shrubs and small trees should not be removed as matter of course. In the case of natives that are invasive, (e.g., quaking aspen, smooth sumac, etc.) the objective should be to control or limit the expansion of these species. Total removal of aggressive native species from a preserve usually should not be a management goal, as this may lessen natural biodiversity. However, if an invasive native shrub or tree, such as black locust, jeopardized threatened or endangered species of high-quality natural communities (for example, in the case of small sites) complete removal may be warranted.

Exotic shrubs and small trees (e.g., European buckthorn, multiflora rose, autumn olive,

and Siberian elm) that are less than 4 inches diameter at breast height (dbh) should be removed mechanically or girdled. If an exotic woody species is cut and is capable of resprouting, the cut stumps can be treated with an herbicide labeled for cut-stump treatment to prevent resprouting. See management guideline Vol. 4 for specific guidelines on use and application of herbicides and necessary licensing procedures for pesticide applicators.

Where woody vegetation greater than 4" dbh is to be removed from Illinois Department of Conservation (IDOC) property, IDOC policy requires specific Commission approval of that activity. Therefore, removal or girdling of woody material greater than 4" dbh will be considered "tree removal" distinguished separately from "brush removal".

## 2. Tree Management

Tree removal or girdling may be approved if the trees pose a threat to the high-quality community or to endangered, threatened, or rare species. In addition, tree removal or girdling may be approved for restoration of savannas and barrens that suffer from severe woody invasion and, in many cases, canopy closure. As a result of cultural suppression of fire in savannas and barrens, few high-quality examples of these communities exist. In most cases, dramatic restoration procedures are warranted. When a preserve objective is restoration of one of these community types, massive tree removal or girdling (e.g., removal or girdling of as much as 90% of the overstory) may be approved by the Commission in conjunction with a program monitoring effects of that removal.

## 3. Disposal of Woody Materials

Woody materials that have been cut may be left lying and burned the next year if they are under 2" dbh. Felled woody materials larger than 2" dbh should be removed from the preserve or, if this not practical, they may be piled and burned. In the latter situation, they should be moved to buffer areas, into lower quality areas within the preserve, or to the periphery of the preserve. Woody material should not be piled and burned within high-quality habitats because the soil underneath will be sterilized.

### *C. Alien (Exotic) and Aggressive Plant Species*

Invasion by or increase of alien (exotic) and/or opportunistic species usually is the result of a disturbance or degradation of a natural system. In healthy, well-managed natural systems native species are well established, effectively excluding alien (exotic) or aggressive species. The goal in protecting natural areas from alien (exotic) and aggressive species is maintaining or restoring ecosystem health and the native biodiversity of the natural areas. Please refer to vegetation management guidelines Vol. 1, Nos. 2-26 for a discussion of control methods and for specific recommendations for controlling 25 aggressive alien (exotic) or native plant species that have been problematic in some Illinois nature preserves.

### *D. Herbicides*

The use of herbicides should be avoided when effective and feasible natural (e.g, fire) or mechanical (e.g., cutting, girdling, mowing) control measures exist for controlling alien (exotic) or aggressive plant species. Use of herbicides in a natural area should be considered, weighing

the threat posed to the natural areas by aggressive species versus the environmental risk of herbicide application.

Herbicide use may be justified when labor available to manage alien (exotic) or opportunistic plants is severely limited, or when mechanical methods are ineffective due to the extent of the infestation or to environmental limitations (too wet, too rocky, etc.). General herbicide guidelines are given in Section 4000.470 of the “Rules for Management of Illinois Nature Preserves”. See management guideline Vol. 4 for specific guidelines on use and application of herbicides and necessary licensing procedures for pesticide applicators. Please refer to management guidelines Vol. 1, Nos. 2-26 for a discussion of control methods and for specific recommendations for controlling many alien (exotic) or opportunistic species. The latter guidelines discuss natural, mechanical, and chemical control methods.

<p><b>Equal opportunity to participate in programs of the Illinois Nature Preserves Commission (INPC), Illinois Department of Natural Resources (IDNR) and those funded by the U.S. Fish and Wildlife Service and other agencies is available to all individuals regardless of race, sex, national origin, disability, age, religion or other non-merit factors. If you believe you have been discriminated against, contact the funding source's civil rights office and/or the Equal Employment Opportunity Officer, IDNR, One Natural Resources Way, Springfield, Ill. 62702-1271; 217/785-0067; TTY 217/782-9175.</b></p>
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