DMU 040
Kalkaska County
Deer Management Unit

Area Description

The Kalkaska County Deer Management Unit (DMU 040) is in the Northern Lower Peninsula Region (NLP) (Figure 1). It has roughly 170,000 acres of State Forest Land which is about 47% of the total acreage in the county, part of which is located on Camp Grayling. Topography varies from areas of steep slopes to rolling hills to areas that are relatively flat. The landscape consists of basically two large tracts of State Forest.

Most of the soils in the area are well drained and consist of sand, sand/gravel, or sandy loams, with occasional inclusions of clay or organic soils, primarily along rivers and creeks. These drier sandy soils tend to support mixes of pine, oak, aspen, and red maple. The northeast corner of the county has some concentrations of northern hardwoods along the Grayling Ice Contact Ridges. Potato farms and hay fields dominate the agricultural production on the private lands that extend from the southwest to the northeast of the county.

DMU 040 contains several large swamp complexes and numerous smaller ones that serve as deer yards during harsher winters. Several of the more notable ones include Mecum Swamp, Black Creek Swamp, Maham Swamp, and the Manistee River corridor. Riparian corridors also provide important travel routes for deer and other species. These yarding areas are distributed roughly 50/50 on public and private lands. Numerous pine stands provide thermal cover in upland areas as well.

The overall less fertile soils and harsher winters of a county inland from the Great Lakes typically produces the greatest over-wintering bottleneck for deer populations within the Traverse City Forest Area.

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. In an effort 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
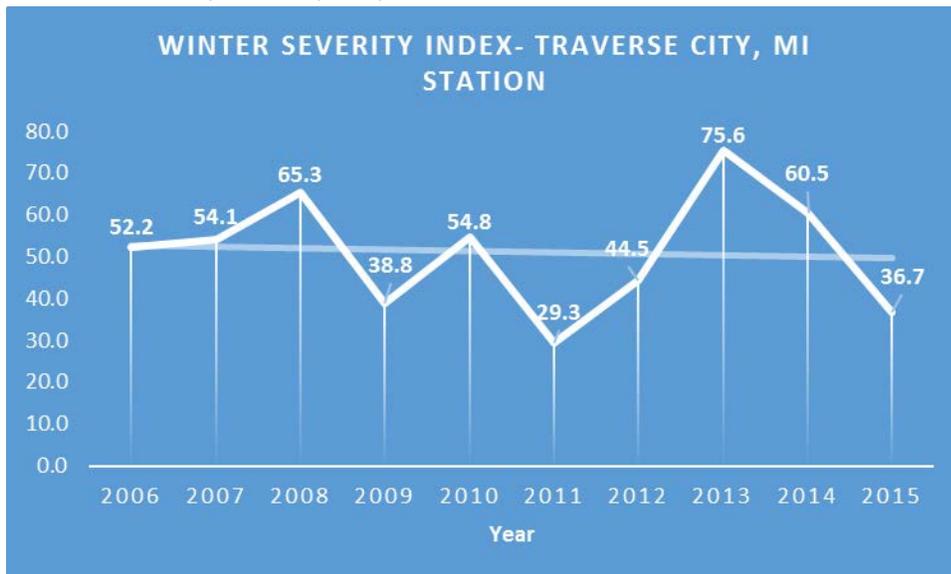
Winter Severity Index (WSI)

Figure 1: Graph of Traverse City Areas Winter Severity Index from 2000 to 2012

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 which positively affects 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. The mild winters observed over the last several years would allow for a steady increase in the deer population
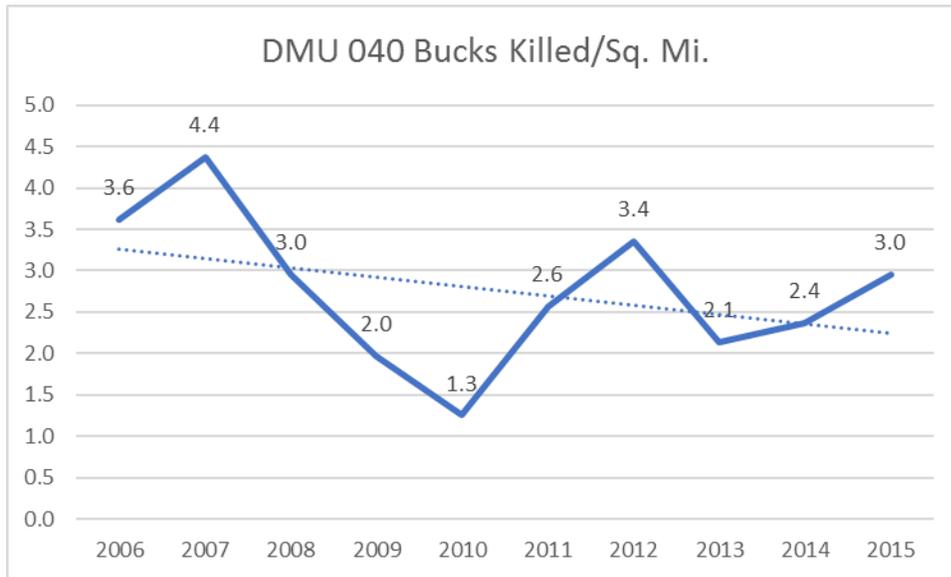
Figure 2. DMU 040 (Kalkaska County) Bucks Killed per Square Mile

The trend for the number of bucks harvested per square mile has declined over the last decade (Figure 3). From year to year there have been fluctuations in the harvest, likely due to a combination of varying winter severities, decline in hunting pressure, and possibly other factors. Following the harsh winter of 2013/14 the harvest data from the 2014 and 2015 seasons have shown a slight rebound in bucks harvested per mile². Also, starting in 2013, DMU 040 became part of a 12-county mandatory Antler Point Restriction (APR) zone. The minimum legal buck must have at least three antler points on one side. This would suppress buck harvest for several seasons until bucks graduated into older age classes and produced antlers meeting the point restrictions. 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.
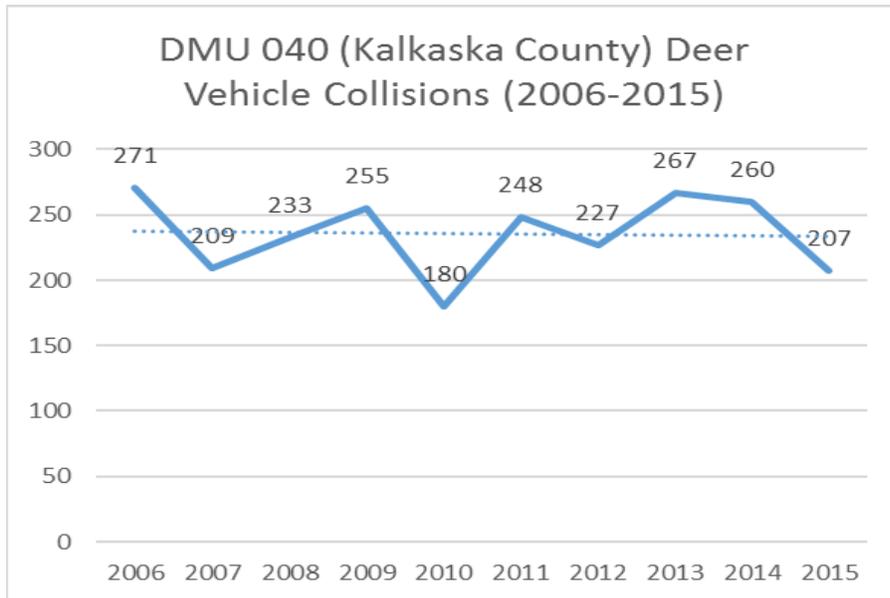
Deer Vehicle Collisions

Figure 3. DMU 040 (Kalkaska County) Deer Vehicle Collisions

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 contextualized 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 popualtion which is winter. Significant drops in DVC occurred one to two years after a particularly severe winter. The overall trend for DMU 040 over the past decade has been stable for DVCs (Figure 4), despite the overall trend of milder winters, increased crop damage complaints, and a slight increase in bucks harvested per unit effort.
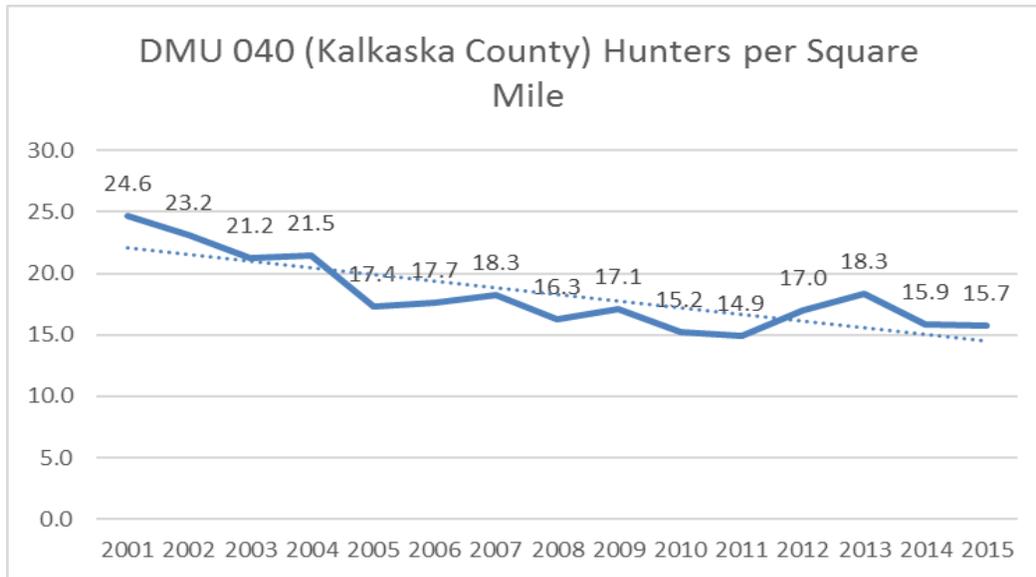
Deer Hunter Numbers and Behavior

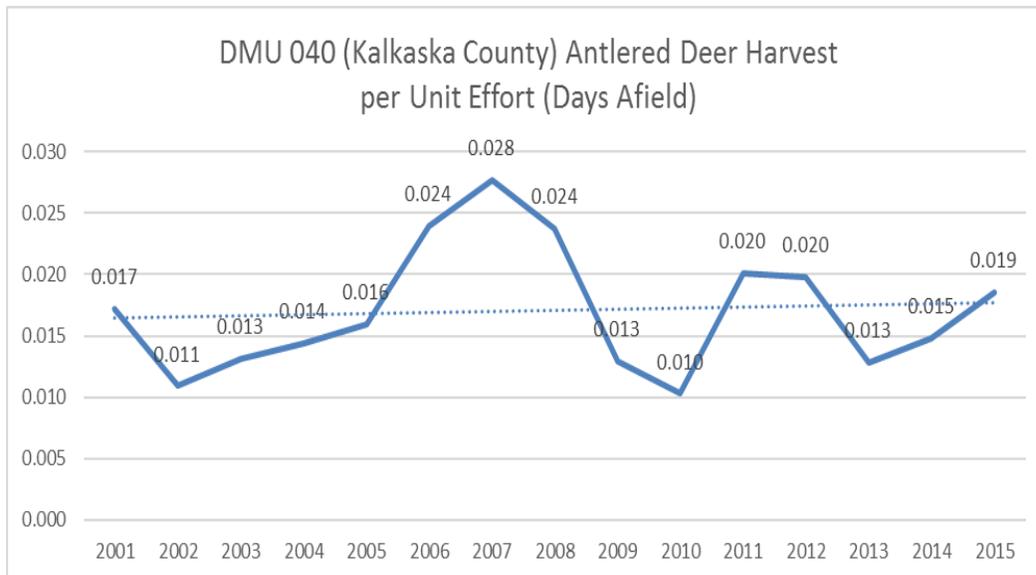*Figure 4. DMU 040 (Kalkaska County) Hunters per Square Mile*

Figure 5. DMU 040 (Kalkaska County) Antlered Deer Harvest per Unit Effort

Hunter trends can be an important indicator to assess if the number of hunters are driving populations up or down. In DMU 040 hunter numbers have slowly decreased over the last decade (Figure 5), but the past few seasons may show a stabilization of hunting pressure. The number of antlered deer harvested per unit of effort has been increasing over the past 15 years (Figure 6). The years of low harvest have followed years of high winter severity in DMU 040 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.

DMU 040 is one the 12 counties included in an Antler Point Restriction (APR) zone. Starting in 2013 hunters were restricted to harvesting a buck with at least 3 or more points on one side. Therefore, the reduction in the 2013 buck harvest was anticipated because this was the first year of APRs and the number of legal bucks would be reduced. Starting in 2014 the hunter success rate did begin to rebound as hoped.

The trend for bucks harvested per Unit Effort (Days Afield) has shown a slight increase over the past 15 years in DMU 040.
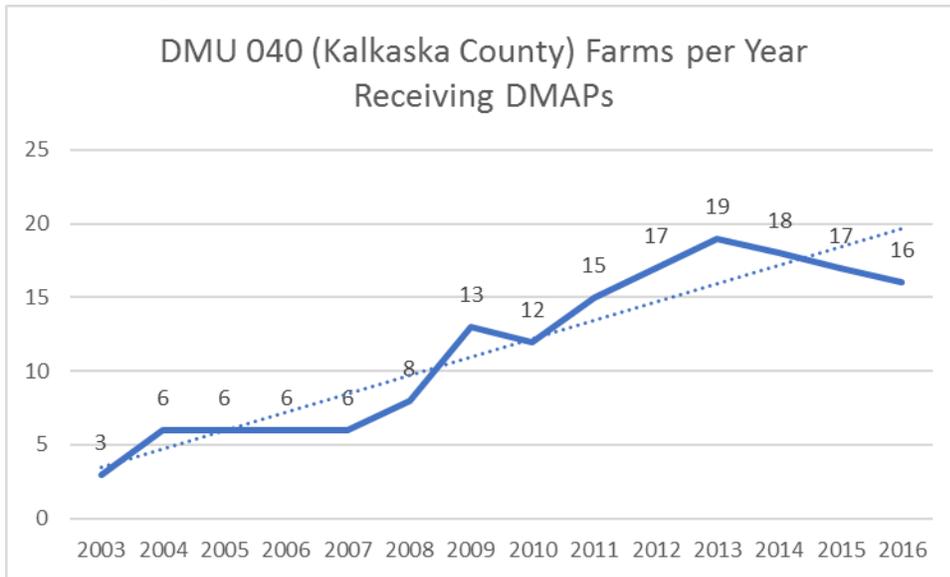
Deer Management Assistance Permits (DMAP)

Figure 6. DMU 040 (Kalkaska County) Farms per Year Receiving DMAPs

The trend since the yearly 2000s for the number of farms per year requesting Deer Management Assistance Permits (DMAPs) has been positive for DMU 040 (Kalkaska County). However since 2014 that number has been on the decline (Figure 7). 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.
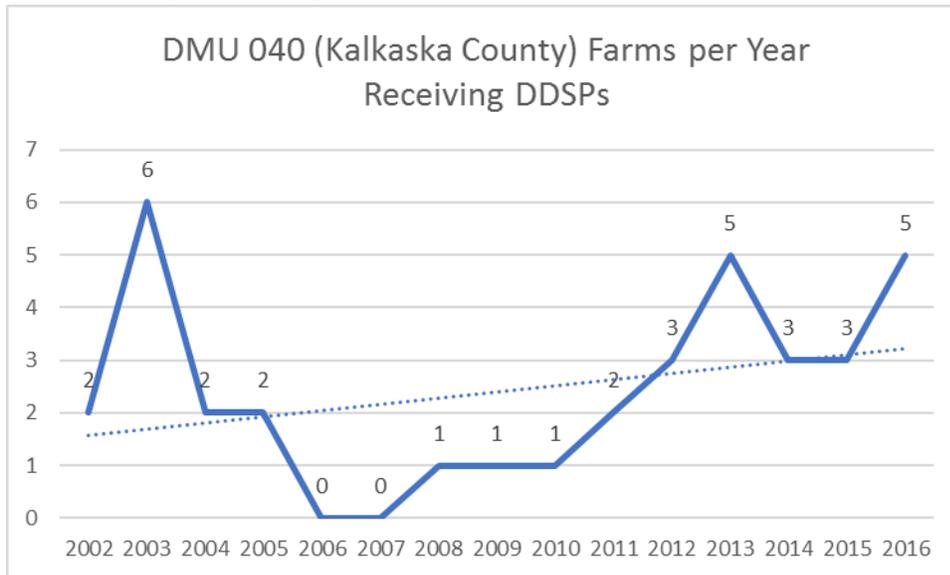
Figure 7. DMU 040 (Kalkaska County) Farms per Year Receiving DDSPs

The trend for number of farms per year requesting Deer Damage Shooting Permits (DDSPs) has shown a slightly increasing pattern in DMU 040 (Kalkaska County) since the yearly 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 change. DVCs tend to be decreasing slightly, while several indicators that could indicate an increasing deer population, have shown a negative trend (or decrease) in the past several years. The trends indicators for DMU 040 suggest a relatively stable deer population in DMU 040 (Kalkaska County). Therefore based on current trends for these indicators, we recommend a slight increase in antlerless permits. Increasing the antlerless harvest will work to push the buck to doe ratio closer to one to one. It will also maintain pressure on local antlerless populations causing agricultureal damage. This antlerless quota recommendation is also consistent with the APR management philosophy of striving for a balanced gender ratio and maintaining deer numbers at or below the biological carrying capacity.

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. 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 do not recommend an early private land antlerless firearm season for DMU 040.

Deer Management
Unit   40

Legend

Deer Management Units Polys Edit

Highway

● Cities

Open Water

Developed

Forested

Herbaceous

Hay/Pasture

Cultivated Crops

Wetlands

131

131

131

72

72

72

72

72

131

131

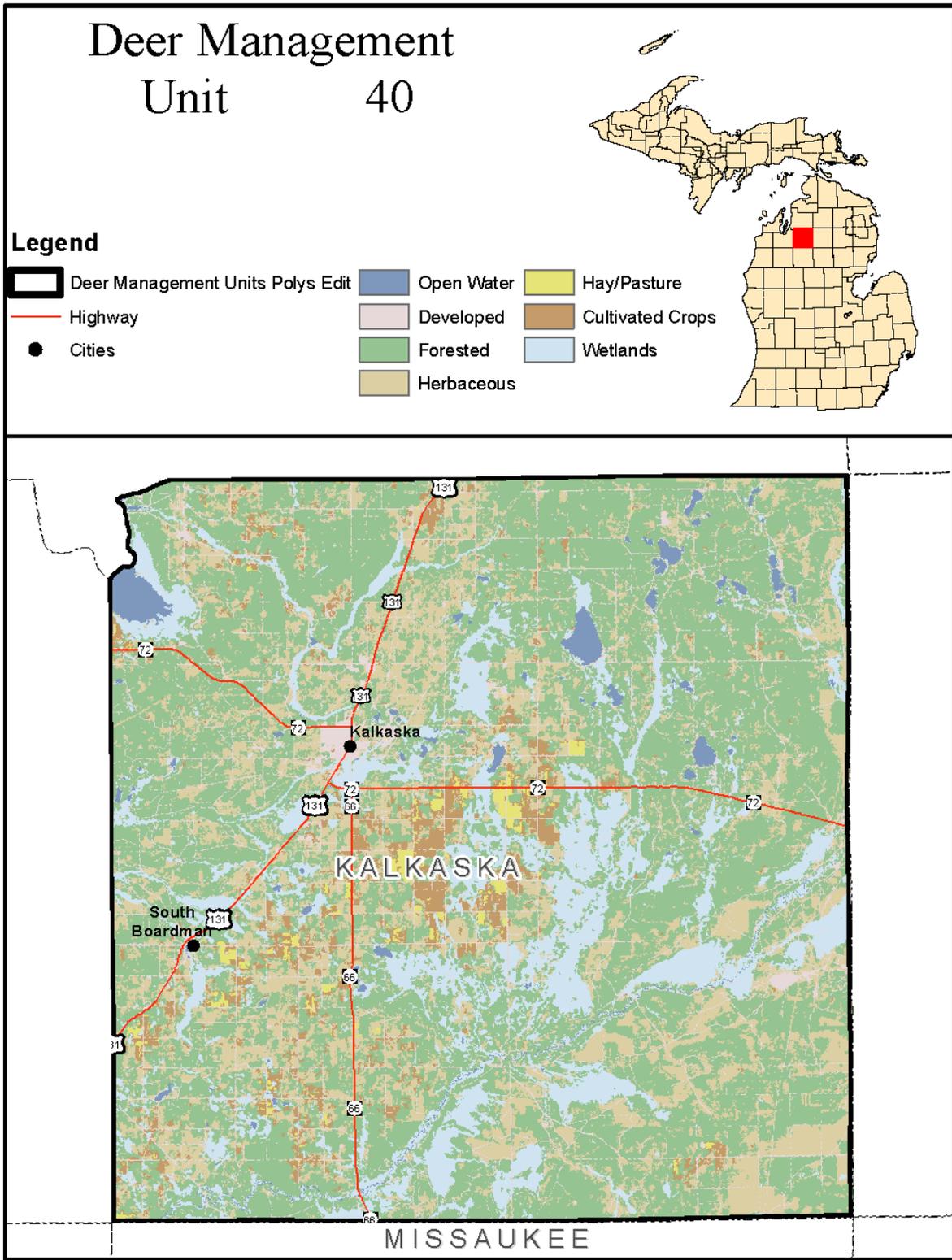66

Kalkaska

131

South Boardman

131

66

66

KALKASKA

66

MISSAUKEE

Figure 1. Deer Management Unit 040 Map