DMU 311
Keeler
Deer Management Unit

Area Description

The Keeler Deer Management Unit (DMU 311) lies in the Southern Lower Peninsula (SLP) region and covers Van Buren, Berrien, and Cass counties. The majority of public hunting opportunities in this DMU are located at Crane Pond, Boyle Lake, and Keeler State Game Areas. Topography varies from rolling hills to relatively flat with soils that are generally well-suited to row crop agriculture and fruit production toward the lakeshore. The landscape is highly fragmented due to the predominance of agriculture on privately-owned lands, which constitute approximately 98% of the DMU. The public and private lands are generally regarded as decent deer habitat with interspersed shrubland, forests, and wetlands among the agricultural lands (Table 1, Figure 1).

Habitat	311	311 Public Lands
Forest (%)	25.3	59.4
Agriculture (%)	50.9	6.7
Grass/Shrubland (%)	9.0	14.8
Wetland (%)	5.5	10.2
Developed (%)	7.4	3.6
Water (%)	1.5	1.4
Bare/Rocky (%)	0.4	3.9

Table 1. Habitat composition of DMU 311 as compared to only the public hunting lands in DMU 311.

Two main goals guide the deer management in this DMU are: 1) to provide quality hunting opportunities; and 2) impact the deer population through management. Impacting the population through management, in this context 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 survey, deer-vehicle collision data from the Michigan State Police, and deer-related information collected by regional wildlife biologists (e.g., number of Crop Damage Permits, habitat assessments, etc.).

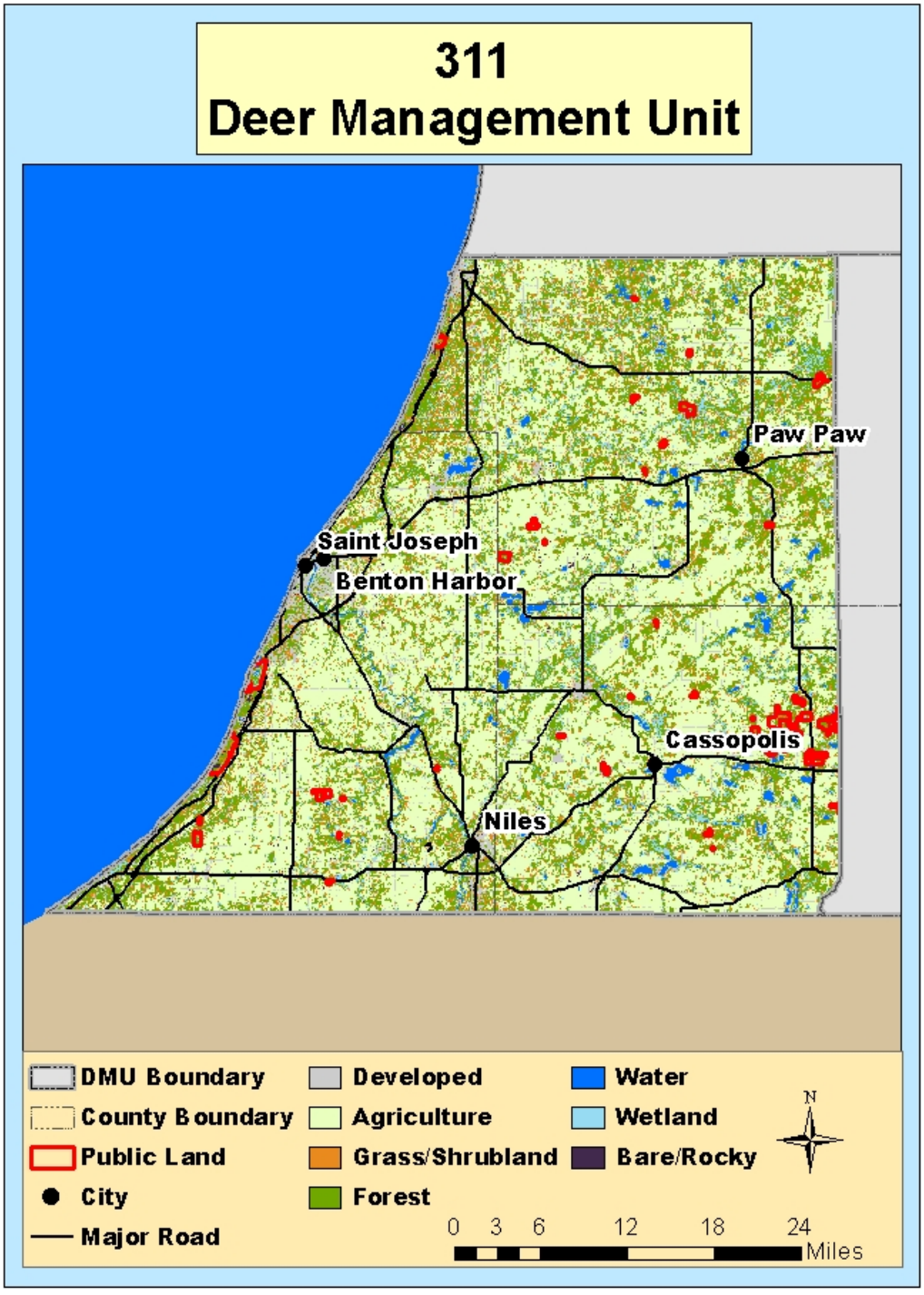

Figure 1. Habitat and land use distribution in Deer Management Unit 311.

Deer Harvest Analysis

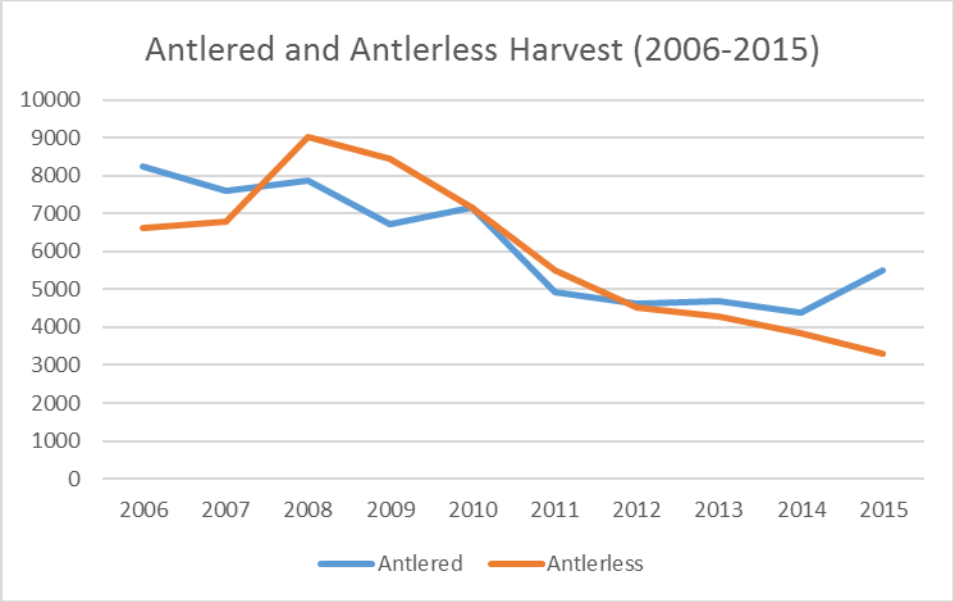

Figure 2. Annual harvest estimates for antlered and antlerless deer DMU 311 2006-2016

	Age Category	Age Category	Age Category
Year	1.5	2.5	3.5+
2001	69%	18%	13%
2002	64%	21%	15%
2003	68%	15%	17%
2004	63%	17%	20%
2005	58%	19%	23%
2006	67%	20%	13%
2007	64%	20%	16%
2008	69%	15%	17%
2009	53%	22%	24%
2010	58%	21%	21%
2011	65%	21%	14%
2012	58%	24%	18%
2013	66%	19%	15%
2014	54%	24%	22%
2015	52%	26%	22%

Table 2. Age structure of antlered deer harvest in DMU 311 2001-2015

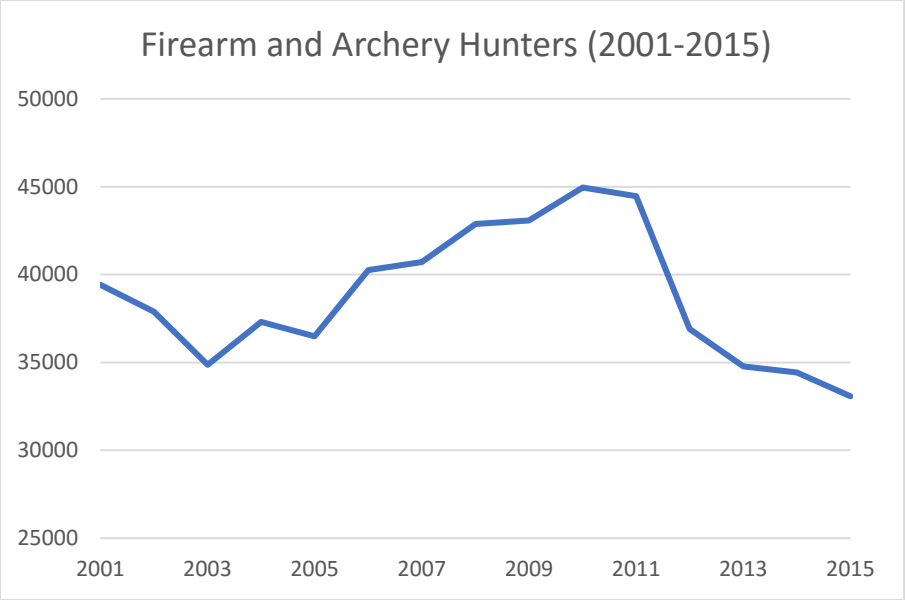

Figure 3. Average number of hunters in DMU 311 2001-2015

There has been a marked drop in antlered and antlerless deer harvests over the past 2 years (2011-2012) for which we have data in the Keeler DMU (Fig. 2). This may be due to a reduction in deer population or changing behaviors in hunters, or, most likely, a combination of both.

Historically there were liberal numbers of antlerless permits available in this DMU. This was intended to limit the productivity of the deer herd and may have eventually contributed to some of the population decline in this DMU. Additionally, many hunters selected not to harvest deer in response to heavy losses in the deer population due to Epizootic Hemorrhagic Disease (EHD). Other environmental factors, such as poor weather immediately preceding fawning, increased predation, and changing agricultural practices, can also impact deer numbers. Ultimately, determining a cause of any population adjustment is difficult when assessing a large geographic region, however; some of the more important ones will be highlighted briefly.

Hunter perceptions and goals can also impact harvest numbers and age structures of a population. A large-scale shift 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 (See Table 2). Success and harvest rates are thereby suppressed not solely by population decline, but by human decision-making processes as well. Similarly, hunters may self-regulate harvest of antlerless deer for a variety of factors, such as a perception of too few deer.

The concurrent drop in antlered and antlerless deer harvested combined with the declining average number of hunters in the DMU suggests that this decrease in harvest was likely in part due to decreased hunting pressure which correlates with reduced survey responses regarding participation in deer hunting in the DMU (see Figure 3). However, based on direct observations, and conversations with hunters, there has also been a decline in deer numbers as well; a substantial decline in some places.

Additional Population Assessment Factors

Deer-Vehicle Collisions

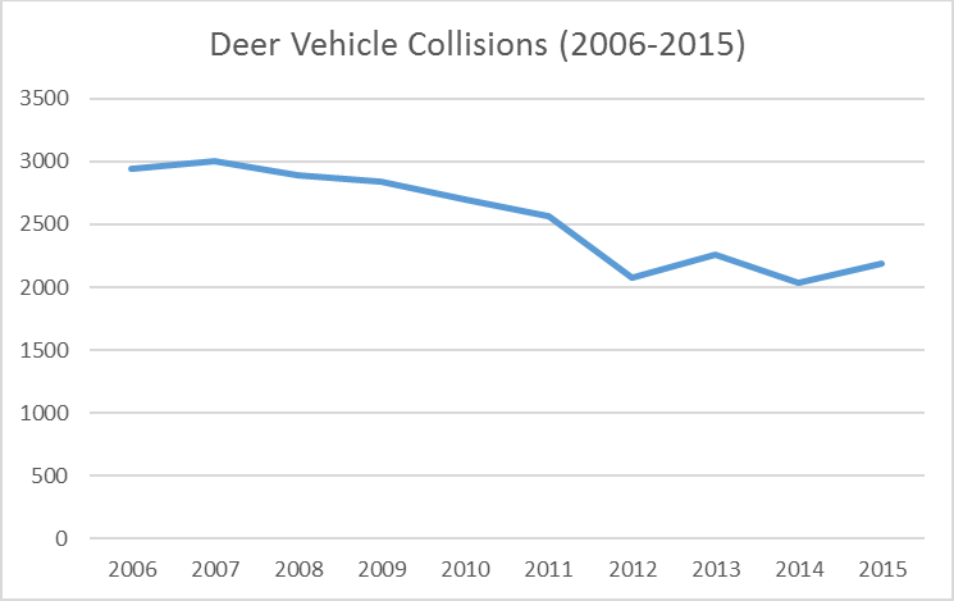

Figure 4. Deer Vehicle Collisions in DMU 322 2006-2015.

Deer-vehicle collisions (DVC) are commonly used as an index to express the deer population trend; the idea being that high rates of DVC are correlated with high deer populations, and vice versa. Research has shown that there are other factors that influence the rate of DVC as well. For instance, habitat distance from roadways and juxtaposition on the landscape can influence the way these animals interact with vehicles. However, DVC data can provide useful information, if contextualized as one part of a deer population assessment.

According to data provided by the Michigan State Police, DVCs have declined from 2006-2015 in the Keeler DMU (Figure 4). The 2015 DVC is like that observed in 2005 when deer harvest was much higher. 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 displayed decline in DVCs is an additional indicator that the Keeler DMU deer density has declined over the past decade.

Deer Management Assistance and Crop Damage Permits

Deer Management Assistance Permits (DMAPs) allow for the harvest of antlerless deer by private landowners or their designees during legal deer hunting seasons. Landowners may request and be granted DMAPs by MDNR to address deer damage concerns when sufficient antlerless permits are not available in a DMU to address the landowner's needs. DMAP requests are tracked by MDNR and may trend with deer populations (i.e., an increase in deer density may result in additional DMAP requests). In the Keeler DMU, DMAP requests have remained fairly constant from year to year.

Crop Damage Permits are also requested by landowners. These permits allow for the harvest of antlerless deer outside of legal hunting seasons to address agricultural damage. Requests for Crop Damage Permits may trend with deer density but also may trend with weather conditions. For instance,

current Crop Damage Permit requests seem to be higher during the winter of 2012-2013 due to heavy snowfall which is creating a food shift from forbs and grasses to orchards and tree nurseries. These permits will continue to be made available for customers that need them to reduce damage experienced to agricultural products.

Deer Condition Data

Deer Management Recommendations

The deer population was gradually declining in this DMU while hunter numbers had remained relatively constant until a sharp decline recorded in 2012 (most likely due to outbreak of EHD across the DMU). As this unit was formerly part of DMU 486, it is not possible to know the rate at which antlerless tags were filled.

In 2010 there were 26,800 antlerless permits available in what is now the Keeler DMU. To address reducing populations in the DMU only 14,700 antlerless tags were made available for the 2013 season (14,000 private land tags and 700 for public land). In 2014, we further decreased the number of antlerless tags to 10,700 (700 public land tags and 10,000 private land tags), for the 2014 season with the intent to keep in reduced for the duration of the 3-year management cycle to see if there was a change.

While there certainly have been some local population recoveries in the DMU, the population is still quite low in some areas and below goal for the DMU collectively. We are recommending a 20% reduction in permit numbers across the board. This will result in 8,000 antlerless tags for private lands and 560 for public lands in the DMU. We also recommend that early antlerless season continue to be closed with all other available seasons remaining open. After another regulation cycle, the data will be carefully evaluated to determine whether or not deer population is at the desired density.