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# Forest Preserve District

## OF WILL COUNTY

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### 2019-2020 Deer Management Plan October 2019

#### Background

The Forest Preserve District of Will County (FPDWC) was established in 1927 to “acquire... and hold lands containing one or more natural forests or parts thereof or land or lands connecting such forests or parts thereof, or lands capable of being reforested, or capable of being restored to a natural condition, for the purpose of protecting and preserving the flora, fauna, and scenic beauties within such district, and to restore, restock, protect, and preserve the natural forests and such lands together with their flora and fauna, as nearly as may be, in their natural state and condition, for the purpose of the education, pleasure, and recreation of the public” (70ILCS805/5).

Beginning in the early 1990s FPDWC staff began to notice deer browse lines in several forest preserves. In 1993 the FPDWC began to document the number of deer in the forest preserve system using aerial surveys (Appendix A). Surveys completed indicated deer densities which exceed the target density of 20 deer per square mile widely considered necessary to maintain plant community quality and diversity. The FPDWC also wanted to determine what impacts to the vegetation within the affected habitats high deer numbers resulted in. During the last 20 years, multiple deer browse studies have been conducted on FPDWC properties, and excessive deer browse has been identified as a major contributor to the negative changes in species diversity, composition and structure within the vegetative communities (see 2010 Deer Population Control Permit Application for details).

The winter of 2019/2020 will be the ninth year of the District’s deer management program. During the 2018/2019 permitted season, staff removed a total of 172 deer. Table 1 below summarizes the cumulative number of deer removed from all preserves to date.

Table 1.

Preserve	2010/11 Number Removed	2011/12 Number Removed	2013/2014 Number Removed	2014/2015 Number Removed	2015/2016 Number Removed	2016/2017 Number Removed	2017/2018 Number Removed	2018/2019 Number Removed	Total Number Removed
Romeoville Prairie Area	0	5	10	0	20	14	8	14	71
Lockport Prairie Nature Preserve	10	8	5	10	15	10	8	15	81
McKinley Woods Preserve--Four Rivers Education Center	75	16	63	40	30	25	30	15	294
Kankakee Sands Geologic Area (Sand Ridge, Kankakee Sands and Braidwood Dunes and Savanna Preserves)	0	21	41	41	45	0	30	28	206
Lockport Prairie East	0	0	0	0	0	6	0	0	6
Goodenow Grove Nature Preserve	0	39	30	30	20	20	0	35	174
Hickory Creek Preserve	0	0	60	60	60	60	35	35	310
Raccoon Grove Preserve	0	0	17	20	10	12	19	15	93
Thorn Creek Woods Nature Preserve	0	0	0	0	0	33	19	15	67
Prairie Bluff Preserve	0	0	0	0	0	20	13	0	33
Total	85	89	226	201	200	200	162	172	1335

Current regional research and deer management programs use the deer densities as a meter to help determine the scale of their deer problem. The damage white-tailed deer do to local ecosystems, specifically plant communities and species populations, is measured to determine the success rate of a program, while the deer density numbers provide a guideline for establishing removal targets. Generally, organizations in northeastern Illinois target 10-30 deer per square mile and adjust their plans accordingly over time as recovery in the plant communities occurs and the structure of the deer herds are influenced by removing specific numbers of the animals annually. Current density numbers when looked at in conjunction with floristic surveys and deer browse data indicate that the high numbers of white-tailed deer are major contributors to the altering of ecosystems in Will County Forest Preserves. Table 2 documents current numbers of deer counted as well as proposed numbers for removal. FPDWC proposes removing a total of 146 deer from the preserves listed, including the 30 deer requested by the IDNR from the Sands Areas as part of the CWD Maintenance protocol.

Table 2.

	Current Population Size	Target Population Size	Current Density (Deer per square mile)	2019-20 Removal Target	Estimated Density after 2019-20 Removal Target Completed (Deer per square mile)
Romeoville Prairie Area	25	20	28	5	22
Lockport Prairie Nature Preserve	12	8	25	4	16
McKinley Woods and Four Rivers Environmental Education Center	51	18	62	35	20
Hickory Creek Preserve	91	50	38	35	23
Thorn Creek Nature Preserve	59	35	38	18	26
Goodenow Grove Nature Preserve	49	30	35	19	22
*The Sands: Sand Ridge Preserve, Kankakee Sands Preserve, Braidwood Dunes and Savanna Nature Preserve				30*	
<b>Total Deer to Remove</b>				<b>146</b>	
*IDNR Requested deer removal					

### Program Goals

The FPDWC deer management program goal is to establish and maintain white-tailed deer populations that allow for a sustainable relationship between biological diversity and habitat structure. Succinctly, the deer population numbers will be reduced to allow vegetation to recover from excessive browse.

### Program Objectives

The general objectives are as follows:

1. Utilize aerial deer population surveys to regularly monitor the density of deer residing within a given preserve.
2. Conduct deer browse studies to assess the extent to which the current conditions and differences from previous conditions can be attributed to browsing pressure from white-tailed deer.
3. Reduce deer browse damage to allow for recovery of plant species diversity, and community composition and structure.

## Preserves

### **Romeoville Prairie Nature Preserve and Isle a la Cache Complex (RPN): (0.90 square miles counted)\*\***

(Sections 26, 27, 34 and 35: Township 37N. - Range 10E. & Section 3: Township 36N. – Range 10E.)

Romeoville Prairie Nature Preserve occupies over 590 acres of the Des Plaines River Valley north of 135th Street on the west side of the river. It is dominated by prairie, sedge meadow, and marsh communities. It is comprised of predominantly high-quality remnant wet-mesic dolomite prairie and contains marsh, sedge meadow, springs, fens and floodplain forest on shallow soils over limestone bedrock. There has been a management emphasis on hydrological control and the expansion, enhancement, and monitoring of the property for rare and conservative plant species. The preserve has no public access areas and is well buffered from residential and other public spaces. The terrain is very level and the landscape very open.

The Isle a la Cache occupies 96 acres on an island in the Des Plaines River south of 135th Street. While the Isle a la Cache Museum and associated amenities occur in the northern half of this area, the southern half of the preserve is flat and largely wooded with a few isolated open areas well suited for sharpshooting.

### **Lockport Prairie Nature Preserve (LPN): (0.49 square miles counted)\*\***

(Sections 22 & 27: Township 36N. - Range 10E.)

Lockport Prairie Nature Preserve, a unique and critically endangered wetland habitat is located on the west side of the Des Plaines River both north and south of Division Street, east of Route 53 between the cities of Lockport and Crest Hill. There is limited public access to this 254-acre site, and the site is actively managed with prescribed burns, native plant seeding, brush removal and hydrological restoration efforts in order to enhance and restore the entire property. The area supports a number of listed species, both federal and state, and is considered one of the highest quality dolomite prairie remnants left in Illinois, containing calcareous fens and seeps, sedge meadow and wetland communities.

Among the species the site is managed for are the Hines Emerald dragonfly (*Samatochlora hineana*), leafy prairie clover (*Dalea foliosa*; a.k.a. *Petalostemum foliosum*), Blanding's turtle (*Emydoidea blandingii*) and spotted turtle (*Clemmys guttata*). Leafy prairie clover, currently listed as Federally Endangered, is one of the rarest plants in Illinois and is considered globally imperiled. A member of the legume family, it is a perennial found in habitats of cedar glades, limestone barrens and shallow soiled dolomitic prairies.

### **McKinley Woods Preserve and Four Rivers Environmental Education Center (MWP): (0.88 square miles counted)\*\***

(Sections 20, 29, 30 and 31: Township 34N. - Range 9E.)

McKinley Woods Preserve is a 447-acre site situated on bluffs above the I&M Canal and the Des Plaines River. The I&M Canal State Trail is between the river and the canal. The preserve is characterized by steep wooded bluffs and ravines that provide a very safe backdrop for firing stations. McKinley Woods is a high-use, high-quality area currently receiving multiple large-scale management and restoration efforts, including clearing out invasive woody species such as buckthorn and honeysuckle to decrease their dominance in the existing woodlands and re-creating prairie and oak/hickory savanna over former agricultural land on the uplands above the river terrace.

The Four Rivers Environmental Education Center is a 78-acre area located essentially on an island in the Des Plaines River. Except for the narrow strip of land connecting it to the mainland, this area is surrounded on all sides by water providing good isolation for sharpshooting activities. While the northern half of this site is largely open, the southern half is predominately wooded.

### **Hickory Creek Preserve (HCP): (2.41 square miles counted)\*\***

(Sections 13, 14, 24: Township 35N. - Range 11E. & Sections 16, 17, 18, 19, and 20: Township 35N. - Range 12E.)

Hickory Creek Preserve is a 1,541-acre mosaic of natural communities including woodland, wetland, barrens and prairie around numerous public use amenities, all of which is surrounded by private residential properties. This preserve has varying degrees of natural community quality, including some high-quality areas, and provides habitat for several threatened and endangered species including the savanna blazing star (*Liatris scariosa nieuwlandii*) and small sundrops (*Oenothera perennis*). The preserve receives regular management in the form of prescribed burning, invasive species control, selective woody removal and planting to maintain higher quality areas while improving more degraded portions.

The preserve has terrain ranging from flat, to rolling, to steeply sloped areas. Using the large amount of interior space and varying terrain, sharpshooters will take advantage of the natural topography and elevated shooting positions from well-buffered locations to limit the potential flight of projectiles.

**Thorn Creek Woods Nature Preserve (TCN): (1.56 square miles counted)\*\***  
(Sections 1,2,11 & 12: Township 34N. - Range 13E)

Thorn Creek Woods Nature Preserve is a 996-acre preserve in Park Forest and University Park that is managed by the Forest Preserve District of Will County. It is owned by multiple partners including FPDWC, the Village of Park Forest, University Park and the Illinois Department of Natural Resources; all of whom comprise the Thorn Creek Woods Management Commission.

It contains upland and bottomland, forested land, glacial potholes, ravines, prairie and wetlands. The preserve contains over 3 miles of trails, and is subject to multiple restoration activities including, invasive species control, prescribed burning and planting and seeding activities. All bait stations are located on FPDWC property.

**Goodenow Grove Nature Preserve (GGN): (891 acres, 1.39 square miles)**  
(Sections 23, 26, 27, 28, 33 and 34: Township 34N. - Range 14E.)

The Goodenow Grove Nature Preserve is an 891-acre site located east of I-394 and north of Goodenow Road. The site is characterized by heavily wooded areas along Plum Creek and its tributaries, as well as barrens (shrubby prairies), savannas and grasslands associated with level areas. Goodenow Grove Nature Preserve contains high-quality remnants of a diverse mixture of natural communities including dry-mesic and mesic upland forests, mesic and wet-mesic floodplain forests, forested seeps, savanna, dry-mesic and mesic prairies, wet-mesic prairie/sedge meadow, marshes and vernal pools. The preserve contains habitat for several state threatened or endangered species, including the Kirtland's water snake (*Clonophis kirtlandii*), the spotted coral-root orchid (*Corallorhiza maculata*), and the ear-leafed foxglove (*Agalinis auriculata*) among others.

The site receives extensive management and restoration including invasive species control, prescribed burning, and seeding and planting efforts. Staff intends to take advantage of natural elevated positions for clear shots and backdrops to minimize the potential flight of the projectiles.

\*\*Actual preserve area may differ slightly from the actual estimated area flown.

## **Documentation of Problem**

The FPDWC has been monitoring changes in the vegetation through surveys and inventories and monitoring deer population levels through aerial surveys in FPDWC properties for many years. Specifically, the FPDWC has permitted, assisted on or conducted a number of deer browse related studies of the vegetation at various locations; including the Romeoville Prairie Area, Lockport Prairie Nature Preserve, McKinley Woods Preserve, including Four Rivers Environmental Education Center, Hickory Creek Preserve, Raccoon Grove Nature Preserve, Thorn Creek Woods Nature Preserve, and Goodenow Grove Nature Preserve. These studies were comparative (examining the change in vegetation over time on large ecosystem wide scales), species specific (focused on a single sensitive species), or were community specific with regard to the composition and structure of woody and herbaceous growth within a given natural community. Some of these studies also compared deer browse impacts between preserves at the species or community level. Data indicate significant deer browse pressure and very high deer densities in these preserves resulting in negative shifts in species composition, decreases in diversity, and an overall decline in the quality of these natural areas.

## **Historical Deer Browse and Browse Monitoring and Evaluation**

Additionally, the following is a list of the deer browse surveys and historical monitoring studies that were designed either to assess general vegetation changes over time or to assess specific impacts of deer browse at the level of individual species or plant communities in Will County Forest Preserves. For detailed information related to and supporting the following results, please refer to the 2011-2012 Will County DPCP Application for summaries and complete reports.

Deer Browse Inventory and Browse Monitoring  
Forest Preserve District of Will County Three-Year Browse Study  
Woody Vegetation Changes in Four Will County, Illinois Forest Preserves  
Messenger Woods Large-flowered Trillium Herbivory Study  
Lockport Prairie *Dalea foliosa* Monitoring

## **Current Deer Browse Evidence**

### 1. Deer Browse Inventory and Monitoring 2019

In July 2019, multiple plots were sampled for deer browse at each of the six proposed deer management sites, as well as at the KGA Sands as per the IDNR request. Plots were selected based on historical documentation of known populations of native herbaceous and

woody plant species, with special attention given to listed species, species of concern, more conservative species and native species in descending order of priority. Browse plots are not replicated at a given point each year. The plots are at new points each year.

Each survey team consisted of two to three persons, with at least one plant specialist, and one data recorder/GPS recorder per team. Within each preserve, survey teams would locate areas that historically supported populations of native plants, or find areas via visual surveys that had evidence of native and conservative species present. Within those areas of native plants showing browse damage, teams would delineate a plot location by placing a center post and measuring out a circle with a 10-foot radius.

With the plot selected, the center point recorded via GPS or manually on a physical map, and the circumference of the plot flagged, plant species and level of browse was recorded. A rough visual assessment was done by the plant specialist on the team. From that assessment, a species list of what was native, most desirable and most relevant to the browse survey would be compiled into a focus list. Using the plot specific focus list, the team would document the amount and degree of deer browse. Assessment of deer browse was based primarily on vegetation at least 18 inches in height to minimize bias from browse unrelated to deer. In a few instances, vegetation less than 18 inches in height was sampled when the browse damage could be confidently attributed to deer. Likewise, in instances when the terminal portions of twigs or other vegetation parts were missing but that damage could not be confidently attributed to deer, those specimens were recorded as undetermined browse or simply as damaged. Each plant from the focus list found within a plot was examined and its condition recorded as to whether or not it was browsed, and if it was browsed by deer. Plants were categorized into 3 categories: Browsed by Deer, Not-browsed, or Browsed by Other.

Within each plot, efforts were directed at finding evidence of deer browse upon native species. This data was recorded to illustrate damage caused by deer. It can be noted that where there is a lack of preferred native forage, or native species, likely due to decades of heavy deer browse, the deer are turning to those plants they get less nutritional value from. The data recorded was then placed into an Excel spreadsheet, sorted, and assigned C-values as per Wilhelm and Rericha (Wilhelm and Rericha, 2017). The result varied by site, but at each site browse damage was extensive within the plots as Table 3 illustrates.

Table 3.

	% Browse Native Vines	% Browse Native Trees	% Browse Native shrubs	% Browse Native Forbes	% Browse Plants C-value 0-3	% Browse Plants C-value 4-6	% Browse Plants C-value 7+	Total % Deer Browse
RPN	na	100%	85%	62%	79%	79%	59%	69%
LPN	na	na	75%	65%	68%	84%	52%	67%
MWP	na	69%	70%	66%	67%	66%	na	66%
HCP	44%	69%	75%	63%	62%	64%	65%	64%
TCN	80%	66%	67%	58%	64%	67%	59%	64%
GGN	na	58%	69%	68%	64%	66%	63%	66%
KGA	na	50%	47%	57%	52%	64%	56%	57%

#### Romeoville Prairie Nature Preserve and Isle a la Cache Preserve

Romeoville Prairie Nature Preserve is a grassland remnant. This type of system would normally not be a preferred habitat for white-tailed deer, and as such the plants that grow here are not well adapted to heavy deer browse and deer movement patterns. The system is under heavy deer browse pressure. While it is not ideal habitat for white-tailed deer, the wetland and prairie communities showed extensive deer browse impacts. In total, 85% of native shrubs found at RPN showed deer browse damage and 59% of highly conservative native species, plant species with C-values of 7 or higher, showed damage from deer browse (Table 3).

Eleven plots were surveyed at RPN (Table 4). In the 11 plots, 12 species were selected for assessing deer browse levels. Of the 12 species sampled, 6 were considered non-conservative, having a C-value of 0 to 3. Of the moderately conservative plants, those having a C-value of 4-6, 79% showed evidence of browsing by deer. Of the extremely conservative species, plants with C-values of 7 or higher, the *Dalea* species, 58% of the *Dalea* plants showed deer browse.

Table 4.

PERMIT AREA	Plot ID	Type of Plant	C value	Species CODE	Scientific Name	Common Name	# of plants	# Browsed by Deer	% Browsed By Deer
RPN	RPN10	shrub	0	RHACAT	Rhamnus cathartica	Common buckthorn	18	18	100%
RPN	RPN10	tree	0	PYRCAL	Pyrus calleryann	Callery pear	17	17	100%
RPN	RPN11	shrub	0	ROSMUL	Rosa multiflora	Multiflora rose	8	6	75%
RPN	RPN02	shrub	1	CORRAC	Cornus racemosa	Gray Dogwood	22	17	77%
RPN	RPN04	shrub	1	CORRAC	Cornus racemosa	Gray Dogwood	2	2	100%
RPN	RPN09	forb	3	TRAOHI	Tradescantia ohiensis	Common spiderwort	31	18	58%
RPN	RPN04	forb	3	DESILS	Desmanthus illinoensis	Illinois sensitive plant	21	16	76%
RPN	RPN05	forb	4	DESCAN	Desmodium canadense	Showy tick trefoil	10	10	100%
RPN	RPN03	forb	4	APOCAN	Apocynum sibiricum var. farwellii	Downy Indian Hemp	11	6	55%
RPN	RPN06	shrub	5	ROSCAR	Rosa carolina	Pasture Rose	18	15	83%
RPN	RPN03	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	30	18	60%
RPN	RPN07	forb	9	PHLGLA	Phlox glaberrima	Marsh phlox	14	9	64%
RPN	RPN01	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	2	2	100%
RPN	RPN02	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	15	8	53%
RPN	RPN03	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	12	4	33%
RPN	RPN04	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	15	6	40%
RPN	RPN05	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	30	23	77%
RPN	RPN06	forb	10	DALFOL	Dalea foliosum	Leafy prairie clover	13	8	62%
RPN	RPN08	forb	10	DALFOL	Dalea foliosum	Leafy prairie clover	18	10	56%

As part of the 2018/2019 DPCP 14 deer were removed from RPN. Most recent aerial counts put the estimated population of the Romeoville Prairie Nature Preserve and Isle a la Cache Complex at 25, not accounting for any immigration or births in the last year. The 2019/2020 removal goal is 5 deer which would reduce the population to 22 deer per square mile.

#### Lockport Prairie Nature Preserve

Lockport Prairie Nature Preserve is a remnant dolomitic wetland site. It is not prime habitat for deer, but it does consistently hold a deer population. Additionally, Prairie Bluff Preserve is adjacent to LPN and that preserve holds a number of deer that use both preserves. As it is part of a river corridor, it is comprised of lands unsuitable for development, thus is left to be saved as a preserve. In the 8 plots, 15 species were selected for assessing deer browse levels. 65% of native forbs were found to be browsed to some degree (Table 3). Of the 15 species sampled, 4 species were considered highly conservative (having a C-value of 7 or above), and these highly conservative species showed 52% browse damage collectively.

Table 5.

PERMIT AREA	Plot ID	Type of Plant	C value	Species CODE	Scientific Name	Common Name	# of plants	# Browsed by Deer	% Browsed By Deer
LPN	LPN01	forb	0	LYSVUL	Lysimachia vulgaris	Golden loosestrife	40	33	83%
LPN	LPN05	forb	0	SECVAR	Securigea varia	Crown vetch	52	40	77%
LPN	LPN04	forb	0	ASPOFF	Asparagus officinalis	Asparagus	4	4	100%
LPN	LPN04	forb	1	RUDHIR	Rudbeckia hirta	Black-eyed Susan	20	3	15%
LPN	LPN06	shrub	1	CORRAC	Cornus racemosa	Gray Dogwood	17	12	71%
LPN	LPN09	shrub	2	SALINT	Salix interior	Sandbar willow	18	13	72%
LPN	LPN05	forb	2	HELGRO	Helianthus grosseserratus	Sawtoothed sunflower	14	6	43%
LPN	LPN06	shrub	3	RUBPEN	Rubus pensilvanicus	Yankee blackberry	12	10	83%
LPN	LPN01	forb	4	APOCAN	Apocynum cannabinum	Indian hemp	25	21	84%
LPN	LPN08	forb	4	ANECAN	Anemone canadensis	Meadow anemone	4	3	75%
LPN	LPN01	forb	6	PTETRI	Ptelea trifoliata	Downy wafer ash	14	12	86%
LPN	LPN07	forb	9	DALPUR	Dalea purpureum	Purple prairie clover	7	5	71%
LPN	LPN04	forb	9	VIOCUC	Viola cuculate	Hooded violet	31	11	35%
LPN	LPN02	forb	10	PETFOL	Dalea foliosum	Leafy prairie clover	2	2	100%
LPN	LPN04	forb	10	PEDLAN	Pedicularis lanceolata	Fen betony	20	11	55%
LPN	LPN07	forb	10	PETFOL	Dalea foliosum	Leafy prairie clover	6	5	83%

As part of the 2018/2019 DPCP 15 deer were removed from LPN. Recent surveys counted 12 deer on site. Removing 4 deer would result in densities within the initial target range of 20-30 deer per square mile. As this site is part of the river wildlife corridor, numbers are likely to replenish very quickly so a new count and continued deer management in following years are recommended as part of an aggressive management approach.

McKinley Woods Preserve including Four Rivers Environmental Education Center

While deer population management began in winter of 2010/2011 at McKinley Woods Preserve, the sampling plots continue to document high browse frequencies, and the impacts of long-term over browsing by deer are still readily visible. At MWP in 2019, 6 plots provided 22 selected species. 69% of native trees, 70% of native shrubs, and all species classes combined experienced 66% browse damage (Table 3).

Long-term effects of heavy deer browse in MWP persist. Mature specimens of native shrubs are difficult to find and poor recruitment of cohorts in older age classes due to excessive deer browse threatens their long-term dominance in this woodland.

Table 6.

PERMIT AREA	Plot ID	Type of Plant	C value	Species CODE	Scientific Name	Common Name	# of plants	# Browsed by Deer	% Browsed By Deer
MWP	MWP01	shrub	0	RUBOCC	<i>Rubus occidentalis</i>	Black raspberry	22	15	68%
MWP	MWP06	tree	1	GEUCAN	<i>Geum canadense</i>	White avens	1	1	100%
MWP	MWP06	shrub	2	RIBMIS	<i>Ribes missouriense</i>	Missouri wild gooseberry	1	1	100%
MWP	MWP01	tree	2	CRAMOL	<i>Crataegus mollis</i>	Downy hawthorn	2	1	50%
MWP	MWP04	forb	2	ELYVIR	<i>Elymus virginicus</i>	Virginia wild rye	4	4	100%
MWP	MWP06	forb	3	CIRCAN	<i>Circaea canadensis</i>	Enchanter's Nightshade	63	41	65%
MWP	MWP06	tree	3	CELOCC	<i>Celtus occidentalis</i>	hackberry	1	1	100%
MWP	MWP05	forb	3	SYMDRU	<i>Symphotrichum drummondii</i>	Drummond's Aster	225	148	66%
MWP	MWP01	tree	3	PRUAME	<i>Prunus americana</i>	Wild plum	5	4	80%
MWP	MWP01	tree	3	JUGNIG	<i>Juglans nigra</i>	Black walnut	2	1	50%
MWP	MWP06	forb	4	VIOSOR	<i>Viola sororia</i>	Common blue violet	18	9	50%
MWP	MWP06	forb	4	SYMLAT	<i>Symphotrichum lateriflorum</i>	Side-flowering aster	14	9	64%
MWP	MWP01	forb	4	SYMLAT	<i>Symphotrichum lateriflorum</i>	Side-flowering aster	11	6	55%
MWP	MWP06	forb	4	IMPCAP	<i>Impatiens capensis</i>	Orange jewelweed	58	23	40%
MWP	MWP06	tree	5	FRAPEN	<i>Fraxinus pennsylvanica</i>	Red ash	1	1	100%
MWP	MWP02	forb	5	PREALB	<i>Preanthes alba</i>	White lettuce	5	3	60%
MWP	MWP03	forb	5	SMIRAC	<i>Smilacina racemosa</i>	Feathery False Solomon's Seal	10	6	60%
MWP	MWP01	forb	5	SMILAS	<i>Smilax lasioneura</i>	Common carrion flower	2	2	100%
MWP	MWP01	forb	5	SOLLUM	<i>Solidago ulmifolia</i>	Elm leaved goldenrod	61	51	84%
MWP	MWP04	tree	5	CAROVA	<i>Carya ovata</i>	Shagbark hickory	2	1	50%
MWP	MWP04	forb	5	SMIRAC	<i>Smilacina racemosa</i>	Feathery False Solomon's Seal	4	4	100%
MWP	MWP04	forb	5	SANCAN	<i>Sanicula canadensis</i>	Canadian black snakeroot	8	7	88%
MWP	MWP05	forb	5	VERALT	<i>Verbesina alternifolia</i>	Wingstem	10	7	70%
MWP	MWP04	forb	6	EUTPUR	<i>Eutrochium purpureum</i>	Purple Joe pye weed	101	73	72%

During previous culling seasons, 294 deer have been removed from MWP. The most recent aerial counts revealed 51 deer and an estimated density of 62 deer per square mile. The current approved plan and target removal number of 35 deer is requested. Removal of 35 deer will significantly reduce the population of MWP to a density of 23 deer per square mile, and will allow future management goals to target the site for more conservative levels of reduction.

## Hickory Creek Preserve

Within the 5 plots sampled at Hickory Creek Preserve, 24 species were selected for monitoring deer browse levels. Of the 24 species observed, 8 species were moderately conservative (having a C-value of 4 to 6). Of these 64% of plants showed some degree of deer browse damage. Of the species categorized as highly conservative (having a C-value of 7 or higher) 65% of plants showed deer browse damage. The total browse across all plots was 64%. Browse plots showed excessive browse, and across native trees and shrubs browse levels were documented at 69% and 75% respectively (Table 3).

Table 7.

PERMIT AREA	Plot ID	Type of Plant	C value	Species CODE	Scientific Name	Common Name	# of plants	Browsed by Dee	% Browsed By Dee
HCP	HCP02	forb	0	EUOALA	<i>Euonymus alatus</i>	Winged euonymus	59	28	47%
HCP	HCP02	forb	0	ROSMUL	<i>Rosa multiflora</i>	Multiflora rose	12	5	42%
HCP	HCP01	forb	0	ASCSYR	<i>Asclepias syriaca</i>	Common milkweed	5	3	60%
HCP	HCP03	vine	1	VITRIP	<i>Vitis riparia</i>	Riverbank grape	9	4	44%
HCP	HCP02	tree	1	CORRAC	<i>Cornus racemosa</i>	Grey dogwood	31	22	71%
HCP	HCP01	forb	1	BIDFRO	<i>Bidens frondosa</i>	Common beggars tick	11	6	55%
HCP	HCP02	forb	2	SYMDRU	<i>Symphiotrichum drummondii</i>	Drummond's Aster	19	9	47%
HCP	HCP02	forb	2	SYMDRU	<i>Symphiotrichum drummondii</i>	Drummond's Aster	33	19	58%
HCP	HCP02	forb	2	POLVIR	<i>Polygonum virginianum</i>	Woodland knotweed	15	9	60%
HCP	HCP02	shrub	2	RIBMIS	<i>Ribes missouriense</i>	Missouri wild gooseberry	4	3	75%
HCP	HCP03	forb	3	CIRCAN	<i>Circaea canadensis</i>	Enchanter's Nightshade	9	5	56%
HCP	HCP01	forb	3	CIRCAN	<i>Circaea canadensis</i>	Enchanter's Nightshade	2	2	100%
HCP	HCP02	forb	3	TRIAUI	<i>Triosteum aurantiacum</i> var. <i>illinoense</i>	Illinois Horse Gentian	2	2	100%
HCP	HCP02	forb	3	IMPCAP	<i>Impatiens capensis</i>	Orange jewelweed	111	81	73%
HCP	HCP01	forb	3	SYMNOV	<i>Symphiotrichum novae-angliae</i>	New England aster	3	3	100%
HCP	HCP03	forb	4	RUDLAC	<i>Rudbeckia laciniata</i>	Wild golden glow	111	79	71%
HCP	HCP03	tree	4	ULMRUB	<i>Ulmus rubra</i>	Slippery elm	2	2	100%
HCP	HCP01	forb	4	PENDIG	<i>Penstemon digitalis</i>	Foxglove beards tongue	11	7	64%
HCP	HCP02	forb	4	SYMLAT	<i>Symphiotrichum lateriflorum</i>	Side-flowering aster	49	25	51%
HCP	HCP02	forb	4	SYMLAT	<i>Symphiotrichum lateriflorum</i>	Side-flowering aster	7	5	71%
HCP	HCP02	tree	4	FRAPEN	<i>Fraxinus pennsylvanica</i>	Red ash	7	4	57%
HCP	HCP04	forb	4	SYMLAT	<i>Symphiotrichum lateriflorum</i>	Side-flowering aster	11	6	55%
HCP	HCP02	forb	4	SYMLAT	<i>Symphiotrichum lateriflorum</i>	Side-flowering aster	23	10	43%
HCP	HCP02	tree	5	QUERUB	<i>Quercus rubra</i>	Red oak	11	7	64%
HCP	HCP06	forb	5	HELDIV	<i>Helianthus divaricatus</i>	Woodland sunflower	12	6	50%
HCP	HCP02	forb	6	EUTPUR	<i>Eutrochium purpureum</i>	Purple joe pye weed	13	7	54%
HCP	HCP02	forb	6	EUTPUR	<i>Eutrochium purpureum</i>	Purple joe pye weed	110	78	71%
HCP	HCP02	forb	6	EUTPUR	<i>Eutrochium purpureum</i>	Purple joe pye weed	7	5	71%
HCP	HCP01	forb	7	THADIO	<i>Thalictrum dioicum</i>	Early meadow rue	61	34	56%
HCP	HCP02	forb	8	LONRET	<i>Lonicera reticulata</i>	Yellow honeysuckle	102	70	69%
HCP	HCP01	forb	9	ENEBIT	<i>Enemion biternatum</i>	False rue anemone	3	3	100%

HCP is a sprawling preserve supporting a large population of deer. The current population estimate is 91 deer, which is a density of 38 per square mile. Considering the extent of suitable habitat surrounding this preserve on private residential property, much of which is not included in aerial surveys, it is likely these population and density estimates are below the actual number of deer which utilize HCP. Reducing the population by another 35 deer in the 2019/2020 management season will result in a density of approximately 23 deer per square mile.



Thorn Creek Woods Nature Preserve

Within the 6 plots sampled at Thorn Creek Woods Nature Preserve (TCN), 22 species were selected for monitoring deer browse levels. (Table 3). The 10 moderately conservative species exhibited 67% browse. (Table 3).

Overall, deer browse plots at TCN revealed evidence of extensive deer browse pressure continuing on native shrubs in the preserve. 67% of native shrubs within the browse plots exhibited at least some evidence of deer browse. Often this browse was evident from previous growing seasons resulting in stunted plants. 64% of all plants within sample plots were browsed.

Table 8.

PERMIT AREA	Plot ID	type of plant	C value	Species CODE	Scientific Name	Common Name	# of plants	# Browsed by Deer	% Browsed By Deer
TCN	TCN06	shrub	0	BERTHU	Berberis thunbergii	Japanese berbury	25	17	68%
TCN	TCN05	vine	1	VITRIP	Vitis riparia	Riverbank grape	5	4	80%
TCN	TCN05	tree	1	CORRAC	Cornus racemosa	Grey dogwood	5	2	40%
TCN	TCN06	tree	1	CORRAC	Cornus racemosa	Grey dogwood	4	2	50%
TCN	TCN02	tree	2	CRAMOL	Crataegus mollis	Downy hawthorn	3	3	100%
TCN	TCN06	shrub	2	RIBMIS	Ribes missouriense	Missouri wild gooseberry	7	4	57%
TCN	TCN02	tree	3	ULMAME	Ulmus americana	American elm	9	5	56%
TCN	TCN03	tree	3	ULMAME	Ulmus americana	American elm	1	1	100%
TCN	TCN01	tree	4	FRAPEN	Fraxinus pennsylvanica	Red ash	1	1	100%
TCN	TCN01	forb	4	PARQUI	Parthenocissus quinquinfolia	Virginia creeper	7	7	100%
TCN	TCN01	forb	4	SYMLAT	Symphiotrichum lateriflorum	Side-flowering aster	1	1	100%
TCN	TCN04	forb	4	PODPEL	Podophyllum peltatum	Mayapple	5	2	40%
TCN	TCN02	tree	5	OSTVIR	Ostrya virginiana	Hop hornbeam	25	10	40%
TCN	TCN02	shrub	5	RUBALU	Rubus alumnus	Heart leafed blackberry	2	2	100%
TCN	TCN02	tree	5	CAROVA	Carya ovata	Shagbark hickory	1	1	100%
TCN	TCN02	tree	5	FRAPEN	Fraxinus pennsylvanica	Red ash	10	7	70%
TCN	TCN03	tree	5	VIBPRU	Viburnum prunifolium	Black haw	40	30	75%
TCN	TCN03	tree	5	CAROVA	Carya ovata	Shagbark hickory	1	1	100%
TCN	TCN03	tree	5	OSTVIR	Ostrya virginiana	Hop hornbeam	3	2	67%
TCN	TCN04	tree	5	VIBPRU	Viburnum prunifolium	Black haw	35	25	71%
TCN	TCN05	tree	5	QUEMAC	Quercus macrocarpa	Bur oak	5	3	60%
TCN	TCN06	forb	5	ARITRI	Arisaema triphyllum	Jack in the pulpit	14	9	64%
TCN	TCN01	forb	8	POLREP	Polemonium reptans	Jacob's ladder	44	22	50%
TCN	TCN04	shrub	8	LONRET	Lonicera reticulata	Yellow honeysuckle	17	11	65%
TCN	TCN05	forb	8	PARINT	Parthenium intergrifolium	Wild quinine	4	2	50%
TCN	TCN06	tree	8	FRAQUA	Fraxinus quadrangulata	Blue ash	25	18	72%
TCN	TCN05	forb	9	VIBACE	Viburnum acerifolium	Maple-leaved arrow wood	5	3	60%
TCN	TCN06	forb	10	ADIPED	Adiantum pedatum	Maidenhair fern	13	8	62%

Deer control at TCN in the 2018/2019 season consisted of 15 animals removed. The most recent aerial counts place the population at approximately 59 animals, with a density of 38 deer per square mile. Reducing the population by another 18 deer in the 2019/2020 management season will result in a density of approximately 26 deer per square mile.

Goodenow Grove Nature Preserve

Within the 6 plots sampled at Goodenow Grove Nature Preserve, 28 species were selected for monitoring deer browse levels. Of the 28 species monitored, 12 species were considered moderately conservative, having a C- value of 4 to 6 (Table 9). The 12 moderately conservative species exhibited 66% browse (Table 3).

Overall, deer browse plots at GGN revealed evidence of extensive deer browse pressure continuing on native trees and shrubs in the preserve. 58% of native trees and 69% of native shrubs within the browse plots exhibited at least some evidence of deer browse. Often this browse was evident from previous growing seasons resulting in stunted plants. 66% of all plants within sample plots were browsed.

Table 9.

PERMIT AREA	Plot ID	Type of Plant	C value	Species CODE	Scientific Name	Common Name	# of plants	# Browsed by Deer	% Browsed By Deer
GGN	GGN03	forb	1	GEUCAN	<i>Geum canadense</i>	White Avens	3	3	100%
GGN	GGN03	forb	1	RUDHIR	<i>Rudbeckia hirta</i>	Black-eyed Susan	2	2	100%
GGN	GGN03	shrub	1	CORRAC	<i>Cornus racemosa</i>	Gray Dogwood	2	2	100%
GGN	GGN03	forb	1	SOLALT	<i>Solidago altissima</i>	Tall Goldenrod	4	3	75%
GGN	GGN03	vine	1	VITRIP	<i>Vitis riparia</i>	Riverbank Grape	4	3	75%
GGN	GGN03	forb	1	BIDFR0	<i>Bidends frondosa</i>	Common beggar's tick	5	4	80%
GGN	GGN04	shrub	1	CORRAC	<i>Cornus racemosa</i>	Gray Dogwood	10	6	60%
GGN	GGN01	forb	3	TRAOHI	<i>Tradescantia ohioensis</i>	Common spiderwort	1	1	100%
GGN	GGN03	tree	3	ULMAME	<i>Ulmus americana</i>	American elm	1	1	100%
GGN	GGN01	forb	4	SYMLAT	<i>Symphyotrichum lateriflorum</i>	Calico aster	7	6	86%
GGN	GGN01	forb	4	PENDIG	<i>Penstemon digitalis</i>	Foxglove beards tongue	11	9	82%
GGN	GGN02	forb	4	SYMLCOR	<i>Symphyotrichum cordifolium</i>	Heart leafed aster	2	2	100%
GGN	GGN06	forb	4	SYMLAT	<i>Symphyotrichum lateriflorum</i>	Side-flowering aster	7	3	43%
GGN	GGN03	tree	5	CRACOC	<i>Crataegus coccinea</i>	Scarlet Hawthorn	6	5	83%
GGN	GGN04	shrub	5	RIBMIS	<i>Ribes missouriense</i>	Missouri wild gooseberry	2	2	100%
GGN	GGN04	tree	5	CRACOC	<i>Crataegus coccinea</i>	Scarlet Hawthorn	1	1	100%
GGN	GGN04	tree	5	VIBPRU	<i>Viburnum prunifolium</i>	Black haw	9	8	89%
GGN	GGN04	forb	5	SMILAS	<i>Smilax lasioneura</i>	Common Carrion Flower	1	1	100%
GGN	GGN05	tree	5	VIBPRU	<i>Viburnum prunifolium</i>	Black haw	21	14	67%
GGN	GGN06	forb	5	PREALB	<i>Preanthes alba</i>	Lion's foot	13	7	54%
GGN	GGN06	forb	5	FRAAME	<i>Fraxinus americanum</i>	White ash	8	3	38%
GGN	GGN01	forb	6	DODMEA	<i>Dodecatheon meadia</i>	Shooting Star	16	11	69%
GGN	GGN03	forb	6	LOBSPS	<i>Lobelia spicata</i>	Pale-spiked Lobelia	1	1	100%
GGN	GGN01	tree	7	QUERUB	<i>Quercus rubra</i>	Red oak	1	1	100%
GGN	GGN03	forb	7	SYMLCOR	<i>Symphyotrichum cordifolium</i>	Heart leafed aster	8	8	100%
GGN	GGN05	tree	7	QUERUB	<i>Quercus rubra</i>	Red oak	1	1	100%
GGN	GGN05	forb	7	THADIO	<i>Thalictrum dioicum</i>	Early meadow rue	12	5	42%
GGN	GGN02	forb	8	BAPLAC	<i>Baptisia lactea</i>	White Wild Indigo	4	3	75%
GGN	GGN04	forb	8	SOLCAE	<i>Solidago caesia</i>	Blue-stemmed Goldenrod	10	6	60%
GGN	GGN05	shrub	9	VIBACE	<i>Viburnum acerifolium</i>	Maple leafed arrow wood	20	15	75%
GGN	GGN04	shrub	10	RUBPEN	<i>Rubus pensilvanicus</i>	Eastern Bramble	5	5	100%
GGN	GGN04	forb	10	HEURIC	<i>Heuchera richardsonii</i>	Prairie Alum Root	5	4	80%

Current aerial counts place the population at approximately 49 animals, with a density of 35 deer per square mile. Reducing the population by another 19 deer in the 2019/2020 management season will result in a density of approximately 22 deer per square mile.

**Plan of Action for Program Evaluations**

Schedule of tasks:

Activity	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Submission of IDNR Permit Application											
Train and Certify Volunteers											
Update Deer Management Brochure											
Post Deer Management Program Updates on Web Site											
IDNR Review and Approval of Application and Firing Stations											
Sharpshooter Qualification Testing											
Develop and Mail Notification Letter to Adjacent Landowners											
Implementation of Culling Activities											
Complete Aerial Deer Population Surveys											
Prepare Annual Summary and Recommendations Report											

Proposed Methods and Procedures

The FPDWC sharpshooting program will utilize FPDWC police personnel and qualified volunteers as sharpshooters, field dressers and for coordinating the transportation of the carcasses to an authorized meat processing facility. Deer will be taken at bait stations by FPDWC sharpshooters and all bait stations will adhere to the IDNR regulations for safety. All sharpshooter candidates will be tested and seasonally approved by the IDNR prior to deer program implementation. Each volunteer candidate must be an Illinois resident, possess a valid firearm owner’s identification (FOID) card and pass a verbal interview, background check, drug screening and practice shooting qualification round conducted by FPDWC police before being considered for testing by the IDNR.

Techniques authorized under deer population control permits require that the resulting deer carcasses are suitable for human consumption. The permittee is required to have all usable deer carcasses processed at a State or Federally licensed meat processing facility and to donate the processed venison to a bona fide charitable organization. Unusable deer carcasses must be disposed of in accordance with the Illinois Dead Animal Disposal Act. Since deer collected under deer population control permits must be used for human consumption, the FPDWC’s permit season would take place during the cooler late fall and winter months (December to March).

The FPDWC must return all unused tags along with a deer removal summary within 30 days after permit expiration. The removal summary must list the tag number, location, sex, age and physical condition of each animal collected, as well as the total amount of processed venison donated and the names of the charities receiving the donated meat. The FPDWC is responsible for all costs associated with the deer control program. The program will not authorize the use of archery equipment, handguns, shotguns, muzzle-loading rifles, etc. Only modern rifles firing 0.223 or 0.308 rounds are proposed for use in the sharpshooting program.

Staff has reviewed and researched current urban deer programs and recommendations extensively. The FPDWC has set goals of 20-30 deer per square mile based on this research (current literature suggests that pre-settlement numbers of white-tailed deer were approximately 9 per square mile). This target range will be re-evaluated annually as the impacts of the deer browse decline with the reduction in deer densities in a given area. The target number of deer to be removed from each site (Table 2) was determined based on the stated desired density and the estimated deer population based on the most recent aerial population counts as well as being contingent on the resources available to the FPDWC.

Evaluation of Management Program

Staff has conducted deer population counts from a helicopter during most years beginning in 1993. Table 10 presents the results from the year 2002 to the present. Survey crews of two or more persons counted deer from December through March, ideally when the snow is less than three days old, at least three inches deep and in the absence of foliage to allow better visibility. However, extremely

mild conditions and lack of persistent snow cover during the winter of 2011/2012 prevented deer population counts from being completed at any FPDWC preserve.

Evaluation of the deer management program will be based on documenting the changes in aerial population surveys and changes in vegetation browse over time at sites where management has been conducted. Site-specific deer population targets will emerge over time as the structure and composition of the vegetation in a given preserve recovers from browse pressure. The deer density and deer population monitoring will not be the sole vehicle of evaluation for management effectiveness. Density targets will be managed adaptively meaning that recovery of vegetative communities and/or species populations will determine future population control and density targets.

The FPDWC initiated its deer management program with a requirement for sharpshooters to remove antlerless individuals only to hasten the population reduction at certain preserves and to allow the public time to adjust to the new program. With the removal of many females from some sites but not enough to reach target population sizes, the District sharpshooters began to experience a significant reduction in efficiency at bait stations during the 2011/2012 culling season as the sex ratio in some preserves with two consecutive years of deer management appeared to have been skewed towards males. The District will continue to implement a restriction for subsequent deer culling seasons; Sharpshooters will now attempt the preferential, but not exclusive, removal of does, allowing for the removal of younger males if necessary to achieve target population sizes. Mature males showing ten or more antler points will not be preferentially targeted.

Table 10.

Area Counted (square miles)*	2002	2005	2006	2007	2008	2009	2010/2011	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
<b>Preserve &amp; Unit</b>														
Romeoville Prairie Area			0.90		0.90		0.90	0.95	0.90	0.90	0.90	0.90	0.90	0.90
Lockport Prairie Nature Preserve			0.56		0.43		0.43	0.43	0.43	0.45	0.49	0.49	0.49	0.49
McKinley Woods Preserve				0.84	1.11		1.11	1.11	1.11	0.88	0.88	0.88	0.82	0.82
Hickory Creek Preserve			3.25		3.25		3.25	3.25	3.25	2.41	2.41	2.41	2.41	2.41
Raccoon Grove Nature Preserve		0.50		0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50
Thorn Creek Nature Center		4.08		3.52	3.52			2.92	2.92	1.56		1.56	1.56	1.56
Goodenow Grove Nature Preserve			2.10		1.50		1.50	1.50	1.50	1.39	1.39	1.39	1.39	1.39
<b>Aerial Count</b>														
<b>Preserve &amp; Unit</b>	<b>2002</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010/2011</b>	<b>2012/2013</b>	<b>2013/2014</b>	<b>2014/2015</b>	<b>2015/2016</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>
Romeoville Prairie Area			54		28		27	33	8	47	37	31	34	25
Lockport Prairie Nature Preserve			29		24		27	14	21	25	21	18	27	12
McKinley Woods Preserve				180	122		137	123	93	65	65	64	35	51
Hickory Creek Preserve			155		200		147	248	205	175	132	95	93	91
Raccoon Grove Nature Preserve		58		52	0			32	59	20	22	29	34	5
Thorn Creek Nature Center		327		373	99			200	30	73		59	56	59
Goodenow Grove Nature Preserve			169		110		98	94	76	59	52	38	70	49
<b>Densities (per square mile)</b>														
<b>Preserve &amp; Unit</b>	<b>2002</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010/2011</b>	<b>2012/2013</b>	<b>2013/2014</b>	<b>2014/2015</b>	<b>2015/2016</b>	<b>2016/2017</b>	<b>2017/2018</b>	<b>2018/2019</b>
Romeoville Prairie Area			60		31		30	35	9	52	41	34	38	28
Lockport Prairie Nature Preserve			52		56		63	33	49	56	43	37	54	25
McKinley Woods Preserve				214	110		123	111	84	74	74	73	43	62
Hickory Creek Preserve			48		62		45	76	63	73	55	39	39	38
Raccoon Grove Nature Preserve		116		104	0			64	118	40	44	58	68	10
Thorn Creek Nature Center		80		106	28			68	10	47		39	36	38
Goodenow Grove Nature Preserve			80		73		65	63	51	42	37	28	50	35

\*=The actual area flown/counted differs from the official preserve size