

DEER MANAGEMENT

By: Rich Mattas

"When we try to pick out anything by itself, we find it hitched to everything else in the universe."

- John Muir, 1838-1914

Everyone enjoys seeing the deer, and many people would like to see them more often. As I hope to explain below, however, it is not possible to discuss the deer without showing how they are linked to the rest of the environment and the enjoyment of nature found here. It is this connection to the rest of the environment that ultimately leads to establishing a population range for the deer. It is the point where both the deer and the rest of the plants and animals with which we share The Territory can remain healthy and sustainable into the future.

The deer management program was initiated in 1991/92 because the deer were starving, they were destroying a great deal of the environment and landscaping, and deer/auto accidents were on the rise. The population density at that time was estimated to be at or above 100 per square mile. When the program started, the acceptable deer population range was determined, with the help of the Illinois Department of Natural Resources, to be in the range of 12 to 20 deer per square mile (132 to 220 deer in the Territory). The deer population today is 220 or above, the upper end of the range. For comparison, the total deer population in Illinois is estimated to be about 750,000, or about 13 per square mile. During the past year, the Greenspace Committee reviewed this range based on more recent technical information, and concluded that the range of 12 to 20 per square mile is still well-founded. Going beyond 20 deer per square mile will have negative consequences for other plants and animals, and hence there is a significant environmental price to be paid for allowing higher numbers.

The rest of the article goes into greater detail about how these numbers were determined along with more information about deer and the rest of the Territory environment.

The route to our destination of specifying a population range for the deer as well as addressing the results of the deer survey is somewhat circuitous but necessary given the number of considerations that go into the decision making process. So, please bear with me as I go through the background information that serves to support decisions made in the past.

Deer in The Galena Territory

(Much of this section is taken from The Deer of North America)

Whitetail deer, specifically Northern Woodland Whitetail Deer, are the only species of deer in the Territory. Deer are large animals, with the mature does ranging from 100 to 150 pounds and the bucks ranging from 150 to 200 pounds. Three key items: food, temperature, and sex largely determine their behavior. Time of year also plays an important role in behavior because of the yearly cycle of food availability and temperature variations.

Deer are known as browsers, as opposed to grazers, which means they eat a varied diet of grasses, forbs (non-grass herbaceous plants), and woody plants. Although deer do feed on grasses, they much prefer broadleaf forbs even after the forbs have died and dried. In the fall, acorns, when available, are the favorite whitetails' food. There are times when acorns comprise 80 percent of the diet with a decided preference for white oak acorns. They will also eat young saplings, particularly maple and oak saplings, as well as fallen leaves. Most of the time, deer remain hidden in the woods, but come out to feed at regular times during the day. In general, deer are crepuscular animals; that is, their periods of greatest activity are at dawn and dusk when they feed. Yet deer have become much more nocturnal than in centuries past because of pressure from humans.

The 'edge' best describes deer habitat. Edge is where the grassland or an open area meets or abuts a forested area. Edge usually means both food and shelter, and that is what deer habitat is all about. A deer, at any time of the year, is seldom more than 400 yards from cover, and in the summer cover is usually close on every side. The Territory, with its checkerboard of woods and open areas is a particularly attractive habitat for the deer.

In the summer, the habits of all deer change because of the heat. In summer they feed primarily at night. The does and fawns may come out just before sunset. The bucks are seldom seen while the sun is still visible. The major feeding period is just before dawn, but when the temperature gets above 60 F, they head for shady cover. They generally prefer the northern slopes because they are cooler. In the winter, the pattern of feeding at dawn and dusk continues, but deer will yard up if the snow is deep. This means they will not be seen at all, except in the yards. This was the case last winter, as observed in the winter aerial deer count when we had a persistent snow cover most of the winter.

Fall is the breeding season, with the breeding season peaking from November 10 to 20. During the period from late October through November, both the bucks and does are very active (chasing and being chased), making this a good time to see deer in the open but also the most dangerous period for deer/auto accidents. The middle of May to the middle of June is the peak of the birthing activity, and does, before they give birth, may be seen at almost any time of the day. During the month of June, does that have given birth become secretive to care for their fawns and are almost never seen. Given good habitat and a lack of predators, a deer herd will almost double its numbers every year. More typically, a deer herd will increase in numbers by 35 to 40 percent per year.

Deer and the Environment

Deer are identified as a "key stone" species; that is, their presence and numbers have a significant impact on the make-up of the rest of the environment. Their impact is due to their large size as well as large amount and diverse nature of the vegetation they consume. If their numbers are allowed to get out of balance with the rest of the environment, they will end up reducing or eliminating existing plants and animals.

The deer have the capability of changing the entire composition of the forest areas they inhabit. In Wisconsin it is calculated that the whitetail deer were crippling or eliminating over 600 million tree seedlings every year. Coupled with their consumption of acorns in the fall means that regeneration of the forest trees, particularly the oaks is prevented. In addition, the understory plants are also greatly reduced or eliminated. This represents a loss of habitat for many birds and animals, and hence they are also eliminated from the environment. The top prey animals, such as the hawks lose their food supply, so their numbers are eventually reduced. Specific deer population densities where these effects are observed are given in the next section.

The GTA, through the Greenspace Committee is committed to preserving the entire environment, not just the deer, for the enjoyment of all property owners. The first goal of the Greenspace Committee is; "Maximize the diversity of native plant and animal species", and the fifth goal is, "Ensure regeneration of native plant and animal species." This means that impact of the deer on the rest of the plants and animals must be taken into account when evaluating deer population.

Considerations for Deer Population

Limits on deer population can be assessed by considering carrying capacities. There are three types of carrying capacities.

1. The Biological Carrying Capacity (BCC). This is the point where births and deaths balance without any outside intervention, including predators and hunters.
2. The Cultural Carrying Capacity (CCC). This is the point where the human population decides that it can accept the deer population. It is very difficult to identify the CCC since there are often many opinions on acceptable deer population size. These considerations do become important well before the BCC is reached, however.
3. The Ecological Carrying Capacity (ECC). At the ECC, herbivores, although having some browsing impact, do not determine the structure and species composition of the plant community. In many areas of the US, this is not a factor, because there is no longer any real bio-diversity to protect. It is a factor here because the Territory is blessed with a large number of plant and animal species. The ECC relates to the goals and objectives for the environment of the Territory, developed by the Greenspace Committee and approved by the GTA board.

The BCC is set by the weather conditions throughout the year and the amount of available food source. This is the point where all available food sources are being exploited and where the deer births are offset by deaths largely due to disease and starvation rather than old age. This is the level that the Territory was at prior to initiating the deer management program, with an estimated population density of over 100 per square mile. At this point the deer population is also prone to population crashes, if for example, there is a severe winter.

The CCC depends on the preferences of people in the local community, and it is difficult to find a population density estimate in the literature that establishes an of the acceptable CCC population density. Factors that go into establishing a CCC include damage to landscaping, frequency of deer/auto accidents, and transmission of diseases carried by deer, such as Lyme disease. In the case of Virginia, areas identified as exceeding the carrying capacity contained more than 25 deer per square mile. It is evident, however, that deer populations in farm-forest landscapes will far exceed levels associated with conflicts (reduced biodiversity, increased agricultural damage, and frequent vehicle collisions with deer) before reduced births (productivity) become apparent.

There is some evidence of population densities where the ECC is reached. Here are some examples of research results.

In the oak forests in central Massachusetts, deer populations of 25 to 44 deer per square mile interrupted the process of understory reinitiation and prevented regeneration. In areas of the forest where deer numbers have been limited to 8 to 15 deer per square mile, understory vegetation is abundant and diverse. A ten year study in Northwestern Pennsylvania demonstrated that species richness, abundance, and height of saplings declined significantly once deer densities exceeded 21 deer per square mile. The bird community that uses this intermediate foliage canopy exhibited significant reduction in species richness and abundance when the deer population exceed 21 per square mile, and five songbird species were no longer observed on study sites. Species richness and abundance of shrubs and herbaceous plants were negatively affected when deer density exceeded 10 per square mile. Finally, a deer browse survey was conducted earlier this year in the Galena Territory by the Illinois Department of Natural Resources. The differences in plant species and numbers in browsed and unbrowsed areas were compared. The report concluded, "that the past reductions in deer population levels have improved the condition of the woody vegetation at Galena Territory. It is apparent, however, that deer continue to impact the vegetation at GTA, and that the deer removal program will need to continue at least at the existing intensity to maintain the level of recovery observed to date."

All these results for the ECC are consistent with the original goal of 12 to 20 deer per square mile. Although, there appears to be some evidence that even at 20 deer per square mile there is damage to the biodiversity. The information is scanty, and therefore, a revision downwards in the goal population is not justified at this time. New results should be monitored as they become available, however.

The 2001 Deer Survey

The deer survey sent out to property owners this past summer is intended to get a sense of the relative level of deer damage to landscaping. An opportunity for property owners to comment was provided along with the survey. The numerical results show, by over a 10:1 ratio, that property owners believe that the current level of deer damage is tolerable. More people, by a significant margin, responded to having less damage this year than more damage. These numbers indicate that the deer management program is doing its job to minimize landscaping damage. My own comment is that results show the program is working, and the numbers themselves do not imply anything about altering our approach to deer management.

There were also numerous comments, some of which were directed at the deer management program. The categories of comments are 1) we have observed damage, 2) we have not observed any damage, 3) we support the management program, 4) we oppose killing the deer completely, 5) the number of deer in the Territory should be increased to see the deer more often, 6) we observe deer in our area, and 7) we do not observe the deer. Although these comments do not constitute a statistically significant sampling of all the property owners, they are important and should be addressed.

First, I hope that this article provides the information to convince everyone that a deer management program is needed. Allowing the deer to repopulate to the numbers of the early 90's, when they were starving, is cruel and unusual punishment for the deer. I would also like to thank those people who indicated their support of the deer management program. With fewer deer, it is true that we are less likely to observe the deer today than a few years ago. Allowing the number of deer to increase will likely increase deer sightings, but as described above, this comes at a price to the rest of the environment. Seeing the deer is something everyone enjoys, so I have an expanded discussion on deer observation in the next section.

Observing the Deer

We see the deer less often than before for two reasons. Certainly there are fewer deer than in the early 1990s, but normal deer behavior is not conducive to easy observation. Deviations from this behavior, such as seeing deer during the middle of the day in the summer or far from woodland cover, are abnormal and should be considered as a sign that there is something wrong with the deer or with the environment.

There are some areas of the Territory where deer sightings today would be unexpected. If there is an option, deer prefer avoiding people and open areas without cover. This means that less deer would be seen in the resort core area, with a high human population density, particularly on weekends, plus open areas such as the golf courses. (Golf courses are rather sterile areas as far as the deer are concerned because their preferred food types have been replaced by non-native, close-cropped grasses of fairways and greens. Only the untouched rough areas and remaining woodlands offer some attraction.) Other open areas, such as former farm fields or open prairies, would also tend to be avoided by the deer.

In addition, as long as there is an adequate food supply, deer are not active in open areas during daylight hours, even if there is cover nearby. Dawn and dusk are the most likely times to see does and fawns, but bucks are typically active only after dark. This varies during the year, with the late fall, during the rutting season, and winter being the better times to see the deer. This is also the time, however, when the human population in the Territory is lowest.

On the other hand, it is possible to see the deer if you use their behavior as a guide. This may mean rising early or going out late in the day to locations where both food and cover exist for the deer. During daylight hours, a walk on the trails through wooded areas may lead to seeing deer as they rest and chew their cud.

Final Thoughts

People enjoy seeing the deer in the Territory, and if asked, "Would you like to see the deer more often?" they would almost certainly answer, "Yes."

To return to the main theme, the deer cannot be considered in isolation from the rest of the environment. Therefore, the question can be rephrased to, "Would you like to see the deer more often if it means

- Endangering the health of the deer?
- Having fewer birds and eliminating species of ground nesting birds?
- Preventing the regeneration of the understory plants?
- Preventing the regeneration of oaks?
- Having fewer wildflowers in the spring and eliminating rare species of wildflowers?"

Rephrased in this way, I believe the answer would change.

The deer are an important part of the local environment, but they are a part of the greater whole. The GTA is committed to preserving the entire environment as best we can, and, as I've tried to show in this article, the present deer population is at the upper limit where both the deer and the rest of the plants and animals can remain healthy and sustainable into the future.

I encourage your comments and questions, and I would be glad to respond to them in future editions of the Territory Times.

Further Reading

Here are two excellent books, one of which describes everything and more that you ever wanted to know about deer physiology and behavior, and one of which describes the relationship of the deer to the environment. There are also a number of excellent websites, such as the many sites for departments of natural resources of individual states.

The Deer of North America, Leonard Lee Rue III, Lyons & Burford Publishers (1997)

The Science of Overabundance; Deer Ecology and Population Management, Edited by W. McShea, H. Underwood, and J. Rappole, Smithsonian Institution Press, Washington (1997)