Mass. Department of Conservation and Recreation
Mass. Department of Fish and Game

Blue Hills: Frequently Asked Questions about Deer Management Program

Won't nature just bring deer numbers back into balance with the environment?
Historically deer were found throughout Massachusetts at levels in balance with the habitat because top predators like humans, wolves, and mountain lions were present and able to take adult, sick, weak, and young deer. Of the current predators, only one is really capable of keeping deer numbers from growing – humans. The current Massachusetts non-human predators (black bears, bobcats, and coyotes) do take a proportion of the fawns each spring and an occasional adult, but not in numbers that can stabilize deer population growth. This is true even after factoring in other sources of deer mortality, such as vehicle collisions. In extreme situations, starvation can become prevalent once deer deplete available food resources, but this typically occurs when deer numbers are extraordinarily high. Starvation typically results in a very slight reduction in the population, such that deer impacts (forest health, vehicle collisions, etc.) persist because deer numbers remain too high.

How did the deer numbers get so high in the Blue Hills?
The landscape in suburban areas of eastern Massachusetts creates the perfect storm of factors that lead to unchecked deer population growth. The increased forested edge habitat and supplemental food sources provide ample forage, much of the forested areas are closed to hunting, and many towns further restrict hunting access. All of these factors combined offer a landscape-scale limitation on deer hunting, thus allowing populations to grow. Eventually, populations can reach levels that impact forest health and the ecosystem. Over time, deer numbers in areas with little or no hunting access have grown exponentially, and concerns regarding deer over-abundance were on the rise in parts of eastern MA by the early 2000's. Despite the number of vehicle collisions and fawns being killed by predators such as coyotes, deer numbers continue to rise in these areas.

What is the problem with having high deer numbers?
Deer eat herbaceous plants and woody vegetation (browse) to survive. When deer numbers are low (~below 20 deer per square mile of forest), forest health and diversity remain intact, and there is little to no impact on other kinds of wildlife such as forest-dwelling birds. As deer numbers rise; however, more vegetation is consumed by deer. Many of the plant species that deer prefer to consume are important to other wildlife which may use those plants for food, shelter, nesting, or perching. Several wildlife species may be negatively impacted as these shrubs, trees, and herbaceous plants decrease or disappear from the forest altogether. As overall forest and habitat health declines, long-term health of the forest and the wildlife that depends on it is in jeopardy. Plant species diversity and regeneration is critical to the survival of forests and their ability to recover from natural disturbances such as fires, insect pests, drought, flood, and wind.

How many deer are there in the Blue Hills?
A population survey was not needed to know that deer were severely impacting the Reservation's forest. Based on the forest vegetation surveys in the Reservation, it was obvious that deer numbers were very high. However, determining "how high" required a deer population survey. The Massachusetts Division of Fisheries and Wildlife assisted the DCR with an abundance survey in 2013. The results showed an average deer density in and around the Blue Hills of 85 deer per square mile of forest on average. There is a confidence interval of around 65-107 deer per square mile of forest associated with that estimate.

It is impossible to tease out differences in deer numbers across the landscape from the estimate; it is an overall average. However, there were certainly more deer seen in the areas with better quality habitat and fewer seen in areas with less productive habitat, like white pine and hemlock stands. During the 2015 hunt in the Blue Hills, hunters also observed this same phenomenon.

There are roughly 9 square miles of deer habitat within the Blue Hills. Using the 2013 survey's confidence interval of 65-107 deer per square mile of forest, that means there are about 500-900 deer using the Blue Hills. Because there was no hunting in

2014, deer numbers likely increased slightly since conducting the survey in 2013. With the deer reduction in the 2015 hunt, deer numbers likely dropped slightly.

The Massachusetts Division of Fisheries and Wildlife plans to repeat the deer density survey in 2017 to reassess deer density after two years of regulated hunting. More meaningful information on trends can be gained after two years of reduction. If a survey was done after only one year, any changes might not be detectable given the confidence limits on the estimate.

Is a total of 64 deer taken in 2015 really enough deer to drop deer numbers?

A total harvest of 64 deer, most of which were females, is a great start toward reducing deer numbers. It's important to understand that dropping deer numbers requires a multi-year effort, which is why the Management Plan spans multiple years. Given all the factors that affect hunting success, it is unrealistic to expect deer numbers to drop to low levels in only 1 year or even 3 years. The first year of the hunt was purposely designed to be conservative, with only 4 days of hunting and less than 3000 of the 7000 acres open to hunting. This effort resulted in a reduction of about 14 deer per square mile from the hunted areas, which is quite a large number (over double what we take in Eastern, MA). As outlined in the Management Plan, future adjustments to the hunt will help increase the deer harvest and ensure a regional reduction.

How many deer do you want to have in the Blue Hills?

The Massachusetts Division of Fisheries and Wildlife has a statewide deer management range of 6-18 deer per square mile of forest. This range keeps deer numbers below the level at which they would have major impacts to the forest and other species which the agency is also responsible for managing. Deer numbers in the Blue Hills are likely over 4 times this recommended range. Given there are about 9 square miles of forest in the Blue Hills, this would mean dropping the number of deer to about 160 animals in the Reservation. Future surveys will help us determine when deer numbers have been reduced to recommended levels.

Why use regulated hunting instead of hired culling?

The Massachusetts Division of Fisheries and Wildlife uses regulated hunting to effectively manage deer populations across the state where there is adequate access for hunters. The Division has also worked with the DCR and The Trustees of Reservations on successful controlled deer hunts where habitat and water quality were at risk due to vegetation damage. Regulated hunting is the most practical, feasible, and cost-effective option for reducing deer numbers in the Blue Hills and elsewhere.

Why not use contraception or sterilization instead of hunting?

These methods were considered while developing the Deer Management Plan, but are not feasible in the Blue Hills. Sterilization involves surgical removal of reproductive organs and is theoretically 100% effective at preventing pregnancy. Contraceptives, administered by dart or hand injection, have been documented to be 60-90% effective at preventing pregnancy. Most treatments require booster shots, requiring that the same deer needs to be captured or darted again a year later, and perhaps again at a later interval. Preventing pregnancy can inhibit population growth, but only if no new unsterilized deer move into the area. Though current contraception and sterilization studies have been able to document effective reproductive control, these studies have taken place in extremely controlled and small study sites such as islands, and have not been able to document the level of population reduction needed at the Blue Hills in a reasonable timeframe. The logistics and economics of these options are enormous and impractical.

Even if all females were successfully treated, a population decline will not occur until those deer die, which can take over 10 years. Also, additional deer and untreated females can continue to enter the area. This situation fails to address the forest damage that has and will continue to occur during that time period.

One of the most effective contraceptive studies from the literature was an area in Maryland that was less than a square mile in size, which was fenced to keep deer from entering. In contrast, the Blue Hills Reservation is open to deer movement and is eight times larger. In the Maryland study site, there were approximately 300 deer (or 333 deer per square mile) living within the site when contraceptive treatment began. After 10 years, there were still 200 deer alive (or 222 deer per square mile), which is still extremely high. If we were to use this same success rate for the Blue Hills, starting at 85 deer per square mile, a 33% drop over 10 years would give us 57 deer per square mile in 2025. This deer density is still significantly higher than the goal of 6-18 deer/square miles.

Can we expect to see a reduction in tick numbers and Lyme disease?
It's important to understand that the goal and rationale for the Blue Hills Deer Hunt is to support forest health, plant and wildlife diversity, consistent with the DCR's responsibility to wisely manage its natural resources.

Scientists are still learning about the relationship between tick abundance and deer abundance. From the scientific literature, tick abundance is a very complex system that depends on several factors. What we do know is that adult female ticks primarily seek white-tailed deer to get their final blood meal which allows them to produce and lay eggs. If she is unable to get that final meal, she will die without laying eggs. There is some level of deer abundance that can become a limiting factor in tick abundance, so it is likely not linear. For example, a drop in deer density from over 100 deer per square mile to 50 deer per square mile may not change tick abundance because there are still enough deer to support tick numbers. However, studies where deer numbers were reduced to around 12 deer per square mile of forest did indicate a drop in tick abundance and Lyme disease incidence. If tick numbers and tick-borne illness decrease after deer reduction in the Blue Hills, that would be a benefit, but not the incentive for the deer reduction. There are also other public safety issues that will likely decrease as deer numbers decline, such as deer-vehicle collisions.

Won't deer hunting lead to higher deer numbers because deer will have more offspring?
Some animals like mice and rabbits can increase or decrease their litter size quite substantially depending on resources and competition. Biologically, however, deer do not have that same ability. Adult female deer typically have an average of 2 fawns per year. Hunting will not lead to the deer in the Blue Hills now having substantially more fawns. Hunting leads to fewer females in the population, so fewer offspring will be born the following year.

The controlled hunt in the DCR's Quabbin Reservation is a great example of how regulated hunting successfully reduced deer numbers to ecologically sustainable levels.

Why are you considering archery hunting?
Designated archery areas were established to help reach the management objectives established in the Blue Hills Deer Management Plan by increasing huntable areas and limiting areas where deer could avoid hunting pressure.
Although shotgun hunting is safe and legal in all designated archery areas, archery was chosen because these areas are small, with fragmented forest habitat that allows for a greater number of archery hunters compared to shotgun hunters.
Archery complements management efforts that are ongoing on private lands adjacent to the Blue Hills archery areas.
Archery hunting is an accepted, safe, and effective method of deer harvest widely used across the country and in Massachusetts, especially in suburban and urban settings.

I would like to know more about hunting safety. Do hunters have to take some kind of course before they can hunt?
Massachusetts has an excellent record of hunter safety. There are about 70,000 licensed hunters in the state. In 30 + years of reported accidents there have only been 3 incidents involving non-hunters. Most of the reported hunting incidents involving injury were either self-inflicted by a hunter, falls from a tree stand or involved other hunters (often from the same party).

First-time hunters in Massachusetts are required to successfully complete a hunter education course before they can purchase a hunting license. Courses are offered across the state and range from 12-18 hours in length.

Because every injury is one too many, the Environmental Police and Division of Fisheries and Wildlife reminds hunters to take all the basic principles of hunter safety to heart and follow the primary rules of firearms safety at all times:

- Treat EVERY firearm as if it were loaded.
- Keep the muzzle pointed in a safe direction at ALL times.
- Keep the safety on and your finger off the trigger until ready to shoot.
- Be sure to accurately identify your game and know what lies beyond your target.

For All Outdoor Users: Be Safe, Be Seen! For visibility, blaze orange, also referred to as hunter orange, is recommended for any outdoor user in the woods and fields during hunting seasons. An excellent video demonstrating how wearing blaze orange makes wearers highly visible to others can be viewed at http://player.vimeo.com/video/47113670.