

Sunrise Park and Beach

Bluff Vegetative Management Manual
Addendum to Management Report July 2012



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May 2013

Landscape Architecture



Natural Areas Management

Sunrise Park and Beach Bluff Vegetative Management Plan

Manual for Restoration

As an addendum to the Sunrise Park and Beach Bluff Vegetative Report, this manual is intended to provide the technical support and act as a resource for the implementation of the restoration work outlined in the report. The existing conditions, recommendations, and overall goals for the plant communities present on the bluff are identified in the report and this manual describes the detailed procedures required to achieve said results.

As outlined in the report, the primary goal of the vegetative management on the bluff is to protect and restore the mesic forest throughout the central core by improving the quality and diversity of the native vegetation, while maintaining the meadows framing the forest on the north and south, and the transition zones between the two.

The management objectives needed to achieve this goal include, but are not limited to: amelioration of soil erosion; the elimination, or at least the reduction of, competition by herbaceous and woody exotic and invasive plants; increased diversity of the understory and ground layer vegetation in all sections of the forest and field; and maintain the vistas without compromising the vegetative integrity of the forested slope. It is important to maintain the priority of vegetation over view if the primary goal is to be achieved

The prescriptions for restoration are given in bullet point format for each of the five major management zones pictured in the map “Plant Communities and Management Zones” in the 2012 report. As three of the five zones refer to the same plant community and are based on quality assessments, it is worth noting that the eventual goal will be to only have three zones of management. This will simplify the long term stewardship.

Open Successional Meadow – South & North

These meadows are overrun with advantageous trees, shrubs, Eurasian grasses and Crown Vetch (Coronilla varia) throughout. Staghorn Sumac (Rhus typhina) and Willow (Salix sp.) were the most frequent invasive native shrubs observed. Basically, the meadows are fast disappearing due to aggressive colonization of several woody plant species. Removal of such and the introduction of controlled burning will be the primary methods by which we gain control of these areas.

Restoration prescriptions:

- Spot treat exotic herbs with Round-Up (glyphosate), starting in spring with garlic mustard and goutweed. Spray/treat the crown vetch, in summer when vetch is in bloom and continue indefinitely on an as needed basis. It will take several applications and a couple of years to gain back control of the areas infested with the vetch. Use Round-Up early in the season or, if advantageous grasses are present use 2,4-D. Garlon 3A (triclopyr) and Clopyralid with a surfactant are most effective mid to late season.
- Cut and treat the aggressive native and exotic brush and young trees (except for mesic forest species on perimeters) when the herbaceous layer is dormant or approaching dormancy, except in areas devoid of any desirable forbs, where treatment can occur at any time. When feasible, frozen ground is preferred on sensitive slopes/soils. In winter treat stumps/cut stems with Garlon 4. Follow up with spot spraying of basal sprouts as necessary with 2,4-D or Round-Up, again, dependent on surrounding vegetation.
- During each ensuing late winter or spring, plant, using plugs or by overseeding, native grasses and sedges (see bluff seed mix) on cleared areas largely devoid of existing desirable herbaceous vegetation.
- After the undesirable exotic herb vegetation is gone and grasses are well established, overseeding with desirable native forbs can be done every winter for 3 years.
- Burn every 2 to 3 years to keep any invasive shrubby vegetation under 3 feet in height. Occasional cutting and stem treatments will be required every few years (or ongoing under regular stewardship) to prevent the woody vegetation from reestablishing colonies.

Scrub Woodland

Two small scrub woodlands lie on either end of the forest. Both appear to have formed on highly altered sections of the slope proper; to the south mainly through dumping of concrete rubble several decades ago and to the north, severe erosion and slumping of the slope, also appearing to have occurred many years ago. They are dominated by a dense “jungle” of young, second growth, invasive woody trees, saplings and shrubs, and exotic woody plants. Little native herbaceous layer is present, although small patches of the more aggressive species of native plants are sporadically found throughout, as are a few of the mesic forest trees, such as basswood (*Tilia americana*). Complete restoration of all strata and the ground layer would be needed. If they were converted to a mesic forest to increase the acreage of this community, they would still not add forest continuity, since the adjacent meadows separate them from the central core forest. This fact, combined with the tremendous amount of labor needed to restore these communities, makes these areas a low priority, with the return not necessarily warranting the investment. It is recommended that any work in these two zones be held off until all other units are completely restored.

Mesic Forest “C”

Two areas of “C” quality mesic upland forest are present, as shown in the 2012 report map. Both are severely disturbed. The southerly one requires a less complex management regimen. It has large characteristic mesic forest canopy trees (Sugar Maple (*Acer saccharum*), Basswood (*Tilia americana*), and Red Oak (*Quercus rubra*)), but little subcanopy or quality understory, and a very depauperate herbaceous layer. Such low diversity and structurally altered communities take a long time to repair. Furthermore, in these Mesic Forest “C” areas, large populations of exotic species are present in all strata, including Norway Maple (*Acer platanoides*) and Black Locust (*Robinia pseudoacacia*) in the canopy, Tartarian Honeysuckle (*Lonicera tatarica*) in the understory, and, in the herb layer, a very large colony of Goutweed (*Aegopodium podagraris*). Oriental Bittersweet (*Celastrus orbiculatus*) dominates some of the areas at the expense of most other woody plants. On the native side, dense Chokecherry (*Prunus virginiana*) colonies are present and create areas of deep shade.

Restoration prescriptions:

- Spot treat Garlic Mustard and Goutweed colonies with Round-Up (glyphosate) starting mid-spring, carefully avoiding sections with vernal wildflowers present, then treat entire colonies again with Round-Up in late summer after the vernal wildflowers have gone dormant.
- Begin removal of exotic tree species by cutting and removing trunks after the herbaceous layer has gone dormant or in winter, treating stumps with Garlon 4 (triclopyr). Aggressive native shrub species and non-native colonizers like Honeysuckle (*Lonicera* sp.) and Burning Bush (*Euonymus* sp.) are to be cut and treated as well.
- In the following late winter or early spring seed in native grasses and sedges (see bluff seed mix).
- Plant areas cleared of exotic trees with young Red Oaks and other trees from the recommended plantings list in spring or fall (not necessary where existing canopy trees are present in mixed sizes). Potted woody plant material is recommended for ease of handling and to minimize disturbance to the bluff slope soil profile.
- As control of the non-native herbs nears completion and the stands of native sedges and grasses become established, overseeding with desirable native forbs (see page 37 in report) can commence. Species already present in the Mesic Forest “A” units should be in the earliest plantings. The fleshy seeds of many of our vernal flowers will need to be collected, perhaps at Ravine Park and nearby private properties by informed volunteers as part of a Work Day or such, and immediately sown, as they need to be ‘fresh from the vine’ and do not typically succeed in establishment as a part of the commercially available seed mixes.
- Also at this time begin the planting of native shrubs and small trees, such as Viburnum, Amelanchier species, and others (see page 36 in report).
- Selectively thin areas of Chokecherry in winter and plant sedges and native forest herbs in them the following spring.
- Throughout the restoration, check for and spray resprouts of exotic shrubs and trees with Garlon 3A or Round-Up late spring through late summer.
- Continue all phases of this process until control of exotic herbs is the only task remaining.

The second area of Mesic Forest “C” is located at and around the juncture of the access roads. Construction of these roads occurred in what was once Mesic Forest “A”, therefore the extent of this high quality area has been reduced from 50 feet to 100 feet southward and along the roadways themselves. Many cultivated garden flowers and shrubs were planted along and above the roadways, and Creeping Bellflower (Campanula rapunculoides) has usurped much of the land above and near the roads. Soil erosion is occurring around exposed tree roots and below the concrete walls. The restoration regime for this “C” area includes all of those listed above for the southern “C” forest plus the following simultaneously:

- Remove (or salvage) all cultivars, both herbaceous and woody, near and along the roads in fall (except, perhaps, the daylilies along the upper roadway).
- In areas opened up by the removal of cultivars, plant native grasses, small shrubs and forbs, all found in the existing mesic forest, during the following spring.
- Treat exotic Bluebells and Garlic Mustard with Round-Up in early spring.
- Install erosion control matting in any bare soil already present or created by the salvage operation.
- Cut and treat colonies of Burning Bush (Euonymus alatus) and other ornamental woody plant material and apply Garlon 3A in early fall or Garlon 4 in late fall and winter.

The Mesic Forest “C” areas are the third priority for management.

Mesic Forest “B”

Two areas of “B” mesic upland forest lie on the slopes and tableland of Sunrise Park and Beach. The tableland portion of the southern section is mowed routinely and managed as a park-like grove of old canopy oaks and maples with no understory or herbaceous layer, except for the lawn. See the 2012 report, pages 17 and 29, for specific management recommendations.

Aside from the tableland, the two “B” areas have more stratification, an older canopy, and a more diverse native understory and herbaceous layer than the “C” areas, but all are still below the standards for high quality woods. Removal of exotic trees and shrubs is still needed, and both the

understory and herbaceous layer need enrichment. The latter has some diversity and populations of conservative species, but total cover is low. Soil erosion is severe in a few places and has undercut some canopy trees on the steep upper slopes, exposing root systems. Because of the hostile growing conditions in these areas, herbaceous plantings will probably not establish well enough to be effective in minimizing the erosion. Dense Chokecherry copses are frequent and without most herbaceous species beneath them.

Restoration prescriptions:

- Cut large colonies of Burning Bush and other alien shrubs in winter and treat stumps with Garlon 4; because of steep slopes and much exposed ground after removal, plant native woodland grasses and sedges there the following spring. A cover crop of annual rye (*Lolium multiflorum*) or sections of erosion control blanket may be necessary. A word of caution is necessary, as annual rye is thought to be allelopathic (subdues the growth of surrounding plants, like a Walnut tree) and known to slow the establishment of the preferred plants.
- Cut and remove scattered Norway Maples and Black Locust trees in winter and treat stumps with Garlon 4. In the canopy areas that open up as a result of the removals, plant small Red Oaks if enough available light is present.
- In the first spring, after clearing of the unwanted woody vegetation, plant a mix of rapidly growing native grasses, on bald slopes and around and below exposed canopy tree root systems; monitor annually and consider replenishment and shrub planting if erosion is not checked.
- Thin dense Chokecherry colonies by cutting only, and plant native shrubs such as Witchhazels (*Hamamelis* sp.), Pagoda Dogwood (*Cornus alternifolia*), Serviceberry (*Amelanchier* sp.), and other shrubs as per the planting lists in the report, in the openings around them; such understory plantings are recommended throughout the “B” sections.
- Increase population sizes of existing herbaceous species through seeding in late winter and planting plugs, if feasible; add species not found in the “B” zones, using the list on page 36 of the 2012 report.

The Mesic Forest “B” areas are the second priority for management action.

Mesic Forest “A”

The two Mesic Forest “A” remnants are examples of what a high quality forest community should look like, both structurally and compositionally, although the latter could use enrichment with additional conservative forest forbs as the herbaceous layer is the weakest component in the composition. The “A” forests have a mixed age canopy with well-spaced trees, several strata, a nearly full complement of characteristic shrub species, and a forb component of forest herbs usually found in many grade B high quality forest remnants which are on the Illinois Natural Areas Inventory. Some exotic species require treatment as they are in low numbers now and easily controlled. The lower than expected ground cover (typical of INAI grade A forests) may be due to the presence of Chokecherry clones, which have only dead leaves and bare soil beneath them. The brief management prescription for these “A” remnants is as follows:

- Cut any exotic shrubs in winter and treat stumps with Garlon 4. Monitor for resprouts.
- Seed in native herbs, sedges, and grasses on a few steep bare soil areas. Again, annual rye or erosion control fabric may be necessary, depending on the location.
- Thin and/or completely remove some of the dense copses of Chokecherry and replace with native herbaceous and/or non-colonizing shrub plantings; repeat such plantings in other areas lacking woodland forbs.
- Consider reintroducing some conservative species, in particular those often occurring on bluff top forests and in ravines elsewhere in the North Shore region. Plants like *Hepatica acutiloba*, *Phlox divaricata*, and *Anemone thalictroides* would all be welcome additions to the Park. One group of species not yet observed in the Sunrise Park and Beach forest is the woodland ferns, such as Fragile Fern (*Cystopteris fragilis*) and Marginal Shield Fern (*Dryopteris marginalis*).

Needless to say, the Mesic Forest “A” areas are the highest priority for management.

Three additional site-wide restoration items should be discussed in closing.

As shown on the attached graphic, the ultimate goal is to reduce the total of management zones to three: the mesic forest, the meadows, and the

transition areas between the two. As stated previously, this will aid in simplifying the long term maintenance.

As stated earlier, it would be highly advantageous to the upper bluff, bluff crest, and tableland trees if an area allowing for the restoration of a 5 to 30 foot wide strip of forest on the ledge above the bluff was set aside. Currently this area is either mowed or maintained as a wood-chipped trail. This intersection of the lawn with the slope creates a stark edge effect which negatively alters the structure and composition of the bluff forest for an unknown but significant distance into it. Leaf blowing directed into the forest buries areas which would otherwise contain native herbaceous plants. Wood chips drifting into the forest alter the soil conditions. At the nearby Ravine Park, some strips of very diverse dry mesic forest buffer the mesic ravine forest from the adjacent mowed lawns and roadways. It is recommended that the dry mesic strips of forest at Ravine Park be used as a structural and compositional blueprint (eco-modeling) for the restoration of the ledge areas at Sunrise Park and Beach, in the areas where similar light conditions exist. Plantings could be selected so as to not interfere with the viewsheds.

Finally, one of the most significant species in the mesic forest at Sunrise Park and Beach is Red Oak. Both the 2012 report and the field work for this manual noted that reproduction of this oak is occasionally occurring in the sapling and subcanopy layers. Periodic (3-year intervals) inspection of the forest should analyze all layers, including the herbaceous stratum, for continued Red Oak reproduction. If this is declining, understory and subcanopy gaps need to be created, especially near existing mature Red Oaks, through removal and/or thinning of selected Sugar Maple, Basswood, and other shade tolerant and shade-creating woody plants. This will facilitate natural oak regeneration and/or facilitate the successful planting of Red Oak saplings. Keeping sections of the mesic forest open enough to support the regeneration of Red Oak will also ensure adequate light is reaching the forest floor, helping to maintain a healthy herbaceous component.

In summary, this manual should be integrated and coupled with the 2012 management report. Together they will ensure that this significant natural area and asset to the community can remain as such in perpetuity. This manual should not be interpreted as unchangeable and ironclad. As the restoration proceeds, management and restoration alterations may be necessary, based on any observed deviations from paths leading to the goal

of creating and maintaining a high quality mesic upland forest on the bluff at Sunrise Park and Beach.

General Notes:

The use of herbicides in this project is recommended for the following reasons; to maximize the level of control with the least amount of labor costs; and to minimize the damage to the existing soil profile on the bluff slope. The chemicals suggested for use are typical of native restoration projects and are meant for use only by trained and licensed professionals. Spot treatments and other techniques should be utilized to minimize the need for their use.

Projected Costs for the Restoration of the Bluff Vegetation at Sunrise Park and Beach 5/2013

Year One

Remove 50% of non-native and invasive woody plant material	\$50,000.00
Follow up stewardship (additional herbicide apps, etc.)	\$15,000.00
Plant 50 native trees and 150 shrubs, overseed disturbed areas	\$35,000.00
Monitoring and management	\$5,000.00
Subtotal	\$105,000.00

Year Two

Remove remaining 50% of non-native and invasive plants	\$50,000.00
Follow up stewardship	\$15,000.00
Plant 50 trees and 150 shrubs, overseed disturbed areas	\$35,000.00
Monitor and management	\$5,000.00
Subtotal	\$105,000.00

Total \$210,000.00

Year Three thru Five

Stewardship	\$10,000.00
Overseeding/planting	\$15,000.00
<u>Total</u>	\$25,000.00 per year for three years

Grand Total Five Year Restoration Plan **\$285,000.00**

Note: this amount does not include potential EAB removals

PLANT COMMUNITIES MANAGEMENT MODELS

SUNRISE PARK
 Lake Bluff Park District
 5.10.2013

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MESIC FOREST
 native high-quality canopy,
 diverse understory
 & herbaceous layer
- 

MESIC FOREST CANOPY ONLY
 native overstory minus
 most forest understory &
 herbaceous layer
- 

TRANSITION ZONE
 intersection of forest &
 meadow comprised primarily
 of elements of both
- 

MEADOW
 native plant community
 comprised of shrub
 copses, grasses & forbs

