

Botanical Report: Plum Creek Regional Park

by

Stephen G. Saupe, Ph.D.

*College of St. Benedict/St. John's
University
Biology Department
Collegeville, MN 56321
(320) 363 – 2782
ssaupe@csbsju.edu*

Jorge E. Arriagada, Ph.D.

*St. Cloud St. University
Dept. of Biological Sciences
St. Cloud, MN 56301
(320) 308-3456
jearriagada@stcloudstate.edu*

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Introduction:

Plum Creek Regional Park is one of the newest parks in the City of St. Cloud (Stearns County, MN). It borders the Mississippi River in south St. Cloud near St. Augusta. The purpose of this study was to document the plant species and plant communities growing in Plum Creek Regional Park. This information will complement a study of the bird diversity at the site that is being organized by Linda Peck and Jane Bennett. Like the ornithological data, the botanical information gathered in this study should provide a valuable baseline for community changes on the site over time and should help city planners develop the site in a manner that minimizes the impact to the native biological communities.

Methods:

We visited the 15 sampling stations previously established by Linda Peck and Jane Bennett for a bird survey of the park. These sites are shown in the map in Figure 1. At each sampling site we marked the GPS coordinates (NAD73) using a Garmin Etrex Legend (Table 2). At each site we recorded the species that we observed (Table 1) and described the plant community according to the MN DNR Natural Heritage Program guidelines (Aaseng *et al.*, 1993). Digital photographs were taken at several sampling locations using a Nikon 4500 digital camera (Appendix 1). Voucher specimens of samples were only collected for a limited number of species that couldn't be immediately identified in the field. These specimens are deposited in the Bailey Herbarium (College of St. Benedict/St. John's University; CSB) or St. Cloud State University Herbarium (SCSU). Scientific names follow Ownbey and Morley (1991).

Results:

We visited Plum Creek on Wednesday April 28, Tuesday May 11, Wednesday May 19 and Monday May 24. We spent between 2 and 3 hours during each visit. We were accompanied and assisted on these visits by Dr. Marco Restani (SCSU Biology

Department, May 11), Joe Eisterhold (SCSU Biology, Apr 28), and Brian Hoffman and Mark Zenzen (SJU Biology, May 19 & 24).

General Description:

Plum Creek Regional Park is located along the western bank of the Mississippi River in southern St. Cloud (Fig 1). The park is approximately 160 acres in area. The soils are largely sandy, deposited in the past by the river. Images and GPS readings for most of the study sites are provided in Appendix 1 and Table 2, respectively.

Southern Section – Map Region 111 (Bird Sampling Sites 4 – 9):

Along the southeastern-most edge of the property, near map region 111, for approximately 1700 feet the banks of the Mississippi form steep bluffs that in places are more than 50 feet off the water's surface. The river banks, which are represented by sites 7 and 8, are vegetated by a mixture of dry site and prairie species including little bluestem, Canada wild rye, common juniper, sage-wormwood, pussytoes, and narrow-leaved puccoon. With the exception of common juniper and a few scattered quaking aspen, Eastern red cedar and honeysuckle, there are few woody species on these slopes. Hackberry can be found near the top edge of the slope. The vegetation on these slopes is probably best characterized as dry prairie (Aaseng *et al.*, 1993). We are not certain of the precise subtype since our study occurred before many plants had emerged but it might be the Barrens subtype.

Sites 4 and 5 are at the eastern edge of a fallow field. The vegetation in this field, which is about 20 acres in area, is comprised almost wholly of weedy species such as foxtail, horseweed, ragweed, and Russian thistle that characterize disturbed sites. An apartment complex borders the field to the west. Proceeding east toward the river from sites 4 and 5 is an approximately 19 acre area of open woods dominated by bur oak and northern red oak. Chokecherry and prickly ash are common understory shrubs. The DNR (Aaseng *et al.*, 1993) would likely classify this site as "Oak woodland – Brushland." Site 9 is in the middle of this oak woodland-brushland.

At the extreme southern edge of the property, near site 6, the area is slightly more mesic and the trees are a mixture of American elm, basswood, bur oak, and ironwood. Gooseberry and prickly ash are common understory shrubs and Virginia waterleaf is an abundant spring forb. The DNR classification (Aaseng *et al.*, 1993) suggests that this is an example of a lowland hardwood forest.

Central Section – Sites 1, 2, & 3:

Sites 2 and 3 are situated on the northern edge of the field described in the section above. To the north of the site markers, the area is wooded and slopes downward toward a cultivated field that was formerly an oxbow in the river. On the top of the slopes along the edge of the field, as well as near the old home site (Site #1), the vegetation is characteristic of disturbed sites (*e.g.*, ragweed, smooth brome, European buckthorn, and Dame's rocket). The slope down to the floodplain has abundant box elder and depending upon the location is intermixed with bur oak, American elm, northern red oak, northern pin oak, basswood, and juneberry. Chokecherry and red elder are common shrubs. The

herbs are dominated by nettle, wood-nettle, and a handful of other species including wild ginger, yellow violets, and bloodroot. These slopes are examples of a flood-plain forest (Aaseng *et al.*, 1993).

Central Section – Site 10:

This marker is situated on the western edge of the park along the road leading into the neighboring property (Crossfire Paintball). The region surrounding the marker is characterized by disturbed site species. Among the plants observed here include box elder, smooth sumac, European buckthorn, cottonwood, juneberry, smooth brome, prickly ash, and northern pin oak. The slope leading down to the plowed field in the old river oxbow is a hardwood forest dominated by box elder, bur oak, northern red oak, hackberry, and American elm with a shrub layer including prickly ash, gooseberry, and chokecherry. Some herbs on the slope at the site include sweet cicely, wild geranium, Solomon's seal, and catbrier.

The slope between site 1 and site 10 is dominated by American elm and has a particularly well-developed layer of spring forbs including bloodroot, wild ginger, wood anemone, Jack-in-the-pulpit, red baneberry, and ferns.

North Central Section – Map 109, Sites 11, 12, & 13:

The section labeled 109 on Figure 1 is approximately 19.5 acres in area. The slopes along the northern edge of the cultivated field are dominated by bur oak and elm with some intermixed paper birch and Eastern red cedar. Violet wood-sorrel and hoary puccoon were found in this area, indicating that the slope was likely more open in the past. These forested slopes may have developed from a deciduous brushland or savanna after the cessation of fire.

Site 11 overlooks the Hardrives complex. The dominant trees in this area are basswood, ironwood, paper birch, and northern pin oak. Judging from their diameter, these species are all relatively young. Other species in the vicinity include bur oak, chokecherry, gooseberry, poison ivy, horsetail, and wild geranium.

Site 12 is along the trail nearly in the middle of region 109. This site is relatively flat and dominated by northern red oak with a few Eastern red cedar and paper birch. Virginia creeper, wild lily-of-the-valley, wild strawberry, and yarrow are in the herb layer.

Site 13 is on the northern edge of the forested region in region 109. The marker is at the top of the steep slope that leads to the City of St. Cloud compost facility. Tree species at the site include bur oak, paper birch, northern red oak, and box elder. Chokecherry, prickly ash and honeysuckle are among the shrubs.

North Section – Map Region 106, Sites 14 & 15:

The northern 33 acres of the park, in map region 106, is the City of St. Cloud compost facility. The central dumping area is approximately 15.3 acres and surrounded by woods. Site 14 is in the woods along the western edge of the compost facility. This is an open woods dominated by quaking aspen, box elder, northern red oak, and bur oak.

Understory herbs include Virginia waterleaf, grape fern, poison ivy, and Jack-in-the-pulpit.

We never located the marker for site 15, but it is presumably near the compost facility which is largely disturbed site vegetation. However, in the field near the compost piles there were a few interesting native plants including blue-eyed grass, meadowsweet, and hawthorne.

River Banks:

We did not survey vegetation along the banks of the river. In addition to some of the species described earlier (*e.g.*, box elder) cottonwood was observed near the water's edge.

Botanical Overview:

During our visits we observed more than 110 species in nearly 50 families of plants growing at Plum Creek (Table 1). Because of the early sampling dates and difficulty in identifying young specimens, this list should not be considered complete. We expect that many species that bloom later in the year will be added as botanical investigations continue throughout the growing season. Further, we didn't have time to identify at least 5 species of sedge (*Carex* spp.) and two species of grass. Thus, our checklist should be considered a preliminary contribution to the flora.

Discussion:

Plum Creek Regional Park is an approximately 160 acre area that lies on sandy deposits along the western banks Mississippi River just north of St. Augusta. There is a relatively large quantity (approximately 50% of the total area) of disturbed habitats with weedy vegetation in the park. These areas include the northern end of the park (Section 106), the cultivated field in the central section, the fallow field in the southwestern section, and the area around the former home site. The plants in these areas are typical weedy species including dandelion, smooth brome and others. European buckthorn was present in many sites though it had not yet become well-established in the park. Poison ivy and prickly are perhaps the two major pests.

Most of the remaining areas of the park are forested with a mixture of flood-plain forest, oak woodland-brushland, and lowland hardwood forest. According to the Natural Areas Inventory (Short *et al*, no date) there are approximately a dozen flood-plain forests in the City of St. Cloud. The sloped areas of Plum Creek can be included in this list. Similarly, the oak woodland-brushland area (map region 111) can be added to the approximately 15 oak woodland-brushland areas in the City and the lowland hardwood forest near site 6 can be added to the approximately 5 lowland hardwood forest sites (Short *et al*; no date).

In general, the vegetation on the slopes is in reasonably good shape, likely because their steepness made human access more difficult. Although the quality of many areas might rate at least "B" using the criteria developed by Short *et al* (no date), no area in Plum Creek was included in the Stearns County Biological Survey (1999).

Conclusion:

We support a careful planning effort to determine the types of activities that are compatible with the Plum Creek landscape, and if so, where these activities should be permitted. As the park is being developed, planners should be aware that human activities (disturbances) increase the frequency of invasive or noxious plant species, having a negative impact on the ecosystem. An intensive use of the land for recreational activities not only will affect the composition and structure of the vegetation resulting in an increase of weedy and noxious species (Gelbard & Belnap, 2003) but also will contribute to increased soil erosion that will create new open areas for more invasive plants. This can be a particular concern on the slopes where some of the least disturbed vegetation occurs on the slopes but soil erosion will be more likely to occur. It would be wise to consult a geologist/engineer about the underlying substrate and its suitability to trail placement, development and stability.

References:

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Table 1. Checklist of Species observed at Plum Creek Regional Park, St Cloud MN during May 2004

Family	Scientific name	Common name
Aceraceae	<i>Acer negundo</i>	Box elder
Anacardiaceae	<i>Rhus glabra</i>	Smooth sumac
Anacardiaceae	<i>Rhus radicans</i>	Poison ivy
Apiaceae	<i>Osmorhiza sp.</i>	Sweet cicely
Apocynaceae	<i>Apocynum sp.</i>	Dogbane
Araceae	<i>Arisaema triphyllum</i>	Jack-in-the-pulpit
Araliaceae	<i>Aralia nudicaulis</i>	Wild sarsaparilla
Aristolochiaceae	<i>Asarum canadense</i>	Wild ginger
Asteraceae	<i>Achillea millefolium</i>	Yarrow
Asteraceae	<i>Ambrosia artemisiifolia</i>	Common ragweed
Asteraceae	<i>Antennaria plantaginifolia</i>	Pussytoes
Asteraceae	<i>Arctium minus</i>	Burdock
Asteraceae	<i>Artemisia absinthium</i>	Wormwood
Asteraceae	<i>Artemisia frigida</i>	Sage-wormwood
Asteraceae	<i>Conyza canadensis</i>	Horseweed
Asteraceae	<i>Crysanthemum leucanthemum</i>	Common ox eye
Asteraceae	<i>Erigeron philadelphicus</i>	Daisy fleabane
Asteraceae	<i>Matricaria matricariodes</i>	Pineapple weed
Asteraceae	<i>Prenanthes sp.</i>	Rattlesnake-root
Asteraceae	<i>Solidago gigantea</i>	Goldenrod
Asteraceae	<i>Taraxacum officinale</i>	Dandelion
Betulaceae	<i>Betula papyrifera</i>	Paper birch
Boraginaceae	<i>Lithospermum canescens</i>	Hoary puccoon
Boraginaceae	<i>Lithospermum incisum</i>	Narrow-leaved or fringed puccoon
Brassicaceae	<i>Berteroa incana</i>	Hoary alyssum
Brassicaceae	<i>Capsella bursa-pastoris</i>	Shepherd's purse
Brassicaceae	<i>Draba nemerosa</i>	Whitlow-grass
Brassicaceae	<i>Hesperis matronalis</i>	Dame's-rocket
Caprifoliaceae	<i>Lonicera x bella</i>	Honeysuckle
Caprifoliaceae	<i>Sambucus pubens</i>	Red elder
Caryophyllaceae	<i>Arenaria lateriflora</i>	Sandwort
Caryophyllaceae	<i>Stellaria media</i>	Common chickweed
Caryophyllaceae	<i>Saponaria officinale</i>	Bouncing bet
Celastraceae	<i>Celastrus scandens</i>	Bittersweet
Chenopodiaceae	<i>Salsola kali</i>	Russian thistle, tumbleweed
Chenopodiaceae	<i>Chenopodium album</i>	Lamb's quarters
Chenopodiaceae	<i>Chenopodium cf. capitatum</i>	Strawberry blite
Cistaceae	<i>Lechea sp.</i>	Pinweed
Cupressaceae	<i>Juniperus communis</i>	Common juniper
Cupressaceae	<i>Juniperus virginiana</i>	Eastern red cedar
Cyperaceae	<i>Carex pensylvanica</i>	Wood sedge
Equisetaceae	<i>Equisetum sp.</i>	Horsetail
Fabaceae	<i>Amphicarpaea bracteata</i>	Hog peanut
Fagaceae	<i>Quercus rubra</i>	Northern red oak

Fagaceae	<i>Quercus ellipsoidalis</i>	Northern pin oak
Fagaceae	<i>Quercus macrocarpa</i>	Bur oak
Fern	<i>Botrychium sp.</i>	Grape fern
Geraniaceae	<i>Geranium maculatum</i>	Wild geranium
Hydrophyllaceae	<i>Hydrophyllum virginianum</i>	Virginia waterleaf
Iridaceae	<i>Sisyrinchium campestre</i>	Blue-eyed grass
Lamiaceae	<i>Glechoma hederacea</i>	Ground-ivy
Lamiaceae	<i>Leonurus cardiaca</i>	Motherwort
Lamiaceae	<i>Nepeta cataria</i>	Catnip
Liliaceae	<i>Polygonatum biflorum</i>	Solomon's seal
Liliaceae	<i>Maianthemum canadensis</i>	Wild lily-of-the-valley
Liliaceae (=Smilacaceae)	<i>Smilax herbacea</i>	Greenbrier, catbrier
Liliaceae	<i>Uvularia sessilifolia</i>	Bellwort
Menispermaceae	<i>Menispermum canadense</i>	Canada moonseed
Oleaceae	<i>Fraxinus pensylvanica</i>	Green ash
Oxalidaceae	<i>Oxalis stricta</i>	Yellow wood sorrel
Oxalidaceae	<i>Oxalis violacea</i>	Violet oxalis
Papaveraceae	<i>Sanguinaria canadensis</i>	Bloodroot
Plantaginaceae	<i>Plantago major</i>	Plantain
Poaceae	<i>Bromus inermis</i>	Smooth brome
Poaceae	<i>Elymus canadensis</i>	Canada wild rye
Poaceae	<i>Phalaris arundinacea</i>	Reed canary-grass
Poaceae	<i>Poa pratensis</i>	Kentucky bluegrass
Poaceae	<i>Schizachyrium scoparium</i>	Little bluestem
Poaceae	<i>Setaria italica</i>	Foxtail
Primulaceae	<i>Androsace occidentalis</i>	Fairy candelabra, Western androsace
Ranunculaceae	<i>Actaea rubra</i>	Red baneberry
Ranunculaceae	<i>Anemone quinquefolia</i>	Wood anemone
Ranunculaceae	<i>Anemone sp.</i>	Thimbleweed
Ranunculaceae	<i>Aquilegia canadensis</i>	Wild columbine
Ranunculaceae	<i>Ranunculus abortivus</i>	Kidney-leafed buttercup
Ranunculaceae	<i>Thalictrum dioicum</i>	Meadow rue
Rhamnaceae	<i>Rhamnus cathartica</i>	European buckthorn
Rosaceae	<i>Amelanchier sp.</i>	Serviceberry
Rosaceae	<i>Crataegus sp.</i>	Hawthorne
Rosaceae	<i>Fragaria virginiana</i>	Wild strawberry
Rosaceae	<i>Geum sp.</i>	Geum, avens
Rosaceae	<i>Malus sp.</i>	Apple
Rosaceae	<i>Prunus virginiana</i>	Chokecherry
Rosaceae	<i>Prunus pensylvanica</i>	Pin cherry
Rosaceae	<i>Rosa acicularis</i>	Wild rose
Rosaceae	<i>Rubus occidentalis</i>	Blackberry
Rosaceae	<i>Spiraea alba</i>	Meadowsweet
Rubiaceae	<i>Galium aparine</i>	Cleavers, bedstraw
Rutaceae	<i>Zanthoxylum americanum</i>	Prickly ash
Salicaceae	<i>Populus deltoides</i>	Cottonwood
Salicaceae	<i>Populus grandidentata</i>	Big-tooth aspen

Salicaceae	<i>Populus tremuloides</i>	Quaking aspen
Salicaceae	<i>Salix nigra</i>	Black willow
Saxifragaceae	<i>Heuchera richardsonii</i>	Alum root
Saxifragaceae (=Grossulariaceae)	<i>Ribes cynosbati</i>	Gooseberry
Saxifragaceae (=Grossulariaceae)	<i>Ribes missouriense</i>	Missouri gooseberry
Scrophulariaceae	<i>Verbascum thapsus</i>	Mullein
Tiliaceae	<i>Tilia americana</i>	Basswood
Ulmaceae	<i>Celtis occidentalis</i>	Hackberry
Ulmaceae	<i>Ulmus pumila</i>	Siberian elm
Ulmaceae	<i>Ulmus Americana</i>	American elm
Urticaceae	<i>Laportea canadensis</i>	Wood-nettle
Urticaceae	<i>Urtica dioica</i>	Stinging nettle
Violaceae	<i>Viola pedatifida</i>	Bird-foot violet
Violaceae	<i>Viola soraria</i>	Blue violet
Violaceae	<i>Viola pubescens</i>	Yellow violet
Vitaceae	<i>Parthenocissus quinquefolia</i>	Virginia creeper
Vitaceae	<i>Vitis riparia</i>	River-bank grape

Table 2. GPS Reading for Study Sites

Site	GPS
1	N 45° 30.299' W 94° 9.077'
2	N 45° 30.279' W 94° 8.950'
3	N 45° 30.291' W 94° 8.823'
4	N 45° 30.243' W 94° 8.672'
5	N 45° 30.136' W 94° 8.746'
6	N 45° 30.019' W 94° 8.710'
7	not recorded
8	not recorded
9	not recorded
10	N 45° 30.421' W 94° 9.150'
11	N 45° 30.487' W 94° 8.945'
12	N 45° 30.474' W 94° 9.060'
13	N 45° 30.549' W 94° 9.133'
14	N 45° 30.725' W 94° 9.151'
15	not recorded