Integrated Pest Management Plan to Reduce Lyme Disease Risk in Loudoun County Parks

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## Contents:

- Integrated Pest Management ............................................. 2
- Setting Action Thresholds .................................................. 3
- Monitor and Identify the Pest ............................................. 3
  - Biology of the Blacklegged Tick, *Ixodes scapularis* ........... 4
- Surveillance ........................................................................ 5
- Prevention .......................................................................... 7
  - Communication and Outreach ......................................... 7
  - Signage ........................................................................... 8
  - Tick Bite Prevention ....................................................... 8
- Landscape Management ..................................................... 10
- Control ............................................................................... 11
  - Management of Host Animals ......................................... 11
  - Chemical Tick Control ................................................... 13
- Summary ........................................................................... 14
- References .......................................................................... 15
- Park Specific Recommendations and Park Index .................. 16
Integrated Pest Management Plan to Reduce Potential Lyme Transmission in Loudoun County Parks

The goal of this integrated pest management (IPM) plan is to make recommendations to develop a program that will reduce the risk of contracting Lyme disease from blacklegged ticks in Loudoun County parks. Information that was vital to the construction of this plan comes from the Centers for Disease Control (CDC), the Connecticut Agricultural Experiment Station’s *Tick Management Handbook* prepared by Kirby Stafford, and the Executive Summary of the U.S. Environmental Protection Agency’s *Promoting Community IPM to prevent Tick-Borne Diseases Conference*. Links to these documents, and other useful tick resources, are provided at the end of this report. Park-specific recommendations have been made by Clarke employees that conducted 5 weeks of tick surveillance during spring of 2013.

**Integrated Pest Management**

The *Tick Management Handbook*, developed by the Connecticut Agricultural Experimental Station, states that IPM involves the selection and use of several methods to reduce, rather than eliminate, pest populations with expected ecological, economic, and sociological costs and benefits. The EPA’s Integrated Pest Management Fact Sheet describes a four tiered approach for IPM:

- Set action thresholds
- Monitor and identify pests
- Prevention
- Control

For ticks, this may involve the use of landscape practices to reduce tick and host animal habitats, management or treatment of host animals, and targeted applications of pesticides to high-risk tick habitat – all in conjunction with personal protection steps, such as dressing appropriately, using insect repellent, and removing ticks promptly.

There are many strategies available for the development of community IPM programs to reduce encounters with ticks. It is important to develop a program which has a clearly defined goals, action thresholds, measureable results, and continual re-evaluation of progress. The goals of the program should be specific and tailored for each integrated pest management principle.
An example of other local program goals can be found online from the Fairfax County Disease Carrying Insects Program’s (DCIP) 2013 Plan of Action (http://www.fairfaxcounty.gov/hd/westnile/wnvpdf/planofaction-2013-draft.pdf).

Setting Action Thresholds

One main difference between traditional pest control programs and integrated pest management programs is the use of action thresholds to determine when to utilize control measures. Action thresholds indicate the point when pest control actions should be taken due to the pest population or environmental conditions. Action thresholds can be qualitative or quantitative. Examples of quantitative thresholds: X or more nymphal blacklegged ticks collected during X drag event(s) at a specific park; Lyme MLE of collected blacklegged ticks at a specific park greater than X%; Ecotone present within X feet of athletic field. Examples of qualitative thresholds: Heavy infestations of ticks vs light infestations of ticks; presence vs absence of overhanging vegetation along trails. Once the threshold is determined, control actions should not take place until the action threshold has been met or exceeded.

Action thresholds should relate specifically to program goals. Establishing appropriate action thresholds can be difficult, but the following should be taken into consideration when determining action thresholds for your program: public health and safety concerns, public opinion, and economics. Specific thresholds can be established for each park, different areas within each park, or even different species of ticks. Thresholds can also be established to determine when landscape management practices should be utilized as a control strategy and can relate to either pest populations or specific landscape variables. Past and ongoing surveillance is essential in establishing existing population numbers on which to base future action thresholds.

Monitor and Identify the Pests

Lyme disease is the most common vector-borne disease in Virginia. The incidence of Lyme disease in Virginia has risen sharply since 2002, and in 2012 there were 805 confirmed and 305 probable human cases (cdc.gov/lyme). The rising incidence of Lyme disease is due to a number of factors, including: Increased tick abundance, overabundant deer population, increased recognition of the disease, establishment of more residences in wooded areas, and increased potential for contact with ticks. Currently, Loudoun County has one of the highest incidence rates for Lyme disease in the state.

According to the Centers for Disease Control and Prevention (CDC) (www.cdc.gov/lyme), Lyme disease is caused by the bacterium Borrelia burgdorferi and is transmitted to humans through the bite of infected blacklegged ticks (formerly referred to as the “deer tick”). Typical symptoms of Lyme disease include fever, headache, fatigue, and a characteristic skin
rash called erythema migrans; if left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of exposure to infected ticks; laboratory testing is helpful if used correctly and performed with validated methods.

Understanding the biology and ecology of blacklegged ticks and Lyme disease is the first step in creating an IPM program to control the spread of Lyme.

*Biology of the blacklegged tick, Ixodes scapularis*

Blacklegged ticks are considered a “three-stage” tick, since the larva, nymph, and adult all feed off of different hosts (as opposed to restricting their life cycle to a single individual). This makes them prone to infection, because pathogens picked up during blood feeding of one stage can be transmitted to naïve populations of mammals during subsequent feedings. Ticks must be attached to humans for at least 24 hours before they begin transmitting the bacteria that cause Lyme disease. However, the likelihood of infection increases steadily the longer the tick is attached. Thus, checking for ticks and prompt removal of attached ticks is one of the most important and effective methods of preventing infection.

Small (larva, nymph) life stages typically feed on relatively small mammals, such as rodents, while the primary host in the adult stage is the white-tailed deer. However, ticks are opportunistic and will feed readily on a wide variety of mammals if given the chance. Depending on the life stage, ticks attach for 3 to 7 days, after which they drop off of their host and molt. The white-footed mouse is the principal reservoir (source of infection) for the bacteria that causes Lyme disease. Birds are reported to be the mode of long-distance dispersal. White-tailed deer are not a reservoir for Lyme disease, but adult females that mate and feed to repletion on deer or other medium to large mammals are capable of producing 2000 to 3000 eggs after dropping off of their host—making deer a key reproductive species in the blacklegged tick life cycle. The highest human risk of infection comes from nymphs, since they are smaller than adults and may be difficult to find on the body, making them more likely to remain attached for the required amount of time to transmit Lyme.

Blacklegged ticks have a two year life cycle. Adults have two periods of increased activity, once in the spring (March to May) and again in the fall (October-December). Eggs are laid by the adult females in May, with larvae hatching in midsummer. August is the peak month for larval activity, and after feeding they will drop off the host, molt to the nympha life stage, and enter dormancy until the following year in late spring. After blood feeding, nymphs molt to the adult stage and appear in fall of the same year. They remain active on warm days during the winter, and their numbers begin to rise again during spring. Adult blacklegged ticks are the stage that is most heavily infected with the bacteria that cause Lyme disease, since the tick has had the chance to be infected twice, once as a larva and once as a nymph. Due to their
relatively large size, however, they are more likely to be detected and removed prior to transmission.

**Surveillance**

Surveillance is a vital tool of IPM that is used to monitor the vector population. Routine surveillance is critical in determining the scope of the problem and the development of an appropriate community response to address it. It can help determine changes in the distribution and density of blacklegged tick populations. It also evaluates the effectiveness of tick reduction strategies and facilitates decision making. Surveillance is important for determining (based on blacklegged tick populations) when action thresholds have been met for additional IPM measures. Ongoing surveillance of tick populations and current human tick-borne disease cases will assist with producing measureable results from the actions taken by the current management program. Surveys conducted by Loudoun County on Lyme and tick awareness have already helped to provide measureable results of the impact of public awareness and outreach efforts.

Key blacklegged tick habitat areas of concern include woodlands, edge habitat (ecotone) and long grass traversed by people. Tick drags are the primary form of surveillance recommended in Loudoun County parks for the collection of blacklegged ticks. They are constructed from large, weighted pieces of cloth 1 m², and are pulled through potential tick habitat such as woods, ecotone, and long brush to collect “questing ticks” (those actively seeking a host). The ticks cling onto the tick drag as it passes by, and are then removed by collectors and placed in vials for future identification and possible testing. Carbon-dioxide traps placed on a 1 m² piece of sailcloth are effective at collecting large numbers of ticks. However, during 2 weeks of surveillance in Loudoun County parks in March 2013, about 97% of the ticks
collected were lone star ticks \textit{(Amblyomma americanum)}, 2\% were American dog tick \textit{(Dermacentor variabilis)}, and less than 1\% were blacklegged ticks \textit{(Ixodes scapularis)}.

Comparatively, tick drags were 5 times more likely to collect blacklegged ticks than CO2-baited traps. As a result, we recommend the continued use of tick drags for surveillance in Loudoun County parks.

Weekly tick drags at predetermined locations in 20 parks are recommended to begin in early spring (March) and conclude in late fall (November). It is important to note that adult blacklegged ticks remain active throughout the winter months on warm days—though the likelihood of human contact with ticks during this time period is significantly reduced. Springtime surveillance will indicate when nymphal populations begin to increase and may help to determine the timing of potential control measures. Blacklegged tick nymphs have the highest capability of transmitting the bacteria that causes Lyme disease to humans, and are the life stage that most commonly infects humans (98\% in one Connecticut study according to Stafford). Continual surveillance throughout the tick season will help determine the efficacy of any control strategy taken and continue to monitor the vector population. At a minimum, pre and post surveillance should be conducted in areas where chemical applications will be made to control ticks in order to determine efficacy of treatments.

Additional surveillance measures that may be employed by the Loudoun County parks include the collection of ticks from organized deer hunts inside the parks, and staff tick collections. Parks that have staff on-site may place ticks removed from clothing during work into alcohol for future identification or testing. Collection of ticks from dead deer culled during organized hunts is a method of choice for neighboring Fairfax County DCIP to collect adult blacklegged ticks. Human disease surveillance also provides information about the geographic distribution of Lyme disease, and thus blacklegged ticks, within the county (but not necessarily about parks).

Testing of blacklegged ticks for \textit{Borrelia burgdorferi} can determine local infection rates within the population, and may help indicate when thresholds are met to initiate IPM strategies for tick reduction. Fairfax County routinely reports that about 25\% of blacklegged ticks collected carry the bacterium that causes Lyme disease. During 5 weeks of surveillance in spring 2013, 31\% of blacklegged ticks in Loudoun County parks were estimated to be infected (the minimum infection rate (MIR)). To determine true infection rates, it is recommended that individual ticks are tested, rather than pooling groups of tick from a given site and park. However, pooled testing of ticks (multiple individuals tested as a group) can still provide a minimum infection rate, which may be useful to decision-makers when determining an appropriate IPM response.
Prevention

Preventing pests from causing harm is widely considered to be the most important step in an integrated pest management program. Prevention strategies for tick control attempt to minimize the risk of exposure to ticks. This can be achieved through active communication and outreach to people in Lyme endemic areas, landscape management practices to reduce habitat for ticks, deer, and rodents, and physical methods to reduce entrance into blacklegged tick habitat. Prevention is generally cost effective and presents little to no risk to people and/or the environment.

Communication and Outreach

Garnering support for local community IPM efforts and to promote prevention, communication and outreach with local citizens is imperative. Citizens are most likely to be interested in preventive measures if they have a complete understanding of the problem and risk involved. Loudoun County has enacted a number of measures to increase public awareness about ticks and Lyme disease in their 10-Point Action Plan to Mitigate Lyme Disease in Loudoun County (a link is provided in the references section).

Action Plan items #2 through #9 are all focused on outreach efforts, and include: the creation of a Lyme survey, a high-profile link to the county Lyme webpage, educational materials geared toward elementary schools, the organization of Lyme Education Forums, routine newspaper articles, a list of expert physicians treating Lyme, educational materials for home-owners, and a Lyme education awareness briefing to all children enrolled in Parks and Recreation outdoor programs. We recommend continuing all of the outreach efforts as listed in the 10-point action plan referenced above.

When planning outreach strategies, it is important to determine which groups of people are at the highest risk for contracting Lyme disease from blacklegged ticks at Loudoun County Parks. Some factors that will increase the risk for certain groups include: total time spent in the parks, areas of the parks visited, and prior knowledge about ticks and Lyme prevention.

Due to their high risk for exposure, we suggest that Lyme disease outreach materials be distributed among all Loudoun County Parks and Recreation employees. We also recommend the initiation of an annual training program for outdoor workers routinely exposed to tick habitat in Loudoun County parks. Parks and Recreation workers make up one of the highest-risk groups for exposure to blacklegged ticks. Since staffed parks often receive the highest use, these are areas where outreach efforts may have the highest impact for both employees and visitors. Visitors to Loudoun County parks should be encouraged to stay on trails whenever possible to avoid tick habitat.
Literature distribution is recommended to residents living in areas that border Loudoun County Parks, especially those parks that contain a significant amount of high-risk blacklegged tick habitat, such as Banshee Reeks.

**Signage**

Warning signs such as those provided by the CDC (cdc.gov/lyme) are recommended in all currently operational Loudoun County parks (one such sign is pictured below), sometimes at multiple locations within the parks. Loudoun County may wish to modify or design their own signage to include additional information to county-related Lyme prevention efforts. The signs should be double-sided wherever feasible to increase visibility, and be placed in high-traffic areas of the park, or areas where risk of human contact with ticks is the highest. Signs posted near roads should be large enough to read while driving past in a vehicle.

![Signage](Image)

**Tick Bite Prevention**

Personal protection behaviors, including avoidance and reduction of time spent in tick-infested habitats, using protective clothing and tick repellents, performing thorough tick checks, and promptly removing attached ticks before transmission of *Borrelia burgdorferi* bacteria can occur, can be very effective at preventing Lyme disease. Detailed information about all
personal protection behaviors should be included in public outreach materials and training programs.

When possible inside of Loudoun County parks, citizens should avoid contact with high-risk tick zones such as woodland edges, and tall grass. The center of trails should be utilized when possible to avoid brushing against overhanging vegetation where ticks may be questing. Long, loose, light-colored clothing, as well as closed-toed shoes are recommended when entering tick habitat. Additional measures include tucking pants into socks and shirts into pants.

Repellents, especially those containing the active ingredient DEET, are also highly effective at reducing tick exposure. They can be applied directly to the skin or clothing. A number of different active ingredients are available in repellents, including DEET, IR3535, Picaridin, Oil of Lemon Eucalyptus and other natural oils. The best repellent is the one that works for the individual using it. Clothing sprays that utilize permethrin as an active ingredient (which can kill and repel ticks) are commercially available at a wide variety of retailers, and should be applied to clothing before it is worn, not to skin (as indicated on the label). Many clothing sprays have a residual insecticidal effect, with some lasting up to 70 washes. There are companies that will treat clothing before sale, and other companies will treat “outfits” sent in by people. All repellents and clothing sprays should be applied following directions on the label to avoid adverse effects.

Careful inspection of the entire body is recommended following exposure to tick habitat. Tick bites are not generally painful, and as a result, most people are unaware they have been bitten without a proper tick check. Not all blacklegged ticks carry the bacteria that cause Lyme disease in humans. A blacklegged tick must be attached for 24-36 hours before they begin transmission of Borrelia burgdorferi. The risk of contracting Lyme disease increases steadily after 36 hours of tick attachment, so prompt removal of the tick is one of the most important actions to reduce transmission.

According to Stafford’s Tick Management Handbook, tick removal should be achieved with the use of fine-tipped tweezers, grasping the tick as close as possible to the skin. Pulling upward with steady, even pressure usually removes the tick with all of the mouthparts intact. However, if the mouthparts are left behind it is usually better to leave them to come out on their own, since they are no longer able to actively transmit the Lyme spirochete, contained in the tick abdomen. Do not ever use other tick removal methods, such as petroleum jelly (suffocation) or burning. They are not effective and may potentially increase the risk of pathogen transmission.

After the tick is removed, the attachment site should be cleaned with alcohol. The tick can be preserved in alcohol along with the date and time of attachment, to be referenced or tested later if symptoms of tick-borne illness appear. The individual should be aware of the symptoms of tick-borne illness and see a doctor within 30 days of finding the tick, when possible.
Landscape Management

Landscape management makes modifications to the vegetation to render the environment less suitable for ticks and tick hosts. Alterations to the landscape should be made in the areas where humans are most likely to encounter tick habitat. Many of the methods used in parks can also help Loudoun County residents reduce tick exposure in their own yards, where the majority of tick bites are thought to occur.

The perimeter of routinely maintained human use areas, including brushy areas and groundcover vegetation, and most importantly, the woods, form the high-risk tick zone. Blacklegged ticks require moist leaf litter for the survival of all stages, and are most commonly associated with dense woods, fragmented forest, and “edge” habitat. In Loudoun County parks, the locations that were most conducive to collecting Blacklegged ticks during spring 2013 surveillance were forest edges, in the transition zone between mowed grass and the woodline (“ecotone”).

The following are landscape management strategies that are currently utilized in Loudoun County Parks.

- Athletic fields are mowed short
- In many areas, grass is mowed short to the wood line
- Paved walkways have mowed/maintained margins
- Trails through grassy areas are mowed.
- In one park, Banshee Reeks, sickle style mowers are used to clear overhanging vegetation from mowed trails
- Large areas of tall grass and brush are bush-hogged multiple times during the summer
- Some wooded areas are fenced to reduce access
- Playground areas and trails are mulched or delineated from surrounding habitat
- Some athletic fields contain fencing/backstops to reduce chance of participatns/balls crossing into potential tick habitat

In general, current landscape management practices seen at Loudoun County parks reduce tick habitat in the areas where the parks are utilized the most: athletic fields. Because most parks in Loudoun County are managed as athletic/recreation areas, many park users will not be at high risk for encountering blacklegged ticks. Landscape management practices should focus on areas where ecotone and dense woods are located in close proximity to athletic fields and near walking trails through areas of ecotone and dense woods. Although areas of tall grass provide suitable habitat for other ticks, without a woodland component nearby (presence of leaf litter), blacklegged ticks are less likely to be encountered.

The following are general landscape management strategies that are recommended to be used in Loudoun County Parks:
- Keep grass mowed to edge of woodline, when possible.
• Use barriers (mulch, plantings, fences, etc) to reduce access between human use areas and ecotone.
• Remove debris from the woodland edge that fosters survival of rodent hosts, such as brushpiles, fallen trees and old stone walls
• Trim branches over woodland trails to increase sunlight and lower humidity.
• Widen or make permanent foot trails through areas of ecotone and/or woods
• Mulch or pave walking trails
• Center playground equipment inside mulched areas of parks surrounded by woods
• Use sickle style mowers on mowed trails through areas of tall grass to reduce vegetation overhanging the trails

Control

IPM programs should evaluate proper control methods for both effectiveness and risk once surveillance has indicated that an action threshold has been met or exceeded. Control measures with the least risk of harm to people and the environment should be employed first. If continued surveillance shows that those measures have not achieved the goals, then more aggressive control measures should be employed.

Many factors should be considered when choosing control options. Public opinion on some of these options such as the use of pesticides in parks and hunting of deer will vary greatly. Regulations for the use of pesticides and control measures involving animals will need to be considered, and special permits may need to be obtained before proceeding. The cost and labor associated with each control option should also be evaluated. Any decision to utilize a control measure should be based on the benefits of using that measure versus the risk it may impose to humans or the environment.

Management of Host Animals

Ticks require blood meals from host animals during each life stage (larva, nymph, adult) in order to complete their life cycle. Larval and nymphal ticks typically feed on small mammals such as mice and other rodents. Adult ticks feed on and reproduce on larger mammals such as deer. The white-tailed deer is not a competent reservoir for the bacteria that cause Lyme disease, so they do not become infected, nor aid in its spread, except as the reproductive component of the adults. Adult females that feed to repletion on large hosts like deer and humans lay eggs that hatch into larvae, which are most likely to feed on the most competent reservoir host for *Borrelia burgdorferi*, the white-footed mouse.

According to the Stafford’s *Tick Management Handbook*, the abundance and distribution of blacklegged ticks has been correlated with the size of the deer population. Development of land for human use (whether homes or parks) often creates ideal habitat for white-tailed deer. Fragmented forests create more “edge” habitat, and foster the growth of
browse plants like shrubs, berries and grasses, on which deer thrive. Landscape management practices that reduce tick abundance may also reduce the available habitat for deer, and may help provide some host control.

Studies have shown that host population reduction or exclusion can be effective in reducing tick populations in closed areas (islands, areas surrounded by deer fencing, etc.). However, the effectiveness of host population reduction in an open system, where hosts can pass through unabated, such as the Loudoun County parks is difficult to determine.

Host management options in Loudoun County parks may include deer fencing, repellents, host habitat reduction, host-targeted chemical tick control, and controlled hunting. Although some of these options are discussed briefly below, there is more detailed information on host management in Stafford’s *Tick Management Handbook*.

White-tailed deer reduction and management

Dense populations of deer have been directly implicated in vehicle collisions, lack of forest regeneration, damage to residential landscapes, and the rising incidence of Lyme disease. Numerous studies have illustrated that controlled deer hunting can significantly reduce or eliminate populations of blacklegged tick in localized or isolated communities. However, deer are highly mobile, and are widespread throughout Loudoun County, both in parks and residential areas. There is not yet sufficient data to determine whether a deer population can be reduced to achieve a satisfactory level of tick control in densely human-populated areas. There have been controlled hunts at multiple parks in 2013, including Banshee Reeks, Edgar Tillet, and Bles Park, but without continued tick surveillance it is unknown whether these will impact the local tick populations in those parks.

According to Stafford’s *Tick Management Handbook*, a community that wishes to implement a deer management program, especially in densely populated urban and suburban areas must deal with hunting restrictions, real or perceived safety or liability concerns, and conflicting attitudes on managing wildlife. Any deer population control program would require an initial reduction phase, and a maintenance phase to keep the population at the desired level. Management of these programs is ongoing, and requires the coordination of numerous agencies and stakeholders.

**Host-Targeted Chemical Tick Control for white-tailed deer**

The U.S. Department of Agriculture developed passive self-treatment methods for white-tailed deer through both systemic (i.e. ivermectin treated corn) and topical application technologies to kill ticks feeding on deer. A device termed a “4-poster” was designed for the application of topical acaricides to white-tailed deer to prevent the successful feeding of adult ticks. It consists of a feeding station with 4 paint rollers that hold the pesticide. Deer are treated when, by design, they are forced to brush against the rollers as they feed on whole-kernel corn. Important to the success of these feeding stations are the density of the stations,
and their continued maintenance. Additional information about 4-posters, and other host-targeted strategies for white-tailed deer, is discussed in detail in Stafford’s *Tick Management Handbook*.

Fairfax County is currently working in collaboration with the Virginia Department of Game and Inland Fisheries on a pilot program for the use of 4-poster stations to control tick infestations on white-tailed deer. More information on this is available at http://www.fairfaxcounty.gov/living/wildlife/pilotstudy/4-poster.htm.

**Host-Targeted Chemical Tick Control for Small Rodents**

The importance of small mammals in the dynamics of Lyme disease depends on the abundance of the animal host, number of ticks feeding on the host, and the host’s ability to infect feeding ticks with the Lyme disease spirochete (i.e. reservoir potential).

Small rodents, especially the white-footed mouse, *Peromyscus leucopus*, are the primary reservoir for *Borrelia burgdorferi*, the bacteria that causes Lyme disease. The methods for reducing ticks on small rodents are similar to those used in deer. They target the larval and nymphal stages of ticks, interrupting the transmission cycle. Damminix Tick Tubes are the most common method for delivering permethrin-treated cotton to rodents who use it for their burrows. The density of tubes is important, as is a knowledge of the highest-risk rodent habitats in a given parks.

**Chemical Tick Control**

Acaricides are powerful tools in controlling tick populations, and should be considered by any community IPM plan. Often, only small amounts of acaricide applied at the right time of the year, are required to effectively control ticks in targeted areas. According to Stafford’s *Tick Management Handbook*, “Chemical intervention should focus on early control of nymphal blacklegged ticks, the stage most likely to transmit Lyme disease by spraying once in May or June.” Local tick surveillance efforts will indicate when nymphal blacklegged tick populations are rising. Studies in Connecticut indicate that a single application of most ornamental-turf insecticides will provide 85-90% or better control with some residual activity.

There are many acaricides labeled for the control of ticks. Some examples of different active ingredients and trade names are detailed in Stafford’s *Tick Management Handbook*. Any product selected should be specifically labeled for area-wide tick control and should be applied according to the labeled directions by a licensed pesticide applicator.

Treatments should be performed as targeted barrier applications and should be limited to blacklegged tick habitat in close proximity to high-risk human use areas. Ticks are rarely found more than a few feet from ecotone inside short-mowed surfaces, thus athletic fields and short mowed areas should not be treated with acaricides. Pesticides should not be applied on
windy days (greater than 10 mph), on playground equipment, or within at least 25 feet of wetlands or 100 feet of streams. Employees at staffed parks and outdoor maintenance workers may have the best knowledge of where people encounter blacklegged ticks at each park.

Adequate education of residents and stakeholders is essential to the success of chemical control, since the application of acaricides may not be widely accepted. Notification of chemical applications should be made at least one week prior to treatments. The following should be included in any public notice of spraying: applicator business name, address, telephone number, the pesticide brand name and common name (if available), EPA Registration number of the pesticide, the location of the application, the proposed date and time of the application, and ways to reduce exposure to pesticides. In addition, notification signs should be posted for at least 48 hours prior to and 48 hours after any chemical application has been made.

Determining the efficacy of control efforts is important for the continual re-evaluation of an IPM program. Surveillance of tick populations before and after chemical applications will show if the treatments achieved the desired tick population reduction. Based on the results, additional control efforts may or may not be recommended.

Summary

In 2012, the estimated population of Loudoun County was 336,898. During fiscal year 2013, there were an estimated 780,000 visitors to manned Loudoun County Parks and Recreation properties. The number of visitors to unmanned parks is not monitored. More than twice the population of the County annually visit parks located within Loudoun County and have the potential to encounter blacklegged ticks. Developing an IPM program, to reduce the potential risk that any one of these visitors contracts Lyme disease while visiting the parks, should be a priority for Loudoun County.

In developing this IPM program, Loudoun County should establish specific program goals with action thresholds for control measures that are based on current surveillance data. The best results will be achieved by combining multiple control strategies with prevention efforts. The actions of the program should be re-evaluated on a regular basis to determine if program goals are being met.
References


http://www.epa.gov/pesp/events/ticks/tickconferencereport.pdf

Fairfax County Disease Carrying Insects Program (DCIP). Fairfax County 4-Poster Pilot Study.
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http://www.epa.gov/pesp/events/ticks/tickconferencereport.pdf

http://www.epa.gov/opp00001/factsheets/ipm.htm

15
# Park Specific Recommendations

<table>
<thead>
<tr>
<th>Park Name</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashburn Park</td>
<td>17</td>
</tr>
<tr>
<td>Banshee Reeks Nature Preserve</td>
<td>20</td>
</tr>
<tr>
<td>Beth Miller Park</td>
<td>24</td>
</tr>
<tr>
<td>Bles Park</td>
<td>27</td>
</tr>
<tr>
<td>Brambleton Community Park</td>
<td>32</td>
</tr>
<tr>
<td>Byrne’s Ridge</td>
<td>35</td>
</tr>
<tr>
<td>Chick Ford and Ryan Bickel Fields</td>
<td>38</td>
</tr>
<tr>
<td>Claude Moore Park</td>
<td>41</td>
</tr>
<tr>
<td>Conklin Park</td>
<td>46</td>
</tr>
<tr>
<td>Countryside Park</td>
<td>49</td>
</tr>
<tr>
<td>Edgar Tillet Memorial Park</td>
<td>51</td>
</tr>
<tr>
<td>Elizabeth Mills Riverfront Park and Kephart Bridge Landing</td>
<td>54</td>
</tr>
<tr>
<td>Evergreen Mills Equestrian and Hiking Trail</td>
<td>59</td>
</tr>
<tr>
<td>Franklin Park</td>
<td>61</td>
</tr>
<tr>
<td>Greg Crittenden Memorial Park</td>
<td>66</td>
</tr>
<tr>
<td>Gwen Thompson Briar Patch Park</td>
<td>69</td>
</tr>
<tr>
<td>Keep Loudoun Beautiful Park</td>
<td>72</td>
</tr>
<tr>
<td>Lovettsville Community Park</td>
<td>74</td>
</tr>
<tr>
<td>Lucketts Community Park</td>
<td>77</td>
</tr>
<tr>
<td>Lyndora Park</td>
<td>80</td>
</tr>
<tr>
<td>Mickie Gordon Memorial Park</td>
<td>83</td>
</tr>
<tr>
<td>Nell Boone Park</td>
<td>86</td>
</tr>
<tr>
<td>Phillip A. Bolen Memorial Park</td>
<td>89</td>
</tr>
<tr>
<td>Potomack Lakes Sportsplex</td>
<td>93</td>
</tr>
<tr>
<td>Trailside Park</td>
<td>96</td>
</tr>
<tr>
<td>Woodgrove Park</td>
<td>99</td>
</tr>
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*Hampshire Park and Ray Muth Sr. Memorial Park were not evaluated for this project and would benefit from future evaluation and recommendations.*
Ashburn Park - 43645 Partlow Rd. Ashburn, VA

Park Description:

This park features 16 acres with three age-appropriate playground units, a picnic pavilion, and a trails network.

Field Observations:

All three playground units are shaded as a result of high canopy cover, and mulch transitions directly to tall trees. Walking trails are paved and are bordered by small areas of short grass leading up to riparian and woodland edges. There are unmaintained foot trails bordered by tall grass, and a utility easement between the playground units and walking trails.

High-risk areas:

- Densely wooded areas surrounding playgrounds

Medium-risk areas:

- Paved trails in densely wooded area.
- Foot trails through long grass and easement.

Low-risk areas:

- Short grass around basketball court in south part of park (basketball court is outside of park boundary)

Surveillance/Monitoring:

Drag Sites:

- D1 – Around playground and edges of easement
- D2 – Wood line bordering paved trail and riparian zone.

Frequency/Schedule:

- 2 sites dragged weekly

Personal protection/Public Education:

Signage:

- S1 – Sign posted near parking lot/playground area.
- S2 – Sign posted along trail leading from basketball courts into wooded area of park.

Outreach:

- Consider outreach/education for students at neighboring Cedar Lane Elementary School who may walk through Ashburn Park on their way to school, as well as residents in the surrounding neighborhoods.
**Landscape Management:**

*Existing strategies:*

- Most walking trails through park are paved with mowed/maintained margins
- Athletic fields are mowed short
- Playground area in woods is mulched to edges with an island of trees fenced in the middle to restrict access

*Strategies to consider:*

- Widen or make permanent foot trails that currently cut through the park from Cedar Lane Elementary School and the utility easement.
- Keep all open areas of grass mowed short up to the tree line, including the area between the paved and unmaintained walking trails and the basketball court, and within the utility easement.
- Place additional fencing around the outside edge of the playground area to restrict access into the surrounding woods.
- Remove leaf litter and excess brush from edges of playground area where possible.
- Trim tree branches and shrubs along trails and playground areas to allow in more sunlight.

**Targeted acaricide applications:**

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Banshee Reeks Nature Preserve - 21085 The Woods Rd. Leesburg, VA 20185

**Park Description:**

The 725-acre Banshee Reeks Nature Preserve Designating Banshee Reeks Park as a Nature Preserve ensures that all the plants, animals, habitats and cultural resources are protected. It is bordered by Goose Creek, which forms the southern boundary.

**Field Observations:**

There are large sections of land in various stages of succession at this park, and more than 20 miles of trails. Numerous park employees alluded to the heavy presence of ticks at this site. There are signs posted within the park warning visitors about ticks. The park is bordered to the east by the Loudoun County Landfill. Discussions with park staff indicated that the majority of park use takes place centrally, on trails relatively close to the Visitor’s Center. Dense woods make up much of the northern part of the park, and conversations with park staff indicated that the highest probability of finding *I. scapularis* is along trails in the woods there. Trails in these woods are less trodden due to lower use, and contain leaf litter and overhanging vegetation. The southeastern portion of the park also contains large stands of dense forest and wetland. Trails bordering wood lines and through open areas are at least 6’ wide, and additional mower attachments cut overhanging vegetation on the sides of trails. Fishing takes place at all three ponds, but most frequent activity occurs at Spring House Pond near Visitor’s Center. In recent years, deer hunts have been performed in October and December, with an average of 35-50 deer culled each year. Prescribed burning has also indicated the presence of healthy vole, shrew, and mouse populations.

**High-risk areas:**
- Areas of dense woods

**Medium-risk areas:**
- Tall grass and ecotone bordering trails

**Low-risk areas:**
- Mowed area immediately surrounding Visitor’s Center and parking lots.

**Recommended surveillance:**

**Organized Deer Hunts:**
- Collect ticks from deer harvested during organized deer hunts at Banshee Reeks

**Park Employee Collection:**
- Encourage parks employees who “pick-up” ticks while working to collect and save the ticks in alcohol
- Any ticks can be collected and saved for identification and/or disease testing.

**Drag Sites:**
- **D1** – Long grass and ecotone southeast of Visitor’s Center.
- **D2** – Long grass and ecotone surrounding maintenance hangar.
- **D3** – Skinny foot trails in northern dense woods.
- **D4** – Island of trees near center of park.
**Frequency/Schedule:**
- 4 sites dragged weekly

**Personal protection/Public Education:**

**Signage:**
- **S1** – Near The Woods Rd, along main entrance to park
- **S2** – Near the Corner Pond Parking lot
- **S3** – Within main parking lot near the Visitor Center
- **S4** – At the confluence of trails leading towards the Spring House Pond

**Outreach:**
- Consider outreach strategies targeted at citizens, local associations and groups who utilize Banshee Reeks Nature Preserve
- Include Lyme prevention information with registration materials presented to any groups/individuals wishing to register to use facilities at Banshee Reeks Nature Preserve
- Have literature and/or displays about ticks available at all manned buildings within the park
- Encourage hikers to the park to stay on trails at all times
- Distribute literature to citizens that live in proximity to the park.

**Landscape Management:**

**Existing strategies:**
- All trails are mowed and sickle style mower used on edges of mowed paths to reduce overhanging vegetation
- Grassy areas surrounding the visitor center are mowed short

**Strategies to consider:**
- Consider widening the trails in wooded areas and removing leaf litter and excess brush from the trails.
- Mulch most frequently used trails, such as those around the visitor’s center.

**Targeted acaricide applications:**
- Targeted barrier applications should be conducted if action thresholds warrant treatment.
- Due to this park being managed as a Nature Preserve, consideration for natural/preserve-specific certifications obtained by Banshee Reeks should be taken into account before planning any acaricide application.
Beth Miller Park - 20270 Leier Pl. Ashburn, VA 20147

Park Description:

The park is a nine-acre passive park, located in Belmont Greene, adjacent to Trailside Park. It contains walking trails, a gazebo, and a pond.

Field Observations:

The open-play field in the south of the park connects to Trailside Park with a steep foot trail that borders tall grass (cleat marks observed). There are paved walking trails along the North side of the pond that also border the thin wood line separating the park from W&OD trail. Trap location in Trailside Park will serve as the indicator trap for Beth Miller as well, since they are connected. A well-trodden foot path connects the open play area to the W&OD trail.

High-risk areas:
• Trail edges on earthen dam containing long grass that connect to W&OD trail.

Medium-risk areas:
• Thin woods/ecotone on northern and eastern part of park, near the W&OD trail.
• Low-lying areas in center of park that contain long grass and other vegetation.

Low-risk areas:
• Open-play field and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
• D1 – Around pond and open play field.

Frequency/Schedule:
• 1 site dragged weekly.

Personal protection/Public Education:

Signage:
• S1 – Between W &OD trail access and unmaintained trail across earthen dam
• S2 – Post near southern access point from Leier Pl. leading through Beth Miller Park towards Trailside Park

Outreach:
• Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and facilities at Trailside Park.
• Distribute literature to citizens that live in proximity to the park.

Landscape Management:

Existing strategies:
• Most walking trails through park are paved with mowed/maintained margins
Strategies to consider:

- Widen or make permanent foot trails that currently cut through the park from Leier Pl and the W & OD Trail
- Keep all open areas of grass mowed short, including the raised field and grassy hill between Beth Miller Park and Trailside Park
- Place fencing around the outside edge of pond area to restrict access into transitional areas between mowed grass and the pond.

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Bles Park - 44830 Riverside Pkwy. Ashburn, VA 20147

Park Description:

The 124-acre property includes a 30-acre active park with soccer fields, walking/hiking trails, a tot lot, a parking lot and restrooms and a 94-acre passive park with wetlands that will contain sections of the Potomac Heritage National Scenic Trail and Broad Run Corridor Trail.

Field Observations:

This is a large park bordering the Potomac River and Broad Run, with trails throughout. Dense woods are present in the northwest corner of the park, as well as the riparian zones along the Potomac River (north edge of park) and Broad Run (eastern/southern finger). Signs of deer were evident throughout the park, especially adjacent to the trails on the east side of the wetland area, which lies east of playing fields. Tall grass is present around all playing fields, and foot trails through the grassy fields were observed. There is a paved trail running through the park which is mowed short on the sides for 15-20' before leading to tall grass.

Smaller foot trails used by more aggressive hikers follow both the Potomac River and Broad Run, and have overhanging vegetation present. Playground does not have a physical barrier between mulch and long grass leading to wetland. There is a confluence of trails (mowed short) in the northern part of the park running up-to and along the Potomac River. Along Riverside Pkwy., there is a mowed access point to Broad Run and the small foot path that runs along Broad Run through the southern stretch of the park.

High-risk areas:
- Woods in northwest corner, along Potomac River, and along Broad Run.
- Foot path along Broad Run, extending through southern stretch of park.

Medium-risk areas:
- Tall grass surrounding playing fields.
- Wetland area between Broad Run and playing fields.
- Walking trails throughout park.

Low-risk areas:
- Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- D1 – Ecotone along west and south sides of playing fields
- D2 – Ecotone and trails north and east of playing fields
- D3 – Trails and ecotone on eastern edge of park (along Broad Run).
- D4 – Trails in southeastern finger of park between Broad Run and Riverside Pkwy.

Organized Deer Hunts:
- Collect ticks from deer harvested during organized deer hunts at Bles Park

Frequency/Schedule:
- 4 sites dragged weekly
**Personal protection/Public Education:**

**Signage:**
- **S1** – Near parking lot and playground area at main access point for park
- **S2** – Post near trail entrance to dense woods by athletic fields and Broad Run Corridor Trail
- **S3** – Near boat ramp/access point along Riverside Pkwy

**Outreach:**
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and river trails at Bles Park
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**
- Most walking trails through park are paved or mowed with mowed/maintained margins
- Athletic fields are mowed short

**Strategies to consider:**
- Widen or make permanent foot trails that are part of the Broad Run Corridor Trail extending into the Southern portions of the park. Trim overhanging vegetation from edges of the trail.
- Widen or make permanent foot trails that lead through tall grass from the end of Riverside Pkwy and Cornerstone Square towards the athletic fields and retention pond.
- Keep all open areas of grass mowed short, including areas of tall grass between athletic fields and grassy area leading to boat launch/river trail.
- Consider creating a larger transitional zone between the athletic field edges and wood lines by removing woody vegetation at edges of fields and mowing up to the edge of the wood line.
- Apply mulch or gravel to mowed paths that lead from the athletic fields to Broad Run Corridor Trail.

**Targeted acaricide applications:**
- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Brambleton Community Park - 22377 Belmont Ridge Rd. Ashburn, 20148

Park Description:

Located along Belmont Ridge Road within the Brambleton Regional Park, this park is adjacent to the National Recreation and Park Association headquarters. The facility includes two softball fields and four large baseball fields.

Field Observations:

The Northern Virginia Regional Parks Authority building lies adjacent to the park in the south. On the west side of the park, woods surround the four main baseball fields. No obvious trails led from park to reservoir in the west. A wetland area borders the south side of the two smaller little league fields. The portion of the park east of Belmont Ridge Rd. is not currently in-use, and has no public parking at this time. This area will need to be re-evaluated when it becomes developed for use. The areas behind the northernmost baseball fields are large hills with tall grass beginning at the top with an ecotone transition to the wood line. There is contiguous deciduous forest beyond the park’s northern and western boundaries. There is a paved golf cart trail south of southwest baseball field running through coniferous forest. Heavy tick presence was reported by staff in western woods of park. Baseball field in northeast corner of park has large boulder retaining walls separating fields from wooded areas.

High-risk areas:
- Woodland surrounding baseball fields to north and west.

Medium-risk areas:
- Unused woodland and wood line in closed eastern portion of park
- Ecotone between baseball fields and surrounding woodland.

Low-risk areas:
- Playing fields, paved trails, and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- D1 – Along woods/ecotone on both sides of northeast baseball field
- D2 – Along woods on western edge of baseball fields.

Frequency/Schedule:
- 2 sites dragged weekly

Personal protection/Public Education:

Signage:
- S1 – Near parking lot and central entrance to athletic fields
- S2 – Near parking lot and northern entrance to athletic fields

Outreach:
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields at Brambleton Community Park.
• Consider outreach strategies targeted to the National Recreation and Park Association Headquarters and the Brambleton Golf Course, both located adjacent to this park.
• Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

*Existing strategies:*

- Most walking trails through park are paved or mowed with mowed/maintained margins
- Athletic fields and surrounding grassy areas are mowed short

*Strategies to consider:*

- Keep all open areas of grass mowed short, including areas of tall grass on artificial hills
- Place a fence around centrally located wooded drainage area to prevent access.
- Remove leaf litter and brush piles from surrounding woody edges and stone walls

**Targeted acaricide applications:**

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Byrne’s Ridge - 24915 Mineral Springs Cir. Aldie, VA 20105

**Park Description:**

This 26-acre active park in Stone Ridge contains three large soccer fields, one large baseball field, two softball fields, and an asphalt trail.

**Field Observations:**

A patch of woods in northeast corner of park borders a fenced daycare center and runs along back side of northernmost baseball field. Trails lead through the woods directly in front of the parking lot, leading up to baseball fields. Jeff Demory indicated that when park staff accessed the well in the easement they encountered ticks. County has since installed irrigation control in southwest corner, reducing entry of staff into easement.

**High-risk areas:**

**Medium-risk areas:**
- Wooded areas near parking lot and daycare center.
- Easement running along west side of park boundary.

**Low-risk areas:**
- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- **D1** – Wooded areas near parking lot.
- **D2** – Western edge of park (ecotone/easement).

**Frequency/Schedule:**
- 2 drags weekly

**Personal protection/Public Education:**

**Signage:**
- **S1** – Sign posted near parking lot where people cut through to fields on trails through woods

**Outreach:**
- Consider outreach for neighboring Minnieland Academy at Stone Ridge
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields at Byrne’s Ridge Park.
- Distribute literature to citizens that live in proximity to the park.

**Landscape Management:**

**Existing strategies:**
• Most walking trails through park are paved with mowed/maintained margins
• Athletic fields are mowed short
• Path through wooded area is mulched

Strategies to consider:

• Widen or make permanent mulched trails that currently cut through the wooded area from the parking lot to athletic fields
• Keep all open areas of grass mowed short
• Place fencing along the Western edge of the park to prevent easy access to the utility easement.
• Remove leaf litter and excess brush from wooded areas and utility easement where possible.
• Trim tree branches and allow in more sunlight in the wooded cut through area.

Targeted acaricide applications:

• Targeted barrier applications should be conducted if action thresholds warrant treatment.
Chick Ford and Ryan Bickel Fields - 21594 Ashburn Village Blvd., Ashburn, VA 20147

Park Description:

These two baseball / softball fields are located along Ashburn Village Boulevard, between Farmwell Road and Waxpool Road

Field Observations:

This is a small park containing 2 baseball/softball fields surrounded by woods. The parking lot is bordered by mowed grass on one side, and a steep hill covered in undergrowth and shrubs. The turnaround at the end of the parking lot has overhanging vegetation in the northeast corner. The area south of the fields and across the road and off park property is a densely wooded parcel with evidence of paint ball activity.

High-risk areas:
- None within park boundaries.

Medium-risk areas:
- North and eastern boundaries along wood line.

Low-risk areas:
- Playing fields, parking lots, and all other maintained areas (mowed short).

Recommended surveillance:

Surveillance is not currently recommended at this park.

Personal protection/Public Education:

Signage:
- S1 – Sign posted near parking lot and entrance to both baseball fields

Outreach:
- Consider outreach for students at neighboring new school and members of Christ Community Church
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields at Chick Ford and Ryan Bickel Fields.
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- Athletic fields are mowed short

Strategies to consider:
- Keep all open areas of grass mowed short
• Place fencing along the Southern edge of the park (across the entrance) to prevent easy access to the wooded area to the South.
• Remove leaf litter and excess brush from wooded areas where possible.
• Trim tree branches and brush along Northern edge of park near turn around where it overhangs into the roadway.

**Targeted acaricide applications:**

• Targeted barrier applications should be conducted if action thresholds warrant treatment.
Claude Moore Park - 21544 Old Vestal's Gap Rd. Sterling, VA 20164

**Park Description:**

Claude Moore Park is located to the east of Cascades Parkway in Sterling, VA. The northern park entrance, marked Old Vestal's Gap Road, provides access to the Visitor Center, the natural areas, and Lanesville Historic District. The southern park entrance, marked Loudoun Park Lane, provides access to the Sportsplex (46150 Loudoun Park Lane) and the Loudoun Heritage Farm Museum as well as the Claude Moore Recreation Center and Claude Moore Community Center.

**Field Observations:**

Most of this park is densely wooded, and there are signs of deer throughout the park. There are several miles of hiking trails throughout the wooded portions of the park, which are frequented by the public and day campers. Conversations with park staff indicate that trails in northern section of park are most active with hikers. Multiple picnic areas near the Visitor Center and Nature Center border areas of woods and/or tall grass. The historic area surrounding Lanesville Ordinary is mowed short. Areas surrounding the two centrally located ponds contain ecotone and damp woodlands with walking trails throughout.

Staff naturalists have reported the presence of blacklegged ticks, lone star ticks, and American dog ticks of various life stages. Area surrounding outfield of baseball fields have either long grass or are bordered by dense woods. The football field contains a rough margin on its perimeter.

Both local leagues and national tournaments enjoy playing baseball, softball, football, soccer, and lacrosse on nine well-groomed and irrigated fields in the Sportsplex. Nature, history, and sports classes, programs, and camps, along with scout programs, school field trips, birthday parties, and special events help to share this multi-faceted park with guests of all ages.

**High-risk areas:**

- Dense woods in the northern, western, and southern part of the park.
- Trails in heavily wooded areas.

**Medium-risk areas:**

- Ecotones and long grass to the north and south of the baseball fields, as well as around Visitor’s Center and along Old Vestal’s Gap Rd.

**Low-risk areas:**

- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**

- **D1** – Along trails in dense woods north of Visitor Center.
- **D2** – Trails through woods near picnic pavilion to south of visitor center, especially near pond.
- **D3** – Purple trailhead along Old Vestal’s Gap Rd and ecotone along football field.
- **D4** – Trail from maintenance building westward along north side of baseball fields leading to blue and white trail.
- **D5** – Long grass/ecotone behind 4 baseball diamonds and down black trail into woods.
**Park Employee Collection:**
- Encourage parks employees who “pick-up” ticks while working to collect and save the ticks in alcohol
- Any ticks can be collected and saved for identification and/or disease testing.

**Frequency/Schedule:**
- 5 sites dragged weekly.

**Personal protection/Public Education:**

**Signage:**
- **S1** – Near parking lot of Vestal’s Gap Visitor Center
- **S2** - Along Loudoun Park Lane where the Little Stoney Mountain and Scout Trails intersect and cross the road
- **S3** – Near Sportsplex parking lot turn around
- **S4** - Further down, along Loudoun Park Ln where Little Stoney Mountain Trail crosses the road
- **S5** – Near intersection of entrances to Heritage Farm Museum football fields
- **S6** – Along Old Vestal’s Gap Rd near entrances to Little Stoney Mountain Trail and Cedar Grove Trail

**Outreach:**
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and all other facilities at Claude Moore.
- Consider outreach targeted at local surrounding schools: Park View High School, and Sterling Elementary School
- Include Lyme prevention information with registration materials presented to any groups/individuals wishing to register to use facilities at Claude Moore Park
- Consider hosting Tick Education events at Claude Moore Recreation Center or Vestal’s Gap Visitor Center
- Have literature and/or displays about ticks available at all manned buildings within the park
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**
- Most walking trails through park are paved with mowed/maintained margins
- Athletic fields are mowed short and baseball fields have backstop fences to prevent access into the wooded areas behind them

**Strategies to consider:**
- Widen or make more defined trails that currently pass through the wooded areas. Consider removing leaf litter from trails through wooded areas and trimming overhanging vegetation
- Keep all open areas of grass mowed short, especially areas of long grass surrounding athletic fields
• Remove leaf litter and excess brush from wooded areas near maintenance facility and pond areas
• Trim tree branches and allow in more sunlight into the wooded trails.

**Targeted acaricide applications:**

• Targeted barrier applications should be conducted if action thresholds warrant treatment.
Conklin Park - 25701 Donegal Dr. South Riding, VA 20152

**Park Description:**

Conklin Park is a 30-acre passive and active park site with basketball courts, three tennis courts, a sand volleyball court, two soccer fields, a pond, and parking facilities.

**Field Observations:**

This park is mostly wooded, but there are no maintained trails inside the woods (although animal trails were present). There is a paved and mowed community walking trail that goes along the Loudoun County Pkwy along the east edge of the park. On the west side of the park, a utility easement runs through the woods just south of the soccer fields. Signs of deer were present in woods just south of eastern parking lot during the initial visit. People access the pond (which is off of park property) near the tennis courts in the northwest corner of the park. A large patch of dense woods makes up the eastern half of the park. The woodland west of Donegal Dr. surrounds the soccer fields to the north, west, and south. Brush piles were observed in the woods along the western edge of the soccer field. Most activity takes place in or near the parking lots.

**High-risk areas:**
- Dense woods in southern and eastern part of park

**Medium-risk areas:**
- Woodline/ecotone bordering soccer fields, parking lots, and tennis courts.

**Low-risk areas:**
- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- D1 – Around soccer fields and across Donegal Dr. toward tennis courts.

**Frequency/Schedule:**
- 1 site dragged weekly

**Personal protection/Public Education:**

**Signage:**
- S1 – Sign posted near parking lot on Western side of park
- S2 – Sign posted near parking lot on Eastern side of park

**Outreach:**
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields at Conklin Park.
- Distribute literature to citizens that live in proximity to the park
**Landscape Management:**

*Existing strategies:*

- Athletic fields are mowed short
- Path along Eastern edge of park is paved with a mowed margin

*Strategies to consider:*

- Widen or make permanent trails that currently cut through from the parking lot to the retention pond
- Keep all open areas of grass mowed short up to tree line
- Consider fencing or backstops along tree lines surrounding athletic fields on the west and along the tree line on the east side of the park by the tennis courts to prevent easy access into tick habitat
- Remove leaf litter and excess brush from wooded areas near athletic fields

*Targeted acaricide applications:*

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Countryside Park - 20756 Countryside Blvd., Sterling, VA 20165

Park Description:
Countryside Park is a one-acre facility on Countryside Boulevard that contains an outdoor asphalt basketball court.

Field Observations:
Countryside park is a very small park where the main activity takes place at the basketball court. All areas of the park are mowed short, and there are a few bushes and trees present.

High-risk areas:

Medium-risk areas:

Low-risk areas:
  • All Areas of park

Recommended surveillance:
  • Surveillance is not recommended at this park

Personal protection/Public Education:

Signage:
  • S1 – Post near basketball court

Outreach:
  • Consider outreach for students at neighboring Countryside elementary school
  • Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
  • All grassy areas are mowed short

Strategies to consider:
  • Keep all open areas of grass mowed short
  • Remove leaf litter, excess brush, and trash from all areas when possible.
Edgar Tillett Memorial Park - 21561 Belmont Ridge Rd. Ashburn, VA 20147

**Park Description:**

This 51-acre park, with sweeping views of the Beaverdam Reservoir, contains two lighted baseball fields and two lighted softball fields.

**Field Observations:**

The southern and western portions are densely wooded, with playing fields forming mowed islands in the middle. Areas around all playing fields are mowed short. In the northeast, underbrush is cleared beneath some groups of trees (replaced with mulch) near the little league field. However, an easement in this area is still relatively rough. In the center of the baseball fields is a shaded/wooded picnic area that is mulched. There is a reservoir west of the park boundary with at least 3 foot trails through the woods leading to the reservoir from the baseball fields. One of the trails is marked by orange flags and is used by a rowing club. There is also a well near another trail that is occasionally accessed by park staff. Staff reported that large numbers of ticks were picked up in the woods directly south of the dumpsters near the old access road. Most of southern woods don't appear to be easily accessible by trails from the road—however some people may venture through this area to reach reservoir.

**High-risk areas:**
- Trails through woods to access reservoir.
- Woods in southern half of park.

**Medium-risk areas:**
- Ecotone surrounding sports fields.

**Low-risk areas:**
- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- D1 – Ecotone around northeast and northwest baseball fields.
- D2 – South of southwest and southeast baseball fields, including foot trails leading to reservoir.

**Organized Deer Hunts:**
- Collect ticks from deer harvested during organized deer hunts at Edgar Tillet Memorial Park

**Frequency/Schedule:**
- 2 sites dragged weekly

**Personal protection/Public Education:**

**Signage:**
- S1 – Sign posted near main trail leading from parking lot
- S2 – Sign posted near picnic tables in centrally located mulched/wooded area
Outreach:
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields at Edgar Tillet Memorial Park.
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- Athletic fields are mowed short

Strategies to consider:
- Widen or make permanent trails that currently cut through the wooded area to the west and lead to the reservoir. Remove excess overhanging vegetation and leaf litter from these trails.
- Keep all open areas of grass mowed short up to tree line
- Fences along tree line by the northeastern most baseball field to prevent access into the utility easement
- Remove excess vegetation in between northern most baseball fields to allow easy between fields or establish permanent/maintained trails
- Remove leaf litter and excess brush from wooded areas near athletic fields
- Trim tree branches and excess brush near playing fields to allow in more sunlight.

Targeted acaricide applications:
- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Elizabeth Mills Riverfront Park and Kephart Bridge Landing- 44105 Heron Way Lansdowne, VA 20176

Park Description:

The property includes 122 acres of passive parkland with access to the Potomac River and Goose Creek. The park is home to the historic Elizabeth Mills canal lock system and will contain a section of the Potomac Heritage National Scenic Trail.

Field Observations:

This park borders Goose Creek to the north and the Potomac River to the East. It is a riverfront trail system leading through dense riparian woodland. The three public access points are off of Riverside Pkwy., at Kephart Bridge Landing off of Riverpoint Dr., and through Lansdowne Golf Course.

High-risk areas:
- Areas of dense woods

Medium-risk areas:
- Ecotone along trails through woods

Low-risk areas:

Recommended surveillance:

Drag Sites:
- **D1** – Along trail beginning at Cotton bridge and travelling northeast
- **D2** – Along trails at Kephart Bridge Landing access off of Riverpoint Dr.
- **D3** – Around Lansdowne Golf Course entrance to park and both east and west on trail.

Frequency/Schedule:
- 3 sites dragged weekly

Personal protection/Public Education:

Signage:
- **S1** – Post along Riverside Pkwy where foot trail intersects
- **S2** – Post along trail leading from parking lot located behind Landsdowne Golf Course, post after crossing through golf course property
- **S3** – Post at trail head by Kephart Bridge Landing Parking Lot

Outreach:
- Consider outreach strategies targeted towards members and staff of Landsdowne Golf Course and Leisure World
- Distribute literature to citizens that live in proximity to the park
**Landscape Management:**

**Existing strategies:**

- Most trails are well maintained near access points

**Strategies to consider:**

- Widen or make permanent all trails. Remove excess overhanging vegetation, tree limbs, and leaf litter from these trails.
- Keep open areas of grass mowed short up to tree line including the access area behind Landsdowne Golf Course
- Remove leaf litter and excess brush piles from wooded areas near Kephart Bridge Landing and Landsdowne Golf Course access points

**Targeted acaricide applications:**

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Evergreen Mills Equestrian and Hiking Trail - 21332 The Woods Rd.
Leesburg, VA 20175

Park Description:

This is a five-mile, multi-use trail loop around the perimeter of the Loudoun County landfill. The trailhead and parking lot are located on 21332 The Woods Road. The trail is currently closed due to landfill expansion construction.

Field Observations:

We were unable to easily access this park due to fences and a locked gate. This park is currently closed to the general public. However, it has the potential to reopen within the next year, at which point new equestrian trails will be created throughout the park. We are currently not recommending any surveillance or activities for this park until it is known when it will be reopened to the public.

High-risk areas:

Medium-risk areas:
- Ecotone along The Woods Rd.
- Areas of long grass (western half of park).

Low-risk areas:

Recommended surveillance:
- No surveillance recommended

Personal protection/Public Education:

Signage:
- Signs are not currently recommended. If park is re-opened, recommendations can be made at that time.

Outreach:
- Consider outreach strategies targeted at local citizens and equestrian groups.
- Distribute literature to citizens that live in proximity to the park.

Landscape Management:

Existing strategies:
- We are unaware of existing strategies due to inability to access this park

Strategies to consider:
- No strategies at this time
Franklin Park - 17501 Franklin Park Dr. Purcellville, VA 20132

Park Description:

Franklin Park is 203 acres of rolling hills with views of the Blue Ridge Mountains. The inner trail is used primarily for horseback riding. The outer trail can be used for hiking, biking, walking, cross-country training, and dog walking. In addition to swimming, there are sporting activities such as volleyball on our sand court, in-line hockey, and tennis. Other sports facilities include two baseball fields, three Little League / softball fields, two soccer fields, two football / rugby / lacrosse fields and a Disc Golf course. There is a catch-release-pond and shaded playground/picnic area.

Field Observations:

Franklin Park is a large, mostly open area with woods bordering most of the edges. A Disc Golf course winds through most open areas of the park north of the baseball and soccer fields. There is also a multi-use trail that for the most part follows the perimeter of the park. As you enter the park, on the West side there is a picnic pavilion and large aquatics center with the disc golf course running behind. On the east side is an area with equestrian trails and a horse corral as well as a field for horse owners to park their trailers in. The disc golf course also has holes in this area. In the western portion of the park are soccer fields and a gazebo. The hillsides surrounding these fields contain tall grass. The centrally located area surrounding the baseball fields are maintained/mowed short. Northwest of the baseball fields is a pond with mowed trails and disc golf in the surrounding area of long grass and shrubs. The southern portion of Franklin Park is a wooded area with a set of two parallel trails between the wood line and the dense shrubby/wooded interior. The southeastern corner of this area has a footpath through dense woods leading out to a practice field near the baseball fields. During conversations with Franklin Park staff, this southern portion of the park was indicated to be one of their “hot spot” for ticks. The other places were an area of tall grass in the north part of the western portion of the park, and the field and trails near the horse corral.

High-risk areas:
  • Wooded path in southeast corner connecting walking/horse trails to practice field.

Medium-risk areas:
  • Southern walking/horse trails.
  • Grassy natural areas surrounding pond and along the western edge of park.
  • Ecotone along most of eastern park boundary.

Low-risk areas:
  • Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
  • D1 – Wooded ecotone from northernmost corner and west of Visitor’s Center.
  • D2 – Grassy hillsides surrounding soccer fields in northwest corner
  • D3 – Ecotone and long grass surrounding fishing pond.
  • D4 – Walking/horse trails in southern portion of park.
  • D5 – Beginning of equestrian perimeter trail and horse corral area
**Park Employee Collection:**
- Encourage parks employees who “pick-up” ticks while working to collect and save the ticks in alcohol
- Any ticks can be collected and saved for identification and/or disease testing.

**Frequency/Schedule:**
- 5 sites dragged weekly

**Personal protection/Public Education:**

**Signage:**
- S1 – At beginning of Equestrian/pedestrian perimeter trail
- S2 - Along Franklin Park Rd near park entrance where equestrian trail crosses road
- S3 – At intersection with Blue Ridge View and Franklin Park Rd.
- S4 – In Parking lot for Franklin Park Performing and Visual Arts Center
- S5 – Centrally located in the middle of the baseball fields
- S6-8 – At entrance/exit points for equestrian/pedestrian trails through dense woods and rough areas on south side of park

**Outreach:**
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and all other facilities at Franklin Park.
- Include Lyme prevention information with registration materials presented to any groups/individuals wishing to register to use facilities at Franklin Park
- Have literature and/or displays about ticks available at all manned buildings within the park
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**
- Most equestrian and pedestrian trails through park are mowed or paved with maintained margins
- Athletic fields are mowed short and baseball fields have backstop fences to prevent access into rough areas behind them

**Strategies to consider:**
- Make permanent the perimeter trails by paving, adding mulch, or gravel.
- Widen the foot trail through the dense woods in the southeastern part of the park, and trim overhanging vegetation.
- Remove the middle strip of vegetation on the equestrian/pedestrian perimeter trail to widen the trail.
- Make permanent trails for disc golfers to follow between “holes”.
- Restrict cut through access to perimeter trails from baseball fields by extending fencing around the fields.
• Keep all open areas of grass mowed short, especially areas of long grass surrounding athletic fields
• Remove leaf litter and excess brush from wooded areas near maintenance facility and pond areas
• Trim tree branches and allow in more sunlight into the wooded trails.

**Targeted acaricide applications:**

• Targeted barrier applications should be conducted if action thresholds warrant treatment.
Greg Crittenden Memorial Park - 21401 Windmill Dr. Ashburn, VA 20147

Park Description:

This 16-acre park in Ashburn Farm includes three baseball / softball fields and a snack bar.

Field Observations:

There is a large wetland area and easement that runs along east edge of park. The creek forms the eastern boundary of the park. A paved trail runs alongside the creek, just outside of the park boundary. We observed signs of deer (scat, trails, and prints) within the easement. Athletic fields are elevated from the wetland area. The hill leading down to the wetlands is dense secondary growth with no obvious trails leading down to that area. Short mowing continues all the way up to the edge of the hill from the athletic fields.

High-risk areas:

Medium-risk areas:
- Young shrubby area that changes to wetland behind fields.
- Woods on south side of parking lot.
- Easement on eastern side of park.

Low-risk areas:
- Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- **D1** – Southern and eastern perimeter of parking lot and playing fields and paved trail north of Thistlewood Ct.

Frequency/Schedule:
- 1 site dragged weekly

Personal protection/Public Education:

Signage:
- **S1** – Near main parking lot entrance

Outreach:
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and all other facilities at Greg Crittenden Memorial Park.
- Have literature and/or displays about ticks available at all manned buildings within the park (snack shop)
- Distribute literature to citizens that live in proximity to the park
**Landscape Management:**

*Existing strategies:*

- Athletic fields are mowed short and baseball fields have backstop fences to prevent access into areas behind them.
- Athletic fields are raised from wetland area/easement. Thick shrubs and a steep hill prevent easy access from baseball fields to easement/wetlands.
- Trails through park are paved with mowed margins.

*Strategies to consider:*

- Restrict access into the easement/wetland area from Ashburn Farm Pkwy.
- Keep all open areas of grass mowed short up to tree/shrub line.
- Remove leaf litter and excess brush from wooded areas near athletic fields.
- Trim tree branches and allow in more sunlight into the paved trails that are along the edge of the park.

*Targeted acaricide applications:*

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Gwen Thompson Briar Patch Park - 21660 Sterling Blvd. Sterling, VA 20164

Park Description:

Gwen Thompson Briar Patch Park is a five-acre park located on Sterling Boulevard. It contains three age-appropriate creative playground units, a picnic pavilion with tables, volleyball court, basketball court, and two tennis courts.

Field Observations:

This park is routinely maintained and all human use areas are mowed short on a regular basis. Wooded riparian zone in southern portion is partially fenced to restrict access. A foot-bridge in the southeast over the stream leads toward E. Frederick Dr., and crosses an animal trail with overhanging vegetation leading off of park property. Low ecotone presence due to mowing of grass to wooded edge.

High-risk areas:
- None within park boundaries.

Medium-risk areas:
- Wooded riparian zone in southern portion of park.

Low-risk areas:
- All other areas.

Recommended surveillance:
- Surveillance is not currently recommended at this park.

Personal protection/Public Education:

Signage:
- S1 – Near main parking lot entrance

Outreach:
- Consider outreach strategies targeted at students of Rolling Ridge Elementary School and members of St. Matthews Episcopal Church.
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- All areas of grass are kept mowed short.
- Wooded riparian area is fenced to restrict access
- Playground area has a permanent raised border
Strategies to consider:

- Trim overhanging vegetation near foot bridge over creek
- Complete fencing around riparian zone and wooded edge

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Keep Loudoun Beautiful Park - 43055 Golf Club Rd. Leesburg, VA 20175

**Park Description:**

Keep Loudoun Beautiful Park is a 3.4-acre passive park site with picnic facilities, fishing and a canoe/kayak launch.

**Field Observations:**

Skinny park between Rt. 7 and Golf Club Rd. Use area generally clear (gravel lot leading up to Goose Creek). No trails in woods. Bridge across Goose Creek is being removed and will not be replaced. Surveillance at this site is not recommended.

**High-risk areas:**

**Medium-risk areas:**
- Woods west of use area.

**Low-risk areas:**
- Gravel parking lot

**Recommended surveillance:**
- Surveillance is not recommended at this park

**Personal protection/Public Education:**

**Signage:**
- S1 – Near parking lot by picnic table

**Outreach:**
- Consider outreach strategies targeted at members and staff of Goose Creek Golf Club, as well as organizations that access Goose Creek from the park.
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**

**Strategies to consider:**
- Trim overhanging vegetation around picnic area
Lovettsville Community Park - 12564 Milltown Rd. Lovettsville, VA 20180

Park Description:

This park is currently closed to the public and under development. Future plans for the 91-acre park call for an equestrian facility, off-leash dog area, amphitheater, fishing pond, community garden, nature study area, soccer and baseball fields, and hiking trails.

Field Observations:

This park is currently under development. There is a small little league field adjacent to baseball fields at the elementary school. This field is currently only accessed through school property. On the northeast side of the park, there is a gated entrance which leads to open fields bordered by thin wood line. These fields are used as parking lots for community events such as firework shows, cross-country races, and equestrian trails—but as the park is developed, this may change. Most activity in the park takes place near the main gate and on the mowed perimeters of the fields. The fields are bush-hogged twice a year, and the trails around the field perimeters are mowed short 4-5 times/year. Bluebird nesting boxes are located throughout the fields, and are monitored 4-6 times per year. The old buildings in the middle of the park are boarded up and surrounded by an 8’ fence. However, south of these structures is a field once used as a cow pasture that was riddled with groundhog burrows. It has recently been opened for equestrian use.

High-risk areas:

Medium-risk areas:
- Wooded margins of open fields.

Low-risk areas:
- Playing fields and mowed walking trails.

Recommended surveillance:

- Once park development has been completed, drag site locations can be established.

Recommended surveillance:

- Surveillance is not recommended at this park until park development is complete.

Personal protection/Public Education:

Signage:
- Signs should be posted near public access points to the park. Once park development has been completed, specific sign locations within the park can be identified.

Outreach:
- Consider outreach strategies targeted towards the Lovettsville Community Center including informational packets and/or displays.
- Distribute literature to citizens that live in proximity to the park.
**Landscape Management:**

*Existing strategies:*

- Park is currently under development

*Strategies to consider:*

- Park is currently under development

**Targeted acaricide applications:**

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Lucketts Community Park - 42361 Lucketts Rd. Leesburg, VA 20176

**Park Description:**
This 10-acre park includes a soccer field, lighted adult softball field, and trail network.

**Field Observations:**
Walking trails inside the park are paved and have mowed edges. There are brush piles in the wood line on the east edge of the park, and a small patch of rough area in the southwest corner. Grass is mowed short to edge of eastern wood line. A sheep farm borders the park to the south.

**High-risk areas:**

**Medium-risk areas:**
- Wood line on east edge of park.
- Small brush/wood line in southwest corner of park.

**Low-risk areas:**
- Playing fields, walking trails and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- **D1** – In the wood line next to the parking lot on the east edge of the park.

**Frequency/Schedule:**
- 1 site dragged weekly

**Personal protection/Public Education:**

**Signage:**
- **S1** – Near middle point of parking lot

**Outreach:**
- Consider outreach strategies targeted towards neighboring Lucketts Elementary School and the Lucketts Community Center
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**
- Grass is mowed short to tree line.
- All trails/paths are permanent with mowed/maintained margins
Strategies to consider:

- Remove excess leaf litter and brush piles from wooded areas
- Consider using fencing to restrict access into the wooded area

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Lyndora Park - 43624 Lucketts Bridge Cir. Ashburn, VA 20148

Park Description:
This 17-acre park includes a soccer field, softball field, tot lot, parking lot, and trails.

Field Observations:
Easement south of playing fields is periodically bush-hogged. This easement is part of a large area of ecotone (tall grass and shrubs) between the athletic fields and the woods that border a stream (which forms southern edge of park). Southwest corner of soccer fields has patch of woods adjacent. There was a 6-8’ buffer of grass mowed short surrounding fields. Areas near parking lot and leading to pond off of park property are mowed short.

High-risk areas:
- Dense woods in southern and eastern margins of park

Medium-risk areas:
- Tall grass/ecotone leading to riparian zone south of playing fields.

Low-risk areas:
- Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- D1 – Long grass on southern edge of playing fields and ecotone in southern and eastern parts of park.

Frequency/Schedule:
- 1 site dragged weekly

Personal protection/Public Education:

Signage:
- S1 – Near parking lot in between baseball and soccer fields
- S2 – In grassy easement access point to stream

Outreach:
- Consider outreach strategies targeted towards citizens and associations which use the athletic fields at Lyndora Park
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- Grass near parking lot, pond, and athletic fields is mowed short
- Baseball field has fence to reduce access into rough easement area
- Most trails/paths through park are permanent with maintained/mowed margins
Strategies to consider:

- Remove excess leaf litter and brush piles from wooded and easement areas
- Keep grass in easement mowed short to tree line
- Maintain a larger area of short grass surrounding the soccer field

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Mickie Gordon Memorial Park - 22670 Carters Farm Lane, Middleburg, VA 20117

Park Description:

The park includes three baseball fields including one lighted field, three soccer fields, two tennis courts, a Little League field, a picnic pavilion, cricket field, and small fishing pond.

Field Observations:

There is reduced ecotone due to short mowing all the way up to edges of wood line in some parts of the park. There are 8-10 ft.-wide mowed paths along wooded edges with a tall grass interior. Athletic fields receive regular use, and some are bordered by wooded areas. The western portion, as indicated on the map, is not designed for general use and is bush-hogged by the school board. We observed signs of deer throughout park, including trails, scat, and prints—especially in tall grassy interior of mowed trails.

High-risk areas:

- Densely wooded plots in central and western portions of park.

Medium-risk areas:

- Wooded area and tall grass between pond and little league field/tennis courts.
- Within tall grass interior sections of mowed trails.
- Tree line between baseball field and cricket field.

Low-risk areas:

- Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:

- D1 – From little league field in east portion of park, westward behind practice field and tree line between baseball and cricket field.
- D2 – Mowed grass trail along wooded edge between pond and little league field.
- D3 – Mowed grass trail along densely wooded area near soccer fields.

Frequency/Schedule:

- 3 sites dragged weekly

Personal protection/Public Education:

Signage:

- S1 – Near main entrance and parking lot by picnic pavilion
- S2 – By parking lot for baseball/soccer/rugby fields
- S3 – Between little league field and tennis court

Outreach:

- Consider outreach strategies targeted towards citizens and associations that utilize athletic fields and other facilities at Mickie Gordon Memorial Park
- Include information about ticks in registration material for groups using the picnic pavilion
• Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

*Existing strategies:*

• In most areas grass is mowed short to tree line.
• All trails/paths are mowed

*Strategies to consider:*

• Remove excess leaf litter and brush piles from wooded areas around the picnic pavilion and in the wood line between the baseball and rugby fields
• Consider using fencing to restrict access into the wooded and rough areas on the west side of the park.
• Widen mowed trails and reduce the amount of tall grass/shrubs in trail areas
• Trim tree branches and remove overhanging vegetation along all walking trails

**Targeted acaricide applications:**

• Targeted barrier applications should be conducted if action thresholds warrant treatment.
Nell Boone Park - 11762 Harper’s Ferry Rd. Neersville, VA 20132

Park Description:

This three-acre park, located in the Neersville community, features basketball and tennis courts, a children's playground and a baseball/softball field.

Field Observations:

There is a thin line of woods/ecotone running along the north edge of the park. A woodchuck burrow and deer bones were spotted there. The parking lot that forms much of the eastern border of the park contains tall grass and brush piles. The remaining portions of the park are mowed short or playground/sports fields.

High-risk areas:

Medium-risk areas:
- Long grass/vegetation bordering eastern parking lot and batting cages.
- Thin line of woods on northern boundary of park.

Low-risk areas:
- Playing field, playgrounds, and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- D1 - Wood line the north and east boundaries of the park.

Frequency/Schedule:
- 1 site dragged weekly

Personal protection/Public Education:

Signage:
- S1 – Near middle point of parking lot

Outreach:
- Consider outreach strategies targeted towards local citizens and Neersville Volunteer Fire Department
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- All grass is mowed short to tree line.
Strategies to consider:

- Remove excess leaf litter and brush piles from wooded areas
- Consider using fencing to restrict access into wooded areas, especially near the baseball dugouts.

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Phillip A. Bolen Memorial Park - 42405 Claudia Dr. Leesburg, VA 20175

Park Description:

Bolen Park is a new 405-acre park containing 17 lighted sports fields and miles of nature trails. The park features four 300’ softball fields, two 90’ baseball diamonds with 300’ fences, two skinned baseball diamonds with 200’ fences, one grass infield diamond with 200’ fence, six large soccer fields, and two football/lacrosse fields. All athletic fields are lighted. Future development of the park will include picnic areas, trails and approximately 200 acres of natural woodlands.

Field Observations:

A herd of 9 deer was present in the wetland area along Claudia Dr. and Greenfield Mill Dr. Discussions with Tina Driskell, park naturalist, identified those areas as known deer-bedding locations. Signs of deer present throughout rough areas in the park. Interviews with maintenance staff identified natural areas (designated by yellow signs) as locations where they consistently encountered ticks.

Cluster of athletic fields in eastern portion of park is bordered by tall grass and wood line. Backstops and large area of mowed grass behind soccer field reduce amount of balls into woods. Football/lacrosse fields are bordered by tall grass and wood line. Walking trails throughout majority of park are paved, and are mowed short for 6 feet on either side of paths. In the woods of the southwestern corner of the park, there are unpaved foot trails lined by leaf litter. These trails are delineated by logs, and are at least 6-8’ wide. These trails are utilized by day camps and regular visitors to the park. Along wood edge is a mowed trail that separates ecotone (tall grass) from wooded edge. There is active construction on the eastern edge of park. Bolen Park staff has received complaints about ticks from people working inside the easement.

High-risk areas
- Southwest woods
- Low-lying natural areas along Greenfield Mill Dr. and Claudia Dr

Medium-risk areas
- Wooded/wetland areas (including un-mowed and yellow sign areas)
- Eastern easement

Low-risk areas
- Paved trails, playing fields, and other maintained areas (short grass).

Recommended surveillance:

Drag Locations:
- D1 – Wooded wetland along Claudia Dr. and Greenfield Mill Dr. going up and behind soccer and lacrosse fields.
- D2 – Hiking trails/picnic area in southwestern woods.
- D3 – Behind soccer fields, park office, and into easement.
- D4 – Natural area between soccer fields and southern baseball fields.
Park Employee Collection:
- Encourage parks employees who “pick-up” ticks while working to collect and save the ticks in alcohol
- Any ticks can be collected and saved for identification and/or disease testing.

Frequency/Schedule:
- 4 sites dragged weekly

Personal protection/Public Education:

Signage:
- S1 – Along Claudia Dr., near main entrance to park
- S2 - By parking lot on Horserun Dr. in picnic area by trails leading into woods
- S3 – By parking lot at end of Greenfield Mill Dr near where paved pathway heads towards baseball fields
- S4 – Near parking lot and paved pathways connecting baseball and soccer fields
- S5 – Along Claudia Dr., near parking lot and paved pathways connecting soccer fields to baseball fields off Horserun Dr.
- S6 – Near parking lot by park offices/visitor center located at the end of Claudia Dr

Outreach:
- Consider outreach strategies targeted at local citizens and associations who utilize athletic fields and all other facilities at Phillip A. Bolen Memorial Park.
- Have literature and/or displays about ticks available at all manned buildings within the park
- Include Lyme prevention information with registration materials presented to any groups/individuals wishing to register to use facilities at Phillip A. Bolen Memorial Park
- Consider outreach strategies targeted towards groups utilizing neighboring Loudoun Soccer Park and Loudoun County Adult Detention Center
- Distribute literature to citizens that live in proximity to the park

Landscape Management:

Existing strategies:
- Grass is mowed short in all areas with athletic fields
- Trails and paths are permanent with mowed/maintained margins
- Trails through woods are delineated by logs

Strategies to consider:
- Remove excess leaf litter and brush from trails through the wooded areas on the west side
- Restrict access into wetland areas and the easement or create permanent trails through these areas.
- Keep grass mowed short up to the tree line on the Western edge of the park
- Remove debris/junk (man-made) from Western woods
**Targeted acaricide applications:**

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Potomack Lakes Sportsplex - 20280 Cascades Pkwy. Sterling, VA 20165

Park Description:

Potomack Lakes Sportsplex is a 47-acre athletic complex with four lighted softball fields, six soccer fields, a large playground, pavilion and concession stand with rest room facilities. There is also a maintenance building with a meeting room.

Field Observations:

Deer signs are evident throughout the park, and they are frequently seen by park staff. Thin patches of woods separate the southern edge of the park from a residential neighborhood. Dense woods border nearly the entire park’s perimeter. A rough area separates the soccer fields from the north woods, along the Potomac Heritage Trail (PHT). This is also known as the WASA Interceptor access road. An orange construction fence separates the soccer and baseball fields from the Potomac Heritage Trail, and also runs along the north edge of the trail. This fence is expected to be in place for 1 to 2 years as construction continues there. Also in the northern portion of the park, there is mulched playground area that is surrounded by dense woodland with no formal transition between these areas. It is heavily shaded and damp. Children are reported to wait for pick-up following soccer games near the gate between baseball and soccer fields. This is an un-mowed cattail wetland with long grass alongside.

High-risk areas:
- Dense woods border the park to the north and east.
- Perimeter of playground area where mulch meets tree line.

Medium-risk areas:
- Smaller stands of woods found in the southern and southeastern parts of the park.
- Rough area between soccer fields and Potomac Heritage Trail, along orange construction fence.
- Wetland/tall grass between baseball and soccer fields.

Low-risk areas:
- Playing fields and other maintained areas (short grass).

Recommended surveillance:

Drag Sites:
- **D1** – Wood line and tall grass south and east of baseball fields.
- **D2** – Wood line on east and north sides of park bordering soccer fields and playground units.

Park Employee Collection:
- Encourage parks employees who “pick-up” ticks while working to collect and save the ticks in alcohol
- Any ticks can be collected and saved for identification and/or disease testing.

Frequency/Schedule:
- 2 sites dragged weekly.
**Personal protection/Public Education:**

**Signage:**
- **S1** – Along Potomac Heritage Trail at entrance to playground in woods
- **S2** – Near parking lot where path leads towards baseball/softball fields and soccer fields, by where children are reported to wait for rides

**Outreach:**
- Consider outreach strategies targeted toward local citizens, Potomack Falls High School and River Bend Middle School
- Consider collaborating with Northern Virginia Regional Park Authority and neighboring Algonkian Regional Park
- Include Lyme prevention information with registration materials presented to any groups/individuals wishing to register to use facilities at Potomack Lakes Sportsplex
- Have literature and/or displays about ticks available at all manned buildings within the park
- Distribute literature to citizens that live in proximity to the park

**Landscape Management:**

**Existing strategies:**
- All athletic fields are mowed short
- All trails/paths are permanent with mowed/maintained margins
- Playground area in woods is mulched to tree line and surrounded by a fence
- Grass is mowed short to tree lines

**Strategies to consider:**
- Remove excess leaf litter and brush piles from all wooded areas, especially near the playground
- Center playground equipment as much as possible to avoid wooded edges
- Consider using fencing or backstops to restrict access into the wooded area surrounding the perimeter of the soccer fields
- Have literature and/or displays about ticks available at all manned buildings within the park

**Targeted acaricide applications:**
- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Trailside Park - 20375 Claiborne Pkwy. Ashburn, VA 20147

**Park Description:**

The 20-acre park contains three lighted baseball fields, an in-line hockey court, and a snack bar.

**Field Observations:**

The northern half of this park is wooded, with baseball fields in the south. Inside the northern patch of woods there is a mulched playground with fences separating the mulch from the trees on the south side. Heavy leaf litter is present in the corners of park, and it is well-shaded. Foot trails through the short patch of woods north of the playground access the W&OD trail. On the west side of the park there is a foot trail leading uphill into Beth Miller Park.

**High-risk areas:**
- Woods in northern half of park

**Medium-risk areas:**
- Playground and roller hockey court surrounded by woods
- Patch of woods in southwest between homes and baseball field

**Low-risk areas:**
- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- D1 – Woodline behind baseball field, around playground, and near hockey court.

**Frequency/Schedule:**
- 1 site dragged weekly

**Personal protection/Public Education:**

**Signage:**
- S1 – At turn around in parking lot, near main trail leading to playground
- S2 – On edge of playground area closest to W&OD Trail where trails cut through to park

**Outreach:**
- Consider outreach strategies targeted at local citizens and associations who utilize athletic fields and facilities at Trailside Park
- Distribute literature to citizens that live in proximity to the park
Landscape Management:

Existing strategies:

- All grass is mowed short to tree line.
- All trails/paths are permanent with mowed/maintained margins
- Playground area has a fence on the south side preventing easy access into the woods

Strategies to consider:

- Remove excess leaf litter and brush piles from wooded areas
- Consider using additional fencing to restrict access into the wooded area
- Remove excess or overhanging vegetation near tennis courts and roller hockey rink
- Trim overhanging tree branches in playground area to allow in more sunlight
- Center playground equipment to minimize contact with wooded edges

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.
Woodgrove Park - 17020 Evening Star Dr. Round Hill, VA 20141

**Park Description:**

This 30-acre park offers fields for baseball, little league, soccer, and softball.

**Field Observations:**

The soccer field in southwest corner is surrounded by tall grass leading to dense woods. There is a bleacher on the hill overlooking the soccer field, next to the tree line. The overlooking hill has tall grass and appears to be an ideal location for viewing games. There is a rock wall along north edge of park that has some brush, but few trees. Eastern corner behind baseball fields showed signs of deer (scat, trails).

**High-risk areas:**
- Dense woods in northwest corner of park and stone wall inside woods near bleachers.

**Medium-risk areas:**
- Old stone wall on northern edge of park
- Ecotone bordering woods in northwest part of park

**Low-risk areas:**
- Playing fields and other maintained areas (short grass).

**Recommended surveillance:**

**Drag Sites:**
- **D1** – Around north and east portions of soccer field, continuing along northernmost park boundary.

**Frequency/Schedule:**
- 1 site dragged weekly

**Personal protection/Public Education:**

**Signage:**
- **S1** – Near parking lot by tree line separating baseball fields from soccer field

**Outreach:**
- Consider outreach strategies targeted towards neighboring Round Hill Elementary School
- Consider outreach strategies targeted at citizens and local associations who utilize athletic fields and facilities at Woodgrove

**Landscape Management:**

**Existing strategies:**
- Grass in athletic fields is mowed short.
Strategies to consider:

- Remove excess leaf litter and brush piles from wooded areas
- Consider using fencing or backstops near the soccer field to restrict access into the wooded area
- Consider removing or clearing out undergrowth from the wooded area near the bleachers overviewing the soccer field
- Remove excess vegetation surrounding rock wall along northern boundary of park, keep grass mowed short up to rock wall

Targeted acaricide applications:

- Targeted barrier applications should be conducted if action thresholds warrant treatment.