



The Montgomery County Deer Management Work Group

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M-NCPPC, Montgomery County Department of Parks
Montgomery County Cooperative Extension
Montgomery County Police Department
USGS, Biological Services Division, Patuxent Wildlife Research Station
U. S. National Park Service
Washington Suburban Sanitary Commission

Montgomery County, Maryland Deer Management Program Deer Impact Data Collection and Results 1996 - 2007

The Comprehensive Management Plan for White-tailed Deer in Montgomery County, MD calls for the Montgomery County Deer Management Work Group (DMWG), on an annual basis, to review deer-impact data. The following explains what data is used and how these data are collected and analyzed. The most recent Deer Management Annual Report and Recommendations is available on the web at: www.mc-mncppc.org/environment/deer.

MATERIALS AND METHODS

Assessing Deer Impacts

The DMWG collects data on deer-related vehicle collisions, agricultural crop damage, damage to home landscaping and damage to natural vegetation. The locations of deer-related vehicle collisions, agricultural crop damage complaints, and homeowner complaints are mapped or otherwise geographically analyzed to determine where existing problems are most severe. The following sections give information on the data collected and how that data is interpreted.

a) Deer-vehicle Collisions

Deer-vehicle collisions (DVCs) represent important safety concerns including the potential for personal injury and death. For this reason reducing deer-vehicle collisions is a primary objective of the County's Deer Management Plan. Data on DVCs are collected from the following sources.

1. The Montgomery County Police Department (MCPD) keeps records on deer collisions on county roads that require police response as well as dead deer seen on roads by police officers and reported to the Division of Animal Control (Animal Control) for pick-up. The MCPD data, because it includes data on collisions in which the deer are not necessarily recovered, includes the most complete numbers for county roads but does not include all deer collisions on state roads or the many DVCs that go unreported. The data is analyzed by the MCPD and an annual report is issued. A copy of this report is sent to the DMWG and included in the appendix of this report.
2. Animal Control is responsible for picking up dead deer on county roads. Detailed location information on each pick-up is provided to the DMWG in an annual summary report. This data is mapped by the DMWG to determine the distribution of deer-vehicle collisions on county roads.
3. Road-killed deer on state roads within the county are picked up by the State Highway Administration (SHA). This data is provided by the Maryland State Highway Administration and included in DVC maps. Because most people don't know the difference between a state and county maintained road, there is considerable overlap between data sets 2 and 3.

The data provided by the above agencies in some cases is complementary and in other cases overlaps considerably. Due to the detailed location information provided, the flexibility of the database, and in order to eliminate overlap, only Animal Control and SHA data is used for mapping (though, as noted above, there may be considerable duplication in these numbers). The distribution of deer-vehicle collision

locations is used to help identify hotspots of high deer density and activity in the county. DVCs are mapped using grids approximately 1000 feet square.

In addition, this data is shared with the Department of Public Works and Transportation (DPWT). Where appropriate, recommendations are made to implement measures to attempt to reduce the numbers of DVCs along identified stretches of road. Recommendations might include signage, fencing, etc.

b) Citizen complaints

Citizen complaints are received by a variety of agencies including DNR, M-NCPPC, local nature centers, the Montgomery County Cooperative Extension Service, The Maryland Nuisance Wildlife Information Line and the Montgomery County Council Office. Often, calls are referred from one agency to another. Consequently, there is no single database to keep track of this information.

Phone calls received by the M-NCPPC through the phone number listed on the brochure "Living with White-tailed Deer in Montgomery County, MD", represent a sample of these calls. Location information is recorded to identify the distribution of citizen complaints throughout the county. This representative sample of calls is also used to document caller concerns.

c) Damage to Agricultural Crops

Farmers and the County Cooperative Extension Service monitor damage to agricultural crops. Average yields over time are monitored for purposes of crop insurance. Deer management permits (DMP's) are issued by DNR to landowners who are experiencing excessive deer damage to agricultural crops. The permit allows the landowner to harvest deer outside of state hunting seasons and bag limits. Records are kept of the number of deer harvested on these permits each year. This information is used to track locations of high crop damage. Additional information is gained through interviews with farmers and formal surveys.

d) Damage to Natural Vegetation in M-NCPPC Parks

1. The M-NCPPC, Montgomery County Natural Resources Management (NRM), initiated a study in 1995 to identify and document the impacts of deer on natural vegetation in the county. Twenty (20) permanent study plots have been established in various parks and habitats in the county. Each study plot is 20 meters by 20 meters in size. The plots were established in pairs; one plot is enclosed in deer proof fence the other plot is not and serves as a control. Data collection follows protocols from the Manual for Monitoring Vegetation on Public Lands (Storm 1992). Between 1996 and 2000 data was collected on overstory and sapling tree species, seedlings of tree and shrub species, shrub cover, ground and vine cover and herbaceous species. Currently data is collected on seedlings, canopy and understory cover. By comparing changes in vegetation inside and outside of these deer exclosures over several growing seasons, NRM staff has been able to document and monitor the extent to which deer are altering park vegetation and correlate these impacts with local deer densities.
2. In early April 1996 additional study plots, of a different type, were established in parks to gather site specific data on the availability and use by deer of woody browse (stems and twigs of woody plants eaten by deer). The availability and use of woody browse in winter is a useful indicator of overall deer impacts on woody vegetation. A series of 1.67 meter radius plots was established in each park and inventoried using a twig count method (Storm 1992). All twigs 2.5 centimeters or greater in length and less than 1.5 meters above the ground are examined. The number of browsed and unbrowsed twigs for each woody species in each plot is recorded. The total of browsed and unbrowsed twigs represents the available browse. A ratio of browsed to total twigs is expressed as a percentage of available browse that was consumed. Additional study plots are added in new parks. Due to the large size of our park system all plots cannot be surveyed every year.

3. In 1993-94, 1995-96 and 1997-98 staff from the Maryland DNR Natural Heritage Program surveyed selected Montgomery County Parkland for Rare, Threatened, and Endangered (RTE) plant species (Weigand, 1997). As part of this work, observations were recorded about the condition of plant communities within these parks. Observations include the extent to which deer are impacting plant communities and the threat posed to RTE plant species. A report containing this information is provided to M-NCPPC for each inventory.

e) Lyme Disease

Citizen concern about the increasing incidence of Lyme disease in the county has increased in recent years and The County Department of Health and Human Services, in cooperation with the DMWG is working to track data on this public health issue.

Lyme disease is a bacterial disease transmitted to animals and humans by ticks, primarily the blacklegged or deer tick (*Ixodes scapularis*). The nymph stage of the tick, which is active from late spring through summer, is most likely to transmit Lyme disease. Symptoms can range widely and may include flu-like symptoms, a bull's-eye rash, severe arthritis, meningitis, and even Alzheimer's-like symptoms.

When caught early, Lyme disease is often easily treated with antibiotics. When misdiagnosed or left untreated the disease can become severe, chronic and debilitating. The County Department of Health and Human Services is increasing efforts to better educate the public and especially doctors on the latest methods to diagnosis and treat for this growing health problem.

Assessing Deer Populations

Deer population surveys provide important information for further evaluating hotspots, developing recommendations, establishing management goals and evaluating management efforts. Deer population counts are conducted in county parks identified as hotspots using spotlight counts, walking surveys and aerial counts. Spotlight counts are counts taken at night from vehicles using high-powered spotlights. Walking surveys involve walking park areas of known size and counting deer seen along transects. Aerial surveys are conducted from aircraft and involve counting deer visually during the day when snow is on the ground or using forward-looking infrared (FLIR) technology to videotape deer and counting is done from the videotape at a later date. In each case the number of deer observed is recorded. Spotlight counts and walking surveys are repeated several times to get an average number. Due to costs of using aircraft, aerial surveys are generally conducted only once a season.

Using the report maps, park staff delineates the area covered, determines the area of deer habitat present and determines the number of deer per square mile of habitat. To determine the area of deer habitat GIS is used to measure the acreage of land that is forest, field, or cropland. Housing areas are excluded. Park staff then estimates what the population will be after this year's fawns are born. Biological data collected during direct reduction management programs is used to determine doe: fawn ratios and other parameters necessary to better predict population growth specific to each park. These data are used to establish short and long-term population management goals.

It is important to note that while the population survey methods used are currently the best available to estimate deer densities in our area, the results are only estimates. Aerial surveys in particular represent a one-time snap shot of deer observed in the area at that time. As the technology improves so will the accuracy of the data. Recent studies have demonstrated that surveys most often under count deer, resulting in estimates lower than actual densities (Jay McAninch, Minn. DNR, personal communication). For the purposes of the recommendations outlined here, the population data should be considered as the minimum density for each site surveyed.

Additional data collected by DNR on the number and sex of deer harvested in the County is used to determine population trends on a countywide (rather than park by park) basis. These data are also used to evaluate if changes to hunting regulations recommended in past years are having desired effects.

Developing Recommendations

Locations of deer related impacts (deer-related vehicle collisions, citizen complaints, agricultural damage, damage to natural vegetation) are mapped or otherwise captured geographically. Areas with the greatest concentration of deer-related incidents are identified. Additional areas may be identified for management due to site-specific problems. In these cases the local problem is of great enough concern that it should be addressed even in the absence of other impacts. For example management action may be desirable for purposes of reducing vegetation impacts in parks that have resources of countywide significance or for an area identified as having an extremely high rate of crop damage, Lyme disease, etc.

Deer impact data, population data and other relevant information is used to develop a list of deer management options that might be used for each hotspot. A list of general and specific recommendations is developed.

General recommendations have countywide application and might include continued educational efforts, identification of areas where more data is required, adjustments to county or state regulations. Specific recommendations include management options that might be applied at specific locations such as local educational workshops for communities experiencing damage, use of fencing or signs on specific stretches of high-risk roadways, or the implementation of population reduction management on a specific parcel of land.

Determining Cultural Carrying Capacity

The goal of Montgomery County's Deer Management Plan is to reduce deer-human conflicts to a level that is compatible with human priorities and land uses. Biologists refer to the maximum population density at which deer-human conflicts are at acceptable levels as the cultural carrying capacity (CCC). CCC is driven by human values and tolerance levels that vary from location to location and change over time. As educational efforts outlined in the County's deer management plan move forward, citizens will learn how to better cope with and reduce deer impacts (i.e. by use of repellents, fencing, vegetation management, and improved driving habits); human tolerance for deer should increase accordingly. At the same time, as population management efforts are implemented (i.e. changes to state hunting regulations, managed hunts, contraception experiments), deer numbers will begin to stabilize and in some cases be reduced. It is presumed that at some point the deer population and human tolerance of deer will reach equilibrium. There is no way of determining this number before it is reached.

An important goal of the deer management program is to reduce the negative impacts of deer on natural communities in order to preserve the natural diversity of flora and fauna within our county parks. Different parks in the county serve different purposes. Conservation parks and other park areas designated as being of high natural value are the highest priority. Studies have shown that in forested areas where the goal is to preserve natural diversity, deer densities should be maintained at approximately 18-30 deer per square mile to allow for optimum forest regeneration and assure habitat for forest species (Tilghman, 1989). Because land-use in our parks includes affording the public the opportunity to see deer and enjoy them as well as preserving natural diversity the most appropriate number of deer will likely be at the high end of this number or slightly higher.

In park areas that serve other functions such as recreation, or that are small and/or of generally lower natural quality, deer impacts are of less concern therefore population management may not be a priority.

RESULTS AND DISCUSSION OF DEER IMPACT DATA

The following is provided as a general review of data collected over many years. A more up-to-date discussion on the most recent trends can be found in the Annual Deer Report and Recommendations FY 2008.

a) Deer-vehicle Collisions

Table 1 is a summary of Deer-vehicle collisions (DVCs) reported by the MCPD, Animal Control and SHA for the years 1994 - 2006.

Numbers of DVCs reported from specific roads can vary widely from year to year. For example a 1.5-mile stretch of Brink Road in 1996 and 1997 had one of the highest concentrations of DVCs in the county (18 and 21 respectively). In 1998 the same stretch of road had only 7. In 1999 the number increased to 11, in 2000 it was 9 and in 2001 it was 13. It is likely that deer are responding to a number of natural and man-made conditions including crop rotation, acorn production, development or other pressures that can change drastically from year to year. This makes it difficult to establish patterns and to justify expensive long-term remedies for what may be temporary conditions.

Table 1. Deer-vehicle Collision Data 1994 - 2005

Source	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MCPD ¹	1,343	1,244	1,776	1,705	1,774	1,891	2,033	2,003	2,127	2,047	1997	1969	1,951
Animal Control*	447	509	521	547	631	1,059	1,112	1,123	1,194	1,180	1086	1281	1,347
SHA*	211	192	200	390	608	572	675	713	N/av	341	N/av	756**	780

1 - number includes incidents where deer were struck but deer were not recovered.

* - Mapped locations

** - new data collection system for SHA may have resulted in increased reporting

Various sources as noted

N/av = Not Available

Deer-vehicle collisions are widespread throughout the county. While DVC concentrations are identified and analyzed for remedial actions, these concentration points make up only a fraction of the total. In 2002 Animal Control recorded road-killed deer picked up in 754 grid blocks. Of the 754 blocks 86% (651 blocks) had only 1 or 2 DVCs. Ninety-five percent (95%) had three or fewer collisions. The vast majority of collisions countywide don't occur in concentration areas but are spread broadly over the county. Therefore, countywide efforts in education, improved driving habits, improved signage and road design are important to long-term, general reductions of DVCs.

DVCs continue to be high at several cloverleaf interchanges of Interstate 270. Due to high traffic volumes and high speeds it is likely that DVCs are especially dangerous at these location. Most of 270 is fenced but the fences must have breaks at exit ramps and vegetation growing within cloverleaves may attract deer. Methods to address these localized DVCs are being investigated.

b) Citizen complaints

The number of phone calls received by APHIS and the M-NCPPC from 1993-2006 are summarized in Table 2. It is important to note that the annual number of calls does not necessarily represent the level of concern. Since most citizens are only going to call this number once, each phone call represents a new household where deer have begun to cause citizen concern. The number of complaint calls has declined

since the mid-1990s but whether this is a result of fewer conflicts or merely frustration on the part of citizens is unknown.

Citizen complaints range from concerns about deer-vehicle collisions to an increase in deer ticks and Lyme disease. By far the most often heard complaint from citizens is the damage done by deer to landscaping vegetation. An issue of growing concern to county residents is the increased exposure to Lyme Disease (see section on Lyme Disease below. Over the years, most calls (>75%) have come from citizens living adjacent to or within several blocks of parkland. The most common concerns are listed below and prioritized according to how frequently each concern is expressed.

1. Damage to landscaping and gardens has increased to unacceptable levels.
2. The number of deer ticks in the area has increased the risk of contracting Lyme disease (callers voicing this concern often had a family member or neighbor with the disease).
3. Deer-vehicle collisions are a major concern
4. Deer have become extremely bold and can no longer be frightened from yards. In some cases deer are viewed as posing a physical threat, especially to children.
5. The amount of deer droppings in yard has reached a point that is intolerable and a potential health threat for children playing in grass.
6. The number of deer feeding on property has increased in recent years. (Many callers expressed the desire to have numbers reduced)
7. Repellents and barriers are often ineffective and/or unacceptable at current deer numbers.

In addition to phone calls and letters from individuals the county received requests from community groups to have deer population management conducted on parkland adjacent to their communities. These concerns are considered as deer management recommendations are formulated annually.

Table 2. Citizen deer complaints received by APHIS and M-NCPPC from Montgomery County citizens, 1992- 2003.

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2005	2006
# calls to Aphis	166	211	125	175	136	134	57	52	58	72**	54	132	95
# calls to M-NCPPC	U/A	U/A	48	82	47	54	42	47	43	43	31	14	18
Total calls	U/A	U/A	173	257*	185	179	99	99	101	>115	85	146	113

* M-NCPPC announced its first year of managed deer hunts in 1996; this event likely led to increased number of calls.

** data incomplete only January – September 2002.

Note: these numbers do not include several hundred annual calls to MD DNR offices. (pers. Comm. P. Peditto)

Source: U.S. Dept. of Agriculture, AHPIS, Annapolis, Md and M-NCPPC

c) Damage to Agricultural Crops

Agricultural producers have a number of methods that they can utilize to reduce deer damage. Those that utilize small acres for high priced crops may find the use of fencing to be cost-effective. The use of dogs contained by underground or invisible fences has been very effective in nurseries and orchards. Farmers raising row crops often manage too much land to make these methods cost effective. Since many sites experiencing agricultural damage are located outside of the urban zone where hunting with firearms is permitted, an approach to reducing deer impacts would be through increased bag limits, improvements to the Deer Management Permit (DMP) program, and increased efforts to manage deer populations on private property. Where agricultural damage does exist in the urban zone it is often adjacent to parkland or other private open space. In these cases where the use of fencing and/or dogs is not cost effective, cooperative efforts between the agricultural producer and adjacent landowners may be needed to reduce deer numbers and damage.

The County Extension Agent has conducted several informal and formal surveys of farmers over the past decade. Most have identified the following information.

1. Crop loss due to deer is being evaluated by farmers in several ways including the use of harvest machinery equipped with global positioning (GPS) systems. GPS systems can accurately pinpoint yields in fields and portions of fields with about a 1% margin of error.
2. Crop losses ranged from minimal in some areas to 100 % in certain fields. Losses countywide probably average 10 to 15% with corn and soybeans sustaining heavy losses due to the high number of acres of these two crops. Other crops impacted include vegetables, small fruit, tree fruit, ornamentals, and hay.
3. Some farmers are modifying the crops they choose to plant in certain fields or in some cases abandoning certain fields altogether.
4. Damage levels reported in 2002 were higher than the previous two growing seasons. This is typical of crop years with less than average rainfall. Deer damage is most noticeable and has a proportionally larger impact on crop production during times of drought or other stress when crop production is marginal.

Deer management permits (DMPs) are issued at most of the same locations in the county each year. Table 3 shows the number of deer harvested using DMPs from 1993 to 2005. Agricultural damage in the urban zone (the urban zone is the southeast two-thirds of the county in which the discharge of firearms requires a county police exemption) may not be well represented by DMP's. Unless a farmer can get an exemption to the weapon ordinance a DMP may be of limited use and landowners may be reluctant to apply for them. Efforts are underway to exempt large agricultural parcels from weapons restrictions to facilitate more deer management within the urban zone.

Table 3. DMPs issued by DNR in Montgomery County 1992-2005

Year	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05
# deer harvested on DMPs	82	188	330	361	400	415	415	432	291	223	449	491	510

Source – Maryland Department of Natural Resources – Wildlife and Heritage Division

As a result of DMP use and regulation changes over the past several years, some farmers have experienced a drop in deer numbers and depredation though this can vary significantly from location to location and from year to year. A 2001 survey of Maryland farmers released by the Maryland Agriculture Statistics Service showed that since 1996 there has been some reduction in crop losses due to deer statewide. The decrease in damage varied depending on the crops grown. Unfortunately the central region of the state, including Montgomery County, did not show as much improvement as some other areas. In the central region, losses per acre of soybeans decreased by 19% and losses of corn increased only slightly (4%), while losses of wheat increased by 200%. This may be because farmers are more restricted in their use of DMPs within these more urban areas.

A 2004 survey of County farmers indicated significant losses to agricultural crops due to deer browse. Thirty-six (36) farmers reported losses on corn, soybeans, wheat and hay. Thirty-four (34) producers reported losses on tree fruit, small fruit or vegetables. Twenty-seven (27) producers suffered losses on nursery, Christmas trees, grapes and other agricultural crops. In all, over 2000 acres of agricultural land has been removed from production due to deer crop damage and 2/3 of survey respondents believe crop damage from deer is on the increase.

The 2006 Wildlife Damage Survey conducted by Maryland Agricultural Statistics indicated central Maryland farmers had sustained losses of over \$4 million due to deer browse. The central Maryland area

includes Montgomery, Baltimore, Carroll, Frederick, Harford, Howard and Washington Counties. Damage in the central Maryland region is reported to be much higher than in other areas. Higher crop prices in 2007 will contribute to increased economic losses, perhaps as much as 50 per cent higher.

d) Damage to Natural Vegetation in M-NCPPC Parks

1. Data from 20 permanent study plots were collected during the 1995-2001 growing seasons. Data analysis demonstrated the following: 1) Deer impacts are reducing height, number and species diversity of seedlings within our parks, 2) understory density has been dramatically reduced and 3) The effects appear greatest in parks with higher densities of deer. Studies done in Pennsylvania, Virginia and elsewhere have shown that an overabundance of deer can profoundly affect the species composition and density of forest understory (McShea and Rappole 1997) and the regeneration of forest trees (Tilghman 1989). This in turn affects wildlife diversity, particularly for forest interior birds, small mammals and other species that nest in the understory or on the forest floor (DeCalesta 1994; McShea and Rappole 1997). The development of a prominent browse line in several of the parks further suggests that deer are an important factor in the reduction of saplings and seedlings. Figure 1 illustrates the difference in vegetation density inside and outside of study exclosures after approximately 6 years.

Figure 1 Photos taken inside and outside of deer exclosure showing difference in forest understory.



Within deer exclosure at Black Hill Regional Park- Understory vegetation includes dense growth of shrubs and seedlings



Outside of deer exclosure at Black Hill Regional Park Understory vegetation has been nearly completely consumed by deer.

2. Browse plot surveys were conducted to determine the availability and usage of woody plant browse in selected parks from 1996 to 2003. These data are summarized in table 4. Percent browsed is considered heavy at 50-100%, moderate at 10-49% and light at 1-9% (Aldous, 1944). Qualitative assessment of long-term trends of this data set strongly suggests that total available browse is slowly being reduced and that the percentage of browse consumed each year is slowly increasing in parks where deer populations are not being managed and that population management is reversing this trend.
3. Reports issued by staff from the Maryland DNR Natural Heritage Program entitled "Inventory of Rare, Threatened and Endangered Plant Populations and Significant Habitats on Select Park Lands of the M- NCPPC in Montgomery County, Maryland" (1995,1997, 1999) comment on the high density

of deer present in many of the parks surveyed and the impacts on plant communities. The following excerpt from the 1995 report summarizes their observations.

"Every park surveyed during this project has an overpopulation of deer. The severity of this problem varies from one park to another, but it represents a considerable threat to the native vegetation in every park. Browse lines are evident in forested areas, indicating deer populations have exceeded the carrying capacity of the land...As a result of overpopulation, and selective browse habits, deer are determining the dominant vegetation in some areas. Plants that are favorite food, such as lilies and orchids, are declining and becoming locally rare. Conversely, plants that are seldom browsed are becoming more dominant. ...adverse changes to the floristics of natural areas are occurring. If quality of the vegetation and integrity of natural communities is to be stabilized over the long term, acceptable methods of deer control must be implemented."

Table 4. Summary of browse availability and use by deer in selected parks Winter 1996 – 2003

Shaded cells show years where population management was conducted

Percent browsed is considered heavy at 50-100%, moderate at 10-49% and light at 1-9% (Aldous, 1944).

Park	Available woody stems per plot							% browsed						
	'96	'97	'99	'00	'01	'02	'03	'96	'97	'99	'00	'01	'02	'03
Little Bennett Reg. Park (LBRP)	113	78	89	57	63		104	42	36	42	44	41		41
Ag/history Farm Park (AHFP)	89	55	44	74	85		32	47	55	76	48	45		55
NBranch SVP (NB)	75			40	124		25	70			71	44		46
Rachel Carson Cons. Park (RCCP)		84	67	79	115		87		33	47	53	29		34
Black Hill Reg. Park (BHRP)		121	47	112	82	13			44	67	57	39	48	
Goshen Rec. Park		109	112	55	36		108		40	42	53	31		37
Rock Creek RP Lake Frank Area	32	53	153				41	39	51	62				43
Blockhouse Pt CP		103	90			147			35	50			39	
Cabin John RP	104		104			108		23		33			50	
Hoyles Mill CP						56							53	
Nw Branch SVP	63		252			235							64	
Rock Creek SVP	119		75			91			51	38			43	
Wheaton RP		160	97	148		95			35	32	32		45	
N Germantwn SP						99							83	

Source M-NCPPC Natural Resources Management

e) Lyme Disease

Reported cases of Lyme Disease in Montgomery County for the years 1995-2006 are included in table 5. In order to be recorded, a case of Lyme disease must first be reported by the diagnosing physician to the appropriate county or state agency and it must meet certain rigorous criteria. It is generally believed that Lyme disease is underreported in Maryland. In addition, many cases that are reported fail to meet the strict criteria and are not included in annual totals. Efforts are underway to improve the accuracy and completeness of this data. The large increase in 2005 and 2006 are a result of increased effort to better track the disease and not of a dramatic increase in actual cases.

Personal protection from ticks remains the best defense against the disease. General information is available at: www.cdc.gov. Two products have been introduced on the market to help reduce the number of ticks in an area. Information is available at: www.maxforcetms.com and

www.crdaniels.com/dandux/4post/intro.htm. These tick control systems, should become useful tools in reducing the incidence of Lyme Disease in parks where tick numbers are extremely high or on private land where communities or individuals wish to purchase and maintain them.

Table 5. Number of confirmed cases of Lyme Disease in Montgomery County by Year

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
26	56	42	52	55	80	69	67	49	39	216*	228*

Source: Maryland State Center for Veterinary and Public Health

* this increase is more a result of an increased effort to properly account for cases than a true increase in the number of case

Deer Populations

Table 6 shows change in populations in selected County Parks over time. In most cases where no population management is being administered the populations generally rise over time. Population management has been initiated over the past 12 years in 19 parks in the county. Population surveys show that these management efforts are reducing deer populations. In most cases these populations are still high and without continued management would begin to increase again. Table 7 lists parks where population management has been conducted, the method of management used and the numbers of deer harvested at these operations during FY 2001- 2004.

Harvest records from DNR shown in table 8 indicate that deer populations continue to increase countywide, however, populations in areas of the county open to firearms hunting – approximately 1/3 of the County in the agricultural preserve have likely stabilized (DNR, Deer program leader, personal communication 2007). Changes made to deer bag limits (the number of deer a hunter is permitted to harvest) over the past 10 years have been designed to increase the number of female or antlerless deer harvested. In the long-term it is the harvest of does that is required to reduce deer numbers. The percentage of antlerless deer listed in Table 8 has increased dramatically indicating that these efforts are working where hunting does occur.

Several diseases impact deer populations to a limited extent. Epizootic Hemorrhagic Disease (EHD) kills small numbers of deer in Maryland each year but is not likely to have a major impact on countywide deer populations. In recent years Chronic wasting disease (CWD) has spread to wild deer in several western and mid-western States and Canada. CWD is a serious disease of the central nervous system that causes death in deer and elk. While similar to “Mad Cow Disease” there is no evidence that CWD is transmissible to humans. DNR has been monitoring deer in Maryland for CWD and to date, no evidence of the disease has been found. In addition to the increased monitoring, DNR is drafting new regulations to restrict the possession, importation, exportation and transportation of live deer in Maryland. The movement of CWD infected captive cervids has been linked to the spread of the disease. More information, particularly for hunters, is available on The Chronic Wasting Disease Alliance Web site (www.cwd-info.org). In addition, DNR has developed a question and answer sheet, which is available on the DNR Web site at:

www.dnr.state.md.us/wildlife/cwdinformation.html

Table 6. History of deer population density estimates in selected parks

Estimates of population density are made in the fall and winter using a combination of spotlight counts, Visual counts from helicopter and forward-looking infrared (FLIR) surveys from helicopter. Shaded cells show fiscal years in which population management was conducted

All numbers are per square mile

Park	spring 1996	spring 1997	spring 1998	spring 2000	spring 2001	spring 2002	spring 2003	Spring 2006	Spring 2007
Little Bennett RP	125	142	101	88	63	61	37	66	28
Ag/History Farm Park	163	259	155	100	128 ¹	108	78	77	47
North Branch SVP	73		116	124	110	107	130	64	14
Black Hill Reg. Park			138	170	85	34	86	109	16
Rock Creek RP	118	170	135		215	155	136	111	54
Rachel Carson CP		207		113	133	100	71	22	37
Wheaton		60	51	na	71	75		**	15
Northwest Branch						220		**	31
N. Potomac (Muddy Br. SVP)			71	na	105	127			36
S. Potomac (C&O canal)							140	N/a	
Goshen Recreational Park		136		153	169	127	91	N/a	94
Upper Paint Branch SVP					47	53	63*	**	
Blockhouse Point Cons Park		68				81	85	2	35
N. Germantown Greenway Park						196	215*	122	54
Hoyles Mill Cons Park							114	61	35
Woodstock Equestrian Park								79	57
Cabin John Reg Park									18
Great Seneca Park								111	33
Ovid Hazen Wells Rec. Park									81

* estimates based on 2001 data

** Area can not be surveyed by helicopter due to flight restrictions resulting from 9-11.

¹Increased numbers in 2001 and 2002 are likely due to development adjacent to park pushing in additional deer.

Table 7. Deer harvests for M.C. Park's Deer Population Management Program FY2001 - 2007.

Park	Management Action	2001	2002	2003	2004	2005	2006	2007
Little Bennett Regional Park	Managed Hunt	286	112	134	99	88	92	134
Agricultural History Farm Park	Managed Hunt/ Sharpshooting begun 2006	171	75	58	58	100	51	93
Black Hill Regional Park	Sharpshooting	120	40	-	-	75	27	32
North Branch Stream Valley Park	Sharpshooting	138	33	50	72	50	50	50
Rock Creek Regional Park	Sharpshooting		141	114	101	108	187	100
Rachel Carson Conservation Park	Managed Hunt		129	70	61	51	36	4
Goshen Recreational Park	Mgd hunt by farm lessee		39	58	53	51	18+	37
Blockhouse Point Cons. Park	Managed Hunt			88	82	39	28	9
Northwest Branch SVP	Sharpshooting				187	100	102	20
Woodlawn Special Park	Sharpshooting				39	17	50	30
Hoyles Mill Conservation Park	Managed Hunt				79	97	143	113
Bucklodge Forest Cons. Park	Managed Hunt				26	26	36	5
N. Germantown Greenway Park	Managed Hunt						140	109
Wheaton Regional Park	Sharpshooting						50	25
Woodstock Equestrian Park	Managed Hunt					115	82	63
Little Seneca SVP	Managed Hunt					48	49	21
Dry Seneca SVP	Managed Hunt						17	
Totals		715	569	572	857	965	1,158	845

Source – M-NCPPC

Table 8. Deer harvest in Montgomery County FY 1994-2007 and Percent of harvest that was antlerless.

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
total	1635	2081	2306	2819	2624	3304	3609	3670	3,546	4,385	4174	4969	5112	5116
antlerless	768	923	1013	1511	1504	1961	2138	2255	2,305	2,890	2736	3380	3707	3714
% antlerless	47%	44%	44%	54%	57%	59%	59%	61%	65%	66%	66%	68%	73%	73%

Source - DNR

Annual Report and Recommendations

The Most recent Deer Management Annual Report and Recommendations are available online at:
www.mc-mncppc.org/environment/deer.

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