021
Deer Management Unit

Geographic Location:

Deer Management Unit (DMU) 021 is 1,464 square miles in size and is located in the central Upper Peninsula (UP). This DMU is dominated by publicly owned land (71%), managed by the Michigan DNR, US Forest Service, and US Fish and Wildlife Service. Lying between Trenary and Germfask, this DMU is bounded on all sides by state highways M-28 and M-77, federal highways US-2 and US-41, and Lake Michigan.

Land use and habitat quality for deer

Major land uses within DMU 021 are forest production and outdoor recreation. Scattered agricultural areas are found along the southern, eastern, and western borders of this large unit. Summer range habitat quality for deer varies throughout the DMU, and is driven by local soil productivity and subsequent cover types and related food availability. Generally, habitat capabilities for deer are moderate to low in most areas due to acidic, well drained soils. In certain areas, silt loam and other productive soils below prolific deciduous stands provide excellent habitat types for deer where preferred food sources (such as grasses, hardwood leaves and lily species) are widespread and available. However, the overall carrying capacity of DMU 021 is limited by winter severity and the capabilities and management of winter range, as deer in this unit are obligatory migrators.

Typical winter weather, as related to deer

Climatic conditions in DMU 021 can be severe with growing seasons lasting only approximately 100 days in the northern portion. Winter deer migration in this unit is highly developed with a large portion of the deer moving into the southern portion of this DMU. Even though DMU 021 falls within the moderate snowfall zone, excessive snow depths cause deer to become highly concentrated within wintering complexes such as the Sturgeon Hole and Big Springs.

Management Guidance:

This unit contains a very high proportion of state and federal forest ownership with some industrial forest ownership. Both deer densities and hunting success rates are historically below-average in DMU 021 as compared to the rest of the UP. Because of this, antlerless permits have not been available for DMU 021 for many years. Agricultural lands are not prominent in DMU 021, but crop damage can be an issue where these lands exist and will continue to be addressed. Outside of the deer wintering complexes, deer browse has not impacted tree regeneration.

Deer Harvest Analysis:

The buck kill success rate for DMU 021 showed a steep decline from the 2012 to 2013 season and from the 2014 to 2015 season, which corresponds with the increased severity of winters 2012/13-2014/15 (Figure 1). Average buck kill success for DMU 021 during the 2013-15 seasons was 13%, which was below the average for UP DMU's (19%). The buck kill success rate increased dramatically in most DMU's

following the mild winter of 2015/16, but only rose slightly in DMU 021 to 14%, which was still below the UP average (19%).

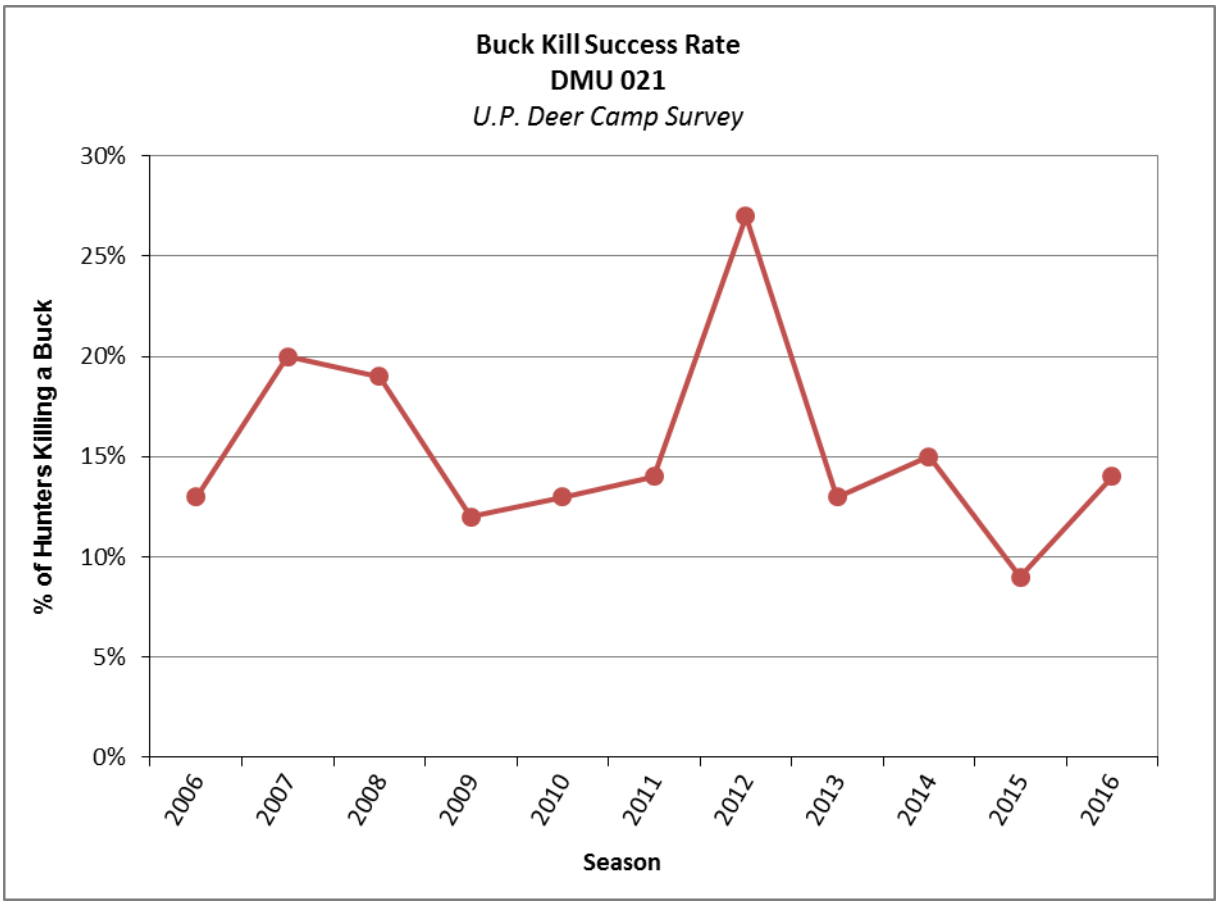

Figure 1. Buck kill success rate in DMU 021 within the Upper Peninsula Region.

The decrease in buck kill per square mile during 2013-2015 also corresponds with the severe winters of 2012/13-2014/15. The buck kill per square mile in DMU 021 (see Figure 2) during 2006-2015 was 1.3, which is lower than the average for the UP Region (2.2) during the same time period.

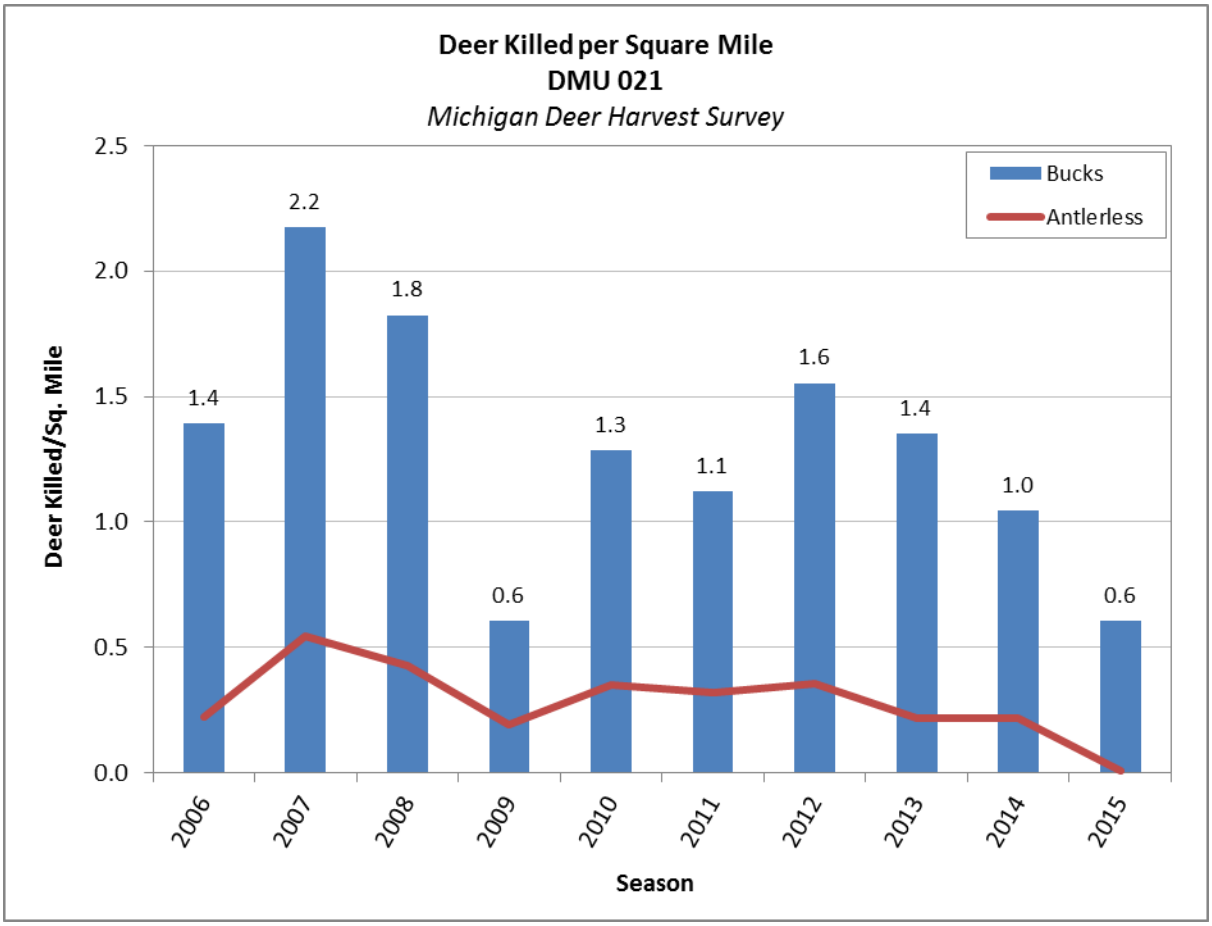

Figure 2. Deer killed per square mile in DMU 021 within the Upper Peninsula Region.

Due primarily to winter severity and habitat capabilities, antlerless deer licenses are usually not offered in this unit. The ability to harvest a doe with archery equipment on the combination tag was removed just prior to the 2015 hunting season due to the severity of winters 2012/12-2014/15. This removed the relatively light take of 0.3 antlerless deer per square mile on average. The decrease in buck kill per square mile during 2013/15 seasons can be attributed to the recent three consecutive severe winters.

Deer sightings and hunter success/satisfaction trends

During the 2016 firearm season, 53 cooperating deer camps (196 hunters) reported their hunting experience in this unit. In 2016, 33% of camps believed there were more deer than in 2015, which is an improvement from 6% the year before and likely due to the relatively mild winter of 2015/16 and subsequent increased fawn production. Sightings of deer increased from 0.8 to 1.4 per hunter day, and buck kill success increased from 9% to 14%. Only 22% considered 2016 to be a good-to-excellent season, although this was an improvement over 2015 (5%). Long-term trends of these statistics are demonstrated in Table 1.

DEER MANAGEMENT UNIT 021											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Camps	55	54	48	56	53	54	54	53	54	55	53
Hunters	253	240	200	255	223	221	222	236	226	223	196
% killing a buck	13%	20%	19%	12%	13%	14%	27%	13%	15%	9%	14%
Deer seen per day	1.8	1.8	2.6	0.8	1.1	1.7	1.9	1	2	0.8	1.4
Fawns seen per 100 does	57	51	45	37	59	56	50	30	28	55	62
Does seen per buck	5	4	5	4	3	3	2	3	5	4	3
More deer than last year	21%	18%	25%	0%	13%	33%	42%	8%	13%	6%	33%
Same number deer	24%	36%	33%	4%	31%	31%	35%	19%	31%	9%	28%
Fewer deer	55%	46%	42%	96%	56%	36%	23%	73%	56%	85%	39%
Season good-to-excellent	13%	22%	32%	2%	2%	25%	40%	10%	13%	5%	22%
Season fair-to-poor	87%	78%	68%	98%	98%	75%	60%	90%	87%	95%	78%

Table 1. Deer Camp Survey data in DMU 021 within the Upper Peninsula Region.

Due to the relatively short and mild winter of 2015/16, observed fawn recruitment was 62 fawns seen per 100 does during the 2016 season, which is well above the 2006-2015 average (47 fawns per 100 does) and a reliable indicator of good fawn production in 2016. This should result in a large cohort of deer in the 1.5 year old age class for the 2017 hunting season, depending on the impacts of winter weather and other factors.

As of February 27th, 2017 actual snow depths at the Big Springs snow depth station were 12 inches, which is below the long-term average of 18 inches for the winters of 2006/07-2015/16 during that same time period. However, accumulated snow totals at Big Springs were 160 inches, which is 21 inches (or 15%) above the long-term average of 139 inches during the same time period. Across the UP, the winter of 2016/17 has produced relatively average snow depths and mild temperatures. However, above-average accumulated snow in DMU 021 may result in greater adult deer mortality and decreased fawn production and recruitment than other DMU's, although current winter conditions are still much better for deer than during the severe winters of 2012/13-2014/15.

Research results

A research project focusing on the role of predators, winter weather, and habitat on deer fawn survival is being conducted in the central U.P. by Mississippi State University in cooperation with the DNR. Results of this research conducted in the low and moderate snowfall zones to date suggest the following:

- high pregnancy rate among adult females despite uneven buck to doe ratios
- low fawn annual survival following harsh winters
- under mild to moderate winter severity, the most important factor influencing the growth (positive or negative) of a deer population is the proportion of fawns surviving their first year and becoming potential breeders
- under severe winter conditions substantial mortality of adult females can occur, replacing recruitment of fawns as the most important factor effecting the growth of a deer population, until the adult female segment of the population recovers.
- severe winter weather can have multi-year effects on deer recruitment and population trends.

- annually, winter severity and habitat conditions influence the amount of predation, which overall was the dominant source of mortality of adult females and fawns. This illustrates the importance of considering all potential limiting factors and their interactions.

These results support results of other surveys suggesting that consecutive harsh winters that have occurred since 2008 have resulted in low deer populations in the region, including in DMU 021.

Agricultural Crop Damage

Agricultural lands are not prominent in DMU 021, but crop damage can be an issue where these lands exist and will continue to be addressed. Ten deer were harvested on crop damage permits in 2016, which is below the 2006-15 average of 25. Fifty-four deer were harvested on DMAP's in 2016, which is below the 2006-15 average of 66.

Forest Regeneration Concerns

Deer Management Unit 021 contains relatively low deer densities throughout various cover types; therefore deer browse impacts are minimal or non-existent throughout most of the unit. However, cedar and hemlock regeneration can be impacted within deer wintering complexes (DWC).

Deer-Vehicle Collisions

Figure 3 demonstrates a general decline in collisions since 2011, which coincides with three severe winters of 2012/13-2014/15; this is one of many indicators used to examine trends in deer numbers throughout the UP Region.

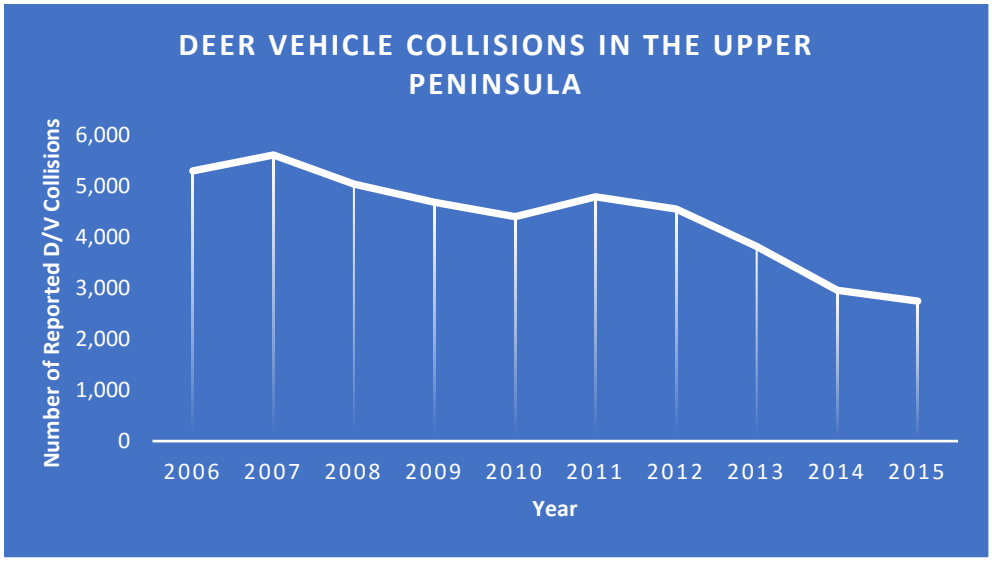

Figure 3. Deer vehicle collisions in the Upper Peninsula Region.

Deer Condition Data

Upper Peninsula yearling beam diameters are fairly consistent in the absence of severe winters, likely due to overall productivity and cation exchange capacity of UP soils. However, yearling beam diameters have varied greatly in recent years, with 2013 being the lowest on record, as demonstrated in Figure 4. Average beam diameters for 2015 were 17.78 mm, which are above-average and likely a response to a less-severe winter, early spring break-up, and good growing season.

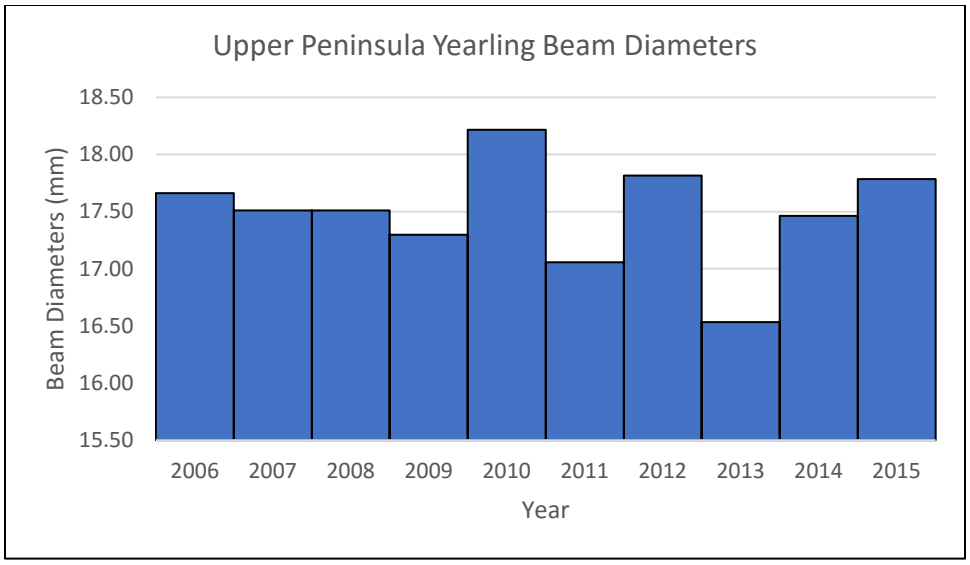

Figure 4. Yearling beam diameters in the Upper Peninsula Region.

Deer Management Recommendations:

Although antlerless permits are usually not offered for this unit, DMU 021 has supported a light antlerless harvest prior to the 2015 hunting season due to archery harvest on a combination deer tag. However, the deer population in DMU 021 was greatly reduced in recent years due to 3 consecutive severe winters. Although the deer population appears to be rebounding after a mild winter, the current deer population is still low and is not providing optimum recreational viewing or harvest opportunities. The buck kill success rate and buck kill per square mile are still among the lowest of UP DMU's. Although DMU 021 can normally support light antlerless harvest, the population size in DMU 021 during the next three years likely won't support it. As a result, we recommend the unit remain closed to issuance of antlerless licenses for the 2017-19 regulation cycle.

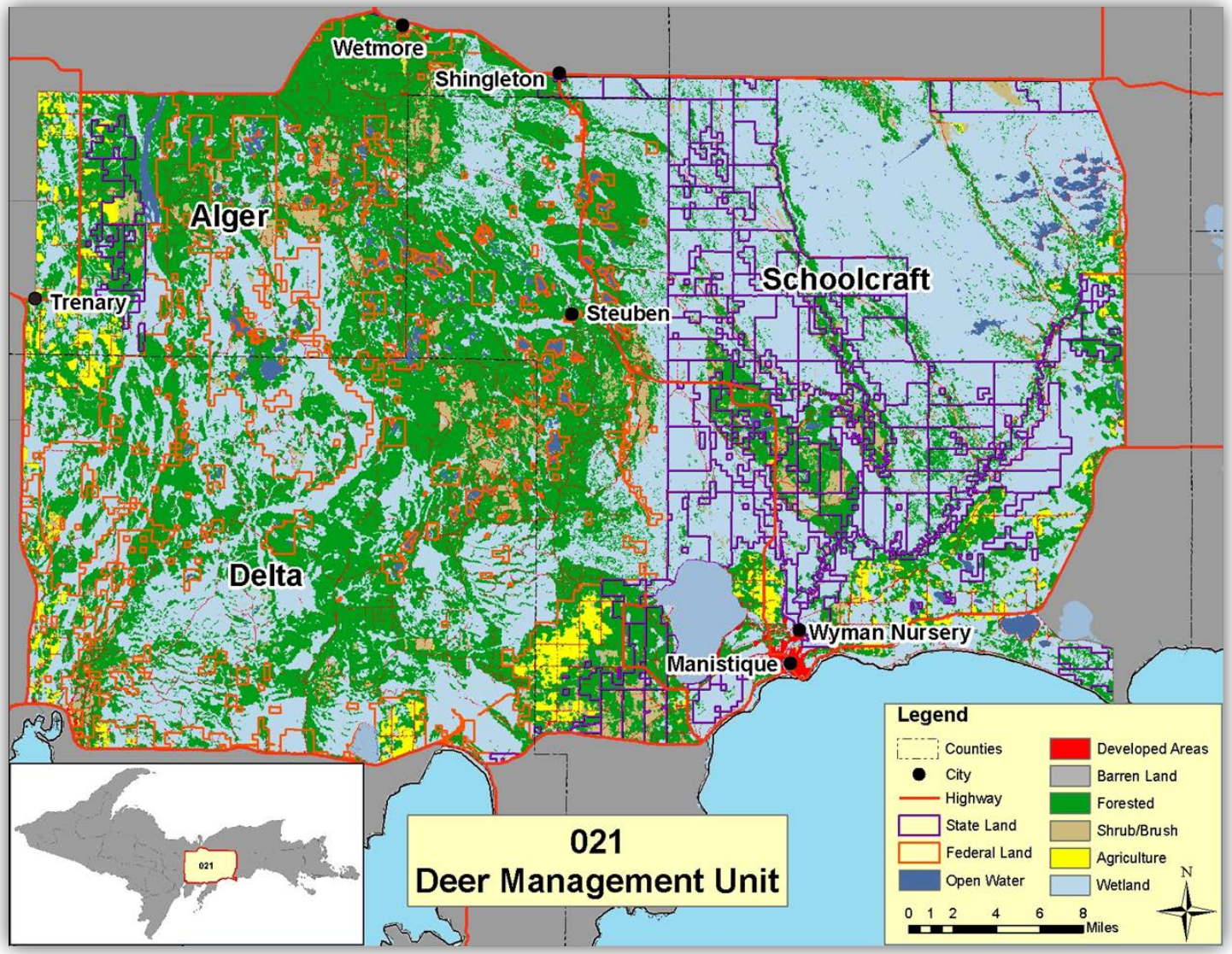

Figure 5. Cover type map of DMU 021 in the Upper Peninsula Region.