

DMU 045

Leelanau County

Deer Management Unit

Area Description

The Leelanau County Deer Management Unit (DMU 045) is in the Northern Lower Peninsula Region (NLP). It has roughly 7,100 acres of State Forest Land which is about 3% of the total acreage in the county. Topography is predominately rolling hills with many small wetlands between hills and a small component of glacial till plains scattered about.

Most of the soils in the area are well drained and consist of sand mixes with occasional inclusions of clay or organic soils. The soils in this DMU typically supported northern hardwoods on the upland sites. Orchards dominate the agricultural scene in this DMU. Leelanau County is Michigan's leading producer of cherries.

The Solon Swamp in central Leelanau County is the unit's most significant winter yarding complex. Other traditional winter yarding areas occur along various riparian corridors including Bodus Creek, Shalda Creek, Leo Creek, and Houdek Creek. Riparian corridors also provide important travel routes for deer and other species.

Sleeping Bear Dunes National Lakeshore is headquartered in Empire, MI, and comprises almost half of the western shore of the Leelanau Peninsula. Leelanau County (DMU 045) has had Antler Point Restrictions (APR) in place since 2003. A second survey was conducted in the DMU after 5 years and the results showed enough support for the APR to keep them in place. Leelanau County deer population is somewhat isolated from other counties/DMUs because it is a peninsula.

Management Guidance

Two main goals guide the deer management in this DMU: 1) impact management; and 2) hunting opportunities. Impact management refers to reduction of undesirable effects associated with deer over-abundance. Crop damage, deer-vehicle collisions, and poor forest regeneration due to over-browsing are examples. To find a middle-ground in which deer numbers provide ample hunting and wildlife viewing opportunities and mitigate unwanted impacts, we review data from several sources to adjust the harvest strategy as needed. These data include deer harvest data from check stations and an annual hunter survey, the winter severity index, deer-vehicle collision data from the Michigan State Police, and deer-related information collected by regional wildlife biologists (e.g., hunter observations, number of Crop Damage Permits, spotlight surveys, habitat assessments, etc.).

Population Assessment Factors

Winter Severity Index (WSI)

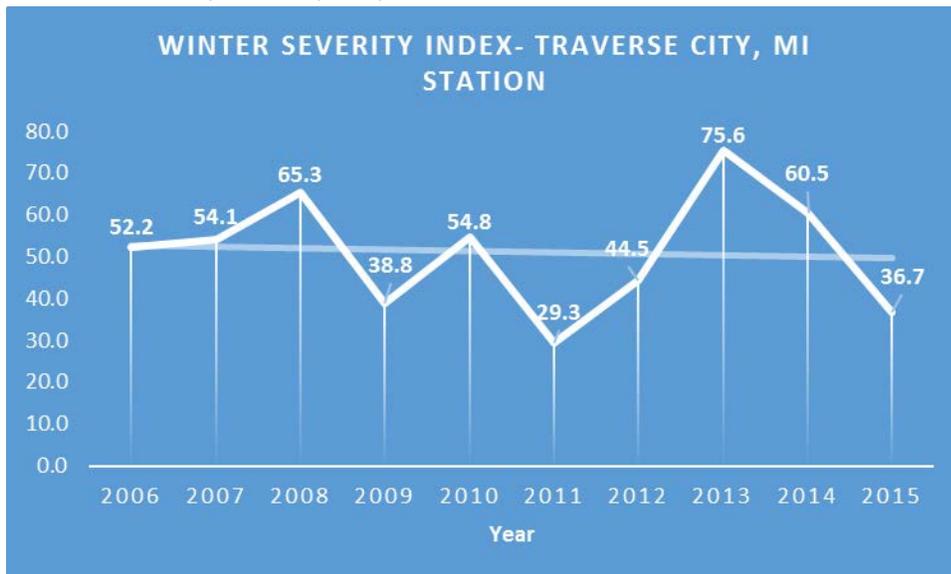


Figure 1: Graph of Traverse City Areas Winter Severity Index from 2006 to 2015

The current WSI system takes advantage of standard weather data available from the National Climatic Data Center. The DNR uses weekly data on air temperature, wind speed, and precipitation from weather stations throughout Michigan and the surrounding area to calculate a weekly index value from November through April. Normally, the WSI values from individual stations are averaged across a specific area (i.e. Upper Peninsula, Northern Lower Peninsula, Southern Lower Peninsula) to give a regional scale perspective on winter severity. To monitor deer related trends specific to the Grand Traverse area, only the Traverse City Area WSI station data were used. The DNR plots these values over time to provide insight into the pattern of winter severity over the course of the winter and to identify severe weather events. Extended periods of severe weather and very early or very late peaks in severity tend to have the greatest effect on deer. The above graph (Figure 2) shows the cumulative WSI, or the overall severity of each complete winter season. Despite several harsher winters over the past 10+ years, the trend has been for milder winters. Relatively mild winters allow for increased deer survival, particularly for fawns which are typically the most vulnerable. Furthermore, pregnant does experiencing a mild winter tend to be healthier and better newborn survival. Whereas mild winters allow for better survival of deer, severe winters can cause high deer mortality. Does may abort fetuses to survive a severe winter, which creates a lag effect into the following year. Winter severity has been low over the last two years compared to the average trend for the area and the winter of 2016/17 is will be another mild one. These types of winters are conducive for an increase in the deer population.

Deer Harvest Analysis

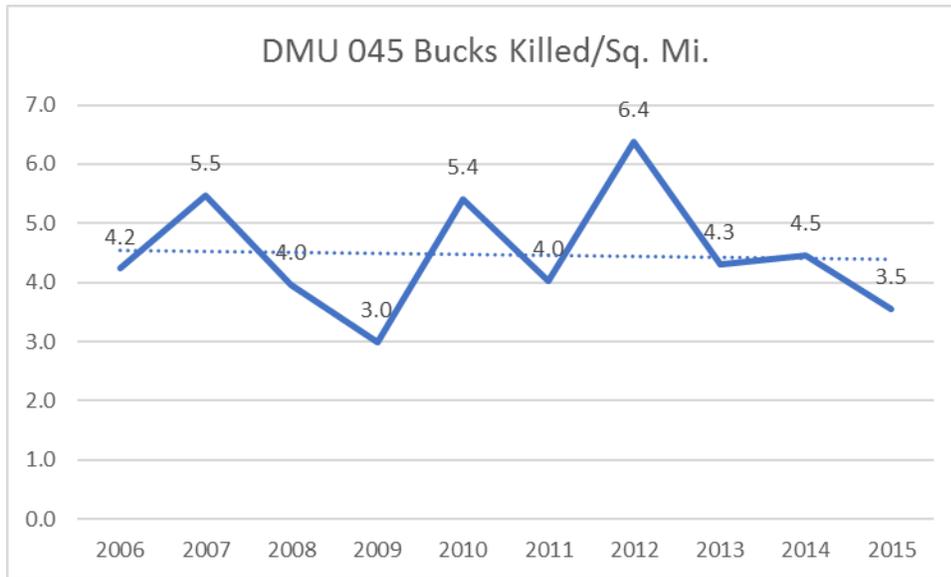


Figure 2. DMU 045 (Leelanau County) Bucks Killed per Square Mile

The trend for the number of bucks harvested per square mile in DMU 045 has been nearly stable in last decade, showing only a slight negative trend (Figure 3). From year to year there have been fluctuations in the harvest, likely due to a combination of varying winter severities, variations in hunting pressure, and possibly other factors. While it can be difficult to pinpoint exactly what is causing a population to increase or decrease we can make predictions based on past trends and looking at several factors that can indicate changes in populations.

In northern Michigan, winter severity has a direct impact on deer condition at the population level. Mild winters allow for better survival of deer, severe winters can cause high deer mortality. In addition, does may abort fetuses to survive which creates a lag effect into the following year.

Deer Vehicle Collisions

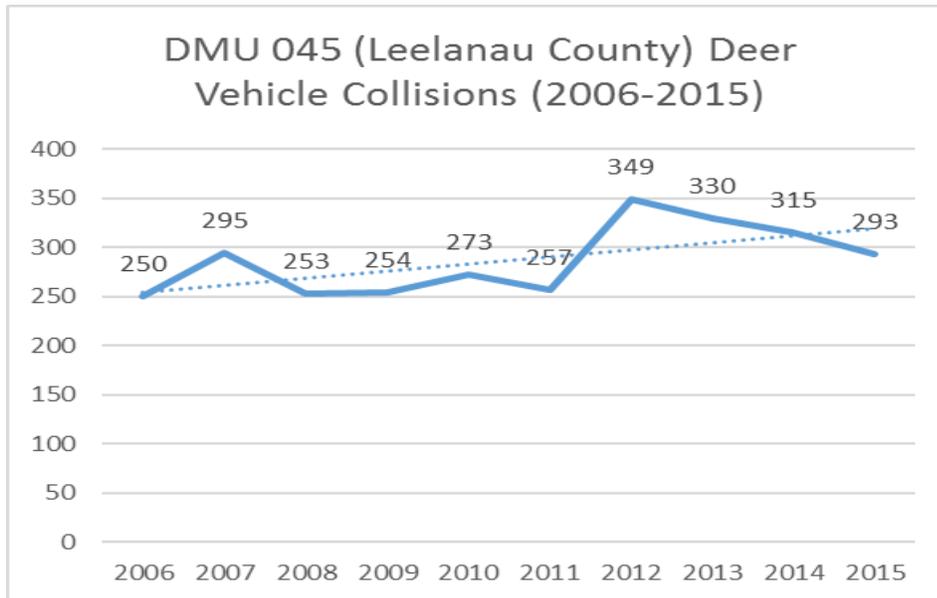


Figure 3. DMU 045 (Leelanau County) Deer Vehicle Collisions (2006-2015)

Deer-vehicle collisions (DVC) are commonly used as an index to the deer population trend, the idea being that high rates of DVCs are correlated with high deer populations, and vice versa. Research has shown that there are other factors that influence the rate of DVCs. Habitat proximate to the roadway and highway characteristics can blur the relationship between deer population and DVCs. However, DVC data can provide useful information if considered as one part of a deer population assessment.

These data are provided by the Michigan State Police. Although changes may have occurred in law enforcement response and recording of DVCs over time, we assume they have remained consistent enough to provide an accurate estimate of DVC rates relative to vehicle miles driven.

The various fluctuations from year to year give supportive evidence to the primary driving factor of the deer population which is winter. Significant drops in DVC occurred one to two years after a particularly severe winter.

The trend for the past decade in DMU 045 has been for a slow increase in DVCs (Figure 4). However, from 2012 through 2015 the number of DVCs has declined, or shown a negative trend for those 4 years.

Deer Hunter Numbers and Behavior

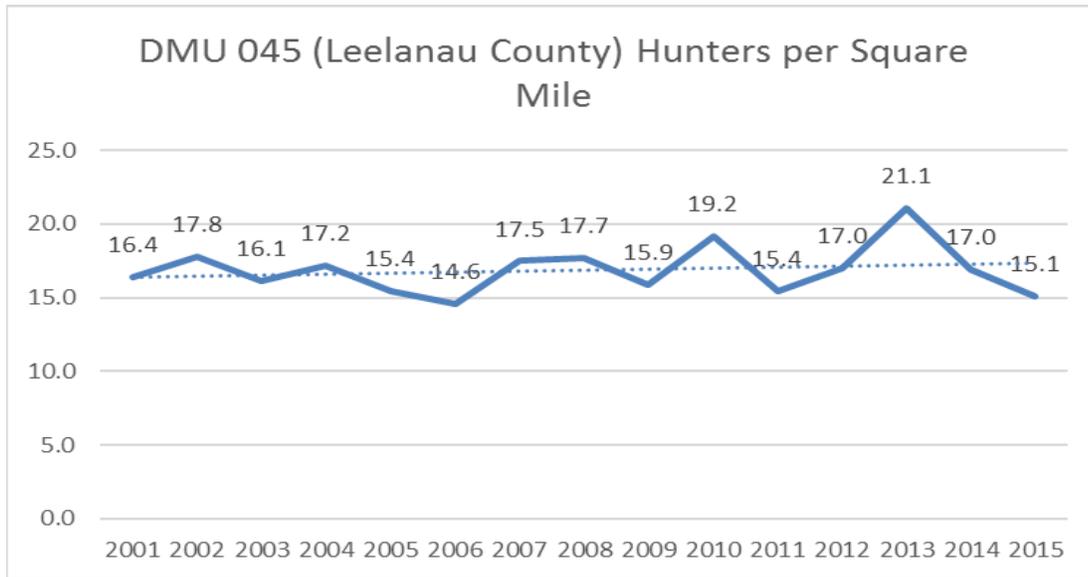


Figure 4. DMU 045 (Leelanau County) Hunters per Square Mile

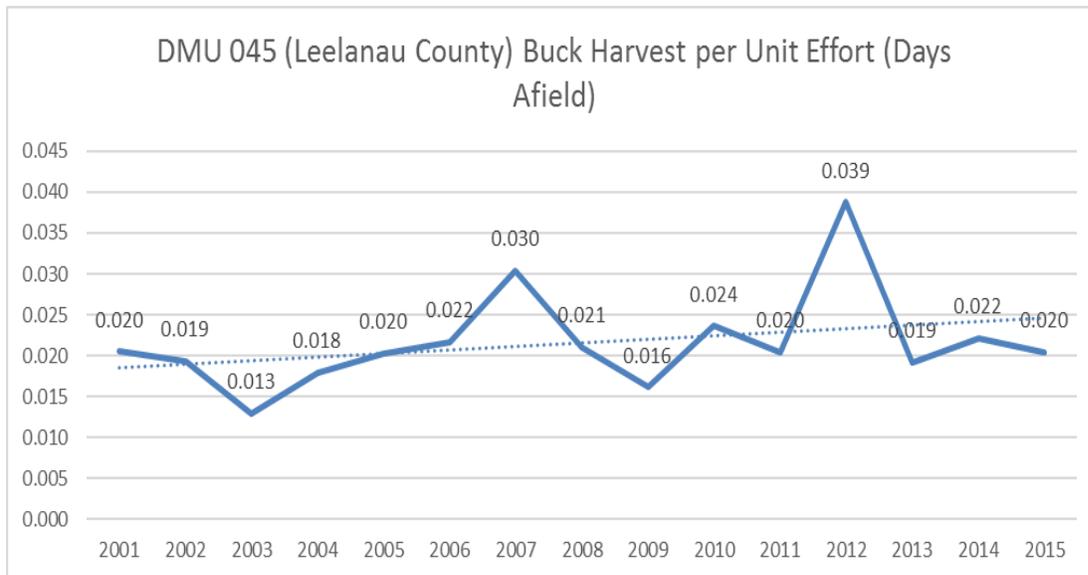


Figure 5. DMU 045 (Leelanau County) Buck Harvest per Unit Effort (Days Afield)

Hunter trends can be an important indicator to assess if the number of hunters are driving populations up or down. Hunter numbers have shown a slightly positive trend over the past 15 years (Figure 5), as has hunter effort. The number of antlered deer harvested per unit of effort has also shown a slightly positive trend (Figure 6).

Years of low harvest have followed years of high winter severity in DMU 045 and the same goes for years of high harvest have followed patterns of lower winter severity indicating that harvest is more likely driven by the severity of the previous winters

Hunter perceptions and goals can also impact harvest numbers. Large scale shifts in hunters' decisions to target older deer and pass on younger bucks results in reduced harvest numbers and increased hunter effort, as there are fewer deer in older age classes. Success and harvest rates are thereby suppressed not by population decline, but by human decision-making processes. Similarly, hunters may self-regulate harvest of antlerless deer for a variety of factors, such as a perception of too few deer.

Deer Management Assistance Permits (DMAPs)

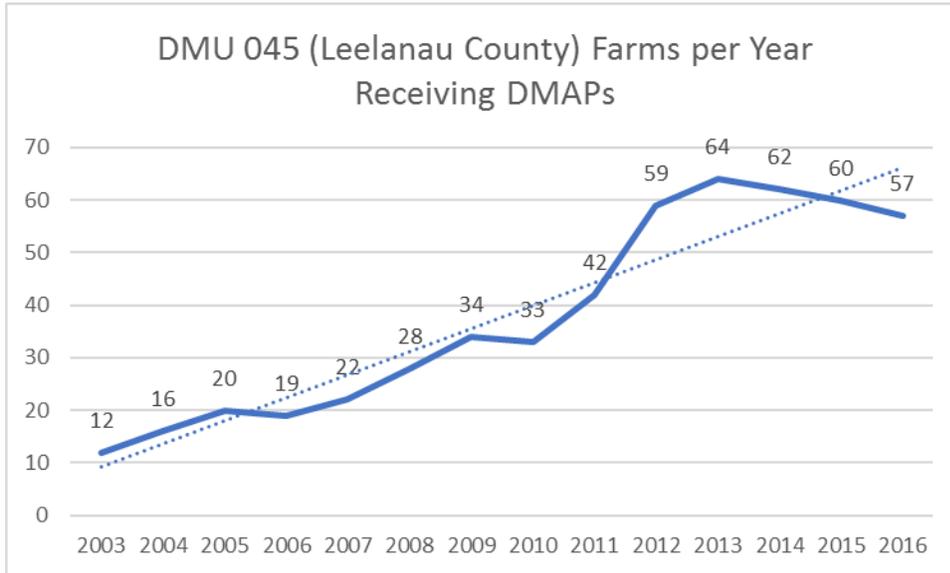


Figure 6. Farms per Year Receiving Deer Management Assistance Permits (DMAPs)

The number of farms per year requesting Deer Management Assistance Permits (DMAPs) has shown a positive trend in Leelanau County since the yearly 2000s (Figure 7). However, the trend has started to decline since 2013. The number of farms was chosen to track the trend of this particular index rather than the number of permits issued, permits purchased, or permits filled. The numbers of permits issued, purchased, and filled could be influenced by such things as change in farm management, crop harvest dates (corn), crop success, weather during hunting seasons, actual and perceived damage during growing season, deer visibility leading up to hunting season, availability of over-the-counter antlerless tags, and even the general economy. However, the practice of a particular farm requesting at least a minimal amount of permits is believed to remain steady from year to year despite the severity of damage and/or other factors.

Deer Damage Shooting Permits (DDSPs)

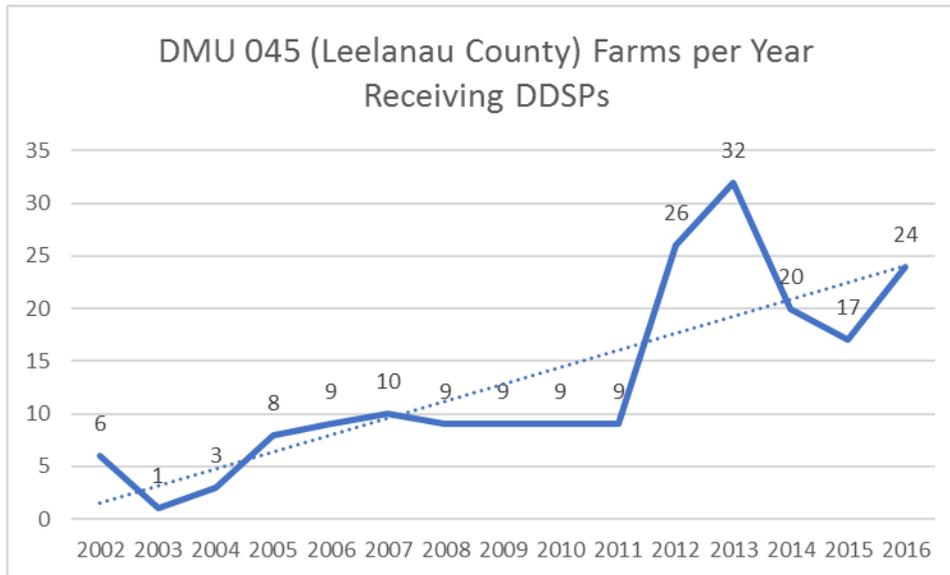


Figure 7. DMU 045 (Leelanau County) Farms per Year Receiving DDSPs

The trend for number of farms per year requesting Deer Damage Shooting Permits (DDSPs) has been showing a general increase in Leelanau County since the early 2000s (Figure 8). The number of farms was chosen to track the trend of this particular index rather than the number of permits issued or permits filled. The numbers of permits issued and filled can be influenced by such things as change in farm practices, number of shooters on the permit, crop harvest dates (corn), crop success, actual and perceived damage during growing season, change in DNR staff responding, and changes in DNR general policies such as liberalization of the minimum number of tags given out and duration of permits. However, the practice of a particular farm reporting current crop damage generally remains steady from year to year despite the severity of damage and/or other factors.

Deer Management Recommendations

While each indicator previously described is by itself not a stand alone gauge of the actual population trends, they do as a group point towards a stable, if not slightly growing deer population in DMU 045 (Leelanau County). Therefore based on current trends for these indicators in DMU 045, we are recommending a slight increase in antlerless quotas. This recommendation is consistent with the APR management philosophy of striving for a balanced buck to doe ratio and maintaining deer numbers at or below the biological carrying capacity. It will also help to reduce deer populations on agricultural lands.

A larger proportion of the antlerless quota should be private land antlerless. This is based on the fact that deer are not spread evenly across the landscape. Deer tend to congregate where the best food (and cover) is found. Because private lands tend to have better soils and are relatively productive, they can, and do support higher deer densities. State Forest land is typically less productive than private farmland but is more than adequate for growing forests and other natural communities, which can support deer, but at lower densities than farmland. This creates a density gradient with the highest deer populations on the farmland and the lower deer densities on public forest lands. Therefore, population increases are going to be seen first and at a higher growth rate on private farmland than on

public land. The foods the deer are targeting on private lands are agricultural crops including various fruit orchards, row crops, pastures, and specialty crops. This can create economic hardships for individuals and communities. This is the reason that as a population grows, harvest pressure on does is first needed on private lands (a source of deer), and then possibly on public lands. As the population grows there will continue to be a larger need on the private lands for doe harvest than on the secondary habitat, public land. However, consideration should be made to keep deer populations on associated public lands at or below biological carrying capacity to minimize pressure on the public land habitat and therefore prevent too many deer migrating to private land. Another factor in distributing the total quota of antlerless licenses is the ratio of private to public land. Not only will private land have higher deer densities, but in most counties there is typically more private than there is public land, thus tilting the license distribution toward private land.

We also recommend an early/late private land antlerless firearm season for DMU 045 based on the increasing occurrence of deer damage to agricultural crops. An early season will allow farms with antlerless tags to target deer on their properties where damage has occurred. The early hunt will help target deer that are more likely to have been causing damage, and still in/near their summer range. Also, in some cases during the fall hunting seasons and after crops are harvested deer may move off harvested ag lands and open fields to better cover where they may not be vulnerable during regular hunting seasons.

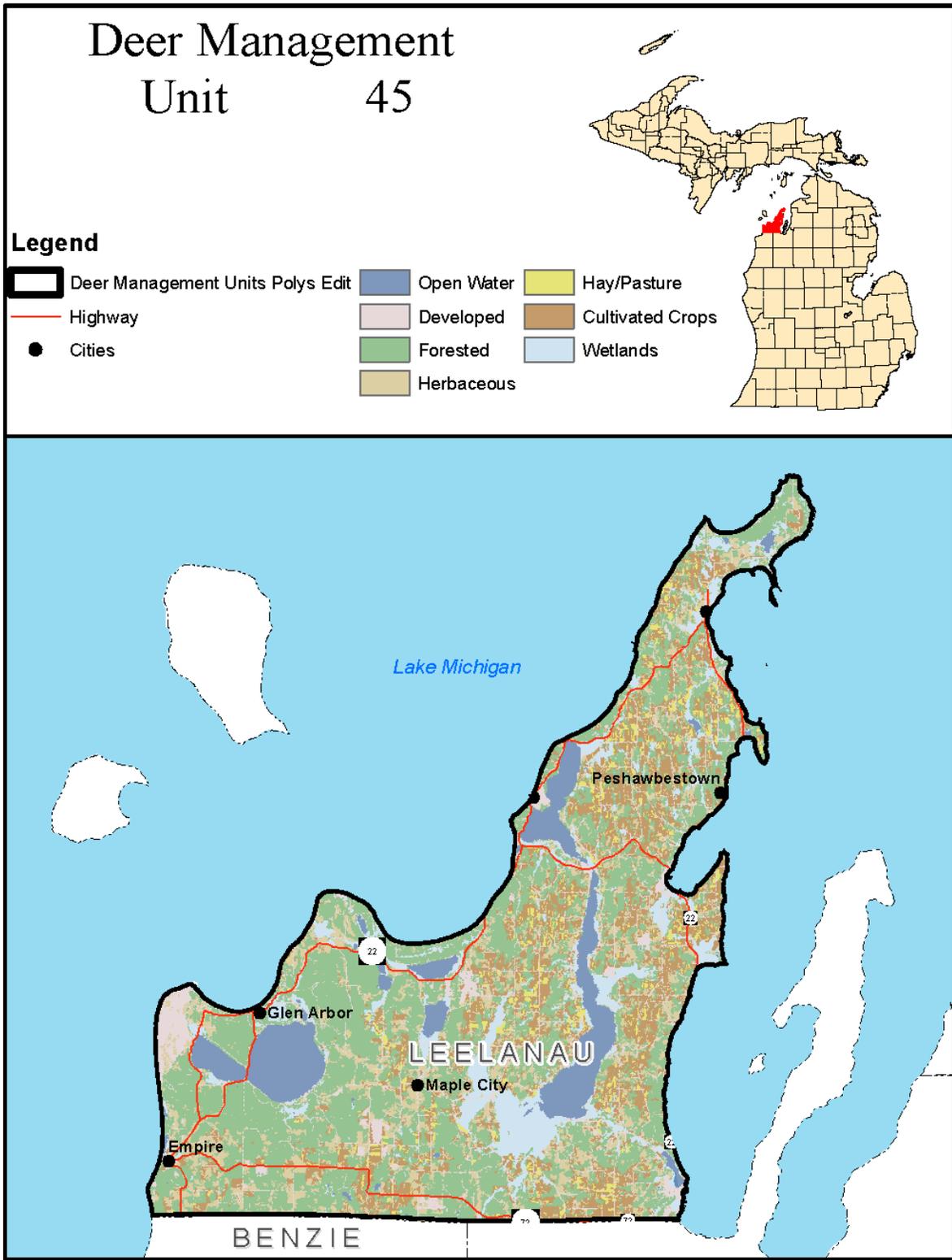


Figure 1. Deer Management Unit 045 Map