

# White-tailed Deer Population Status 2016

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## **Abstract**

The statewide posthunt white-tailed deer population estimate for 2016 was approximately 1,343,500, 14% higher than in 2015. Population estimates, based on sex-age-kill calculations, declined 10% or more between 2015 and 2016 in 7 deer management units, increased 10% or more in 41 units, and remained within a 10% change in the remaining 32 units. Population estimates increased 31% from 2015 to 2016 in the Northern Forest Zone and 12% in the Central Forest Zone. Zonal estimates increased 12% in the Central Farmland and 1% in the Southern Farmland.

## **Methods**

Deer management units were the same as what was used in 2015 and largely followed county boundaries (Figure 1). Units with similar deer season frameworks were combined into deer management zones. Deer population size and density were estimated for 80 areas (62 entire counties and 9 counties split between 2 management zones). Estimates were not made for tribal reservation units or metro subunits due to lack of harvest or aging data. Density was estimated based on total land area rather than estimates of suitable deer habitat.

Population estimates for deer management units were calculated using the Sex-Age-Kill (SAK) formula. This formula combines information on the age composition of the buck harvest with an estimate of the percentage of adult buck mortality that is due to legal hunting (buck recovery rate) to estimate the annual percentage of the adult buck population that is harvested (annual buck harvest rate). The prehunt adult buck population size in each management unit is estimated by dividing the unit's registered buck harvest by an estimate of annual buck harvest rate. Prehunt adult buck population estimates are then expanded to the entire prehunt deer population by: 1) multiplying buck population estimates by adult sex-ratios to estimate the adult doe population size, and 2) multiplying doe population estimates by fall fawn to doe ratios to estimate fall fawn populations. Posthunt deer populations are estimated by subtracting total harvest from prehunt estimates.

Primary inputs to the SAK formula are: 1) year- and unit-specific harvests of antlered and antlerless deer, 2) 5-year average percentage of yearlings among harvested adult bucks, 3) 5-year average percentage of yearlings among harvested adult does, 4) buck recovery rate, and 5) early fall fawn to doe ratios. The percentage of yearlings among harvested bucks is used as an estimate of the annual mortality rate of adult bucks. Multi-year averages are used for yearling buck and doe percentages because annual variation in reproduction or fawn survival can affect annual estimates of percentage of yearlings, thereby biasing estimates of adult buck mortality. In addition, year- and unit-specific samples of aged deer often are inadequate for reliable estimation of yearling percentages.

Fawn to doe ratios were updated in all regions based on results of the Summer Deer Observation survey and Operation Deer Watch (a citizen-science effort to collect deer observations). Average yearling buck and doe percentages were updated in 2016 for most deer management units. Buck recovery rates for most units were similar to those used in 2015.

The opening day of the firearm season was November 19. There was little snow on the ground

initially, but some snow fell opening morning, especially near Green Bay and in the northwestern portion of Wisconsin. Total snow fall on opening morning was <1 inch everywhere and most areas had only 0.1 inch of snowfall. The low temperatures statewide ranged from mid-teens to mid-twenties and it was very windy across the state. The combination of the wind, low temperatures, and lack of snow on the ground made the opening day hunting conditions challenging. By mid-week of gun season, some more snow accumulated in the northern forest zone and especially in Oneida County. Also by mid-week low temperatures were above freezing in most of the state. The last weekend of gun season was warmer and less windy with low temperatures in the mid-twenties to mid-thirties. The Deer Advisory Committee did not recommend widespread adjustments to buck recovery rates due to hunting season conditions.

## **Results and Discussion**

Estimates of posthunt deer populations during 2016 were made for 80 deer management units (Table 1). Statewide, the 2016 posthunt population estimate was approximately 1,343,500, which was 14% higher than in 2015. Unit-specific posthunt population densities in 2016 ranged from 3-58 deer/mi<sup>2</sup> of land area and averaged 25 deer/mi<sup>2</sup> of land area. Population estimates, based on sex-age-kill calculations, declined 10% or more between 2015 and 2016 in 7 deer management units, increased 10% or more in 41 units, and remained within a 10% change in the remaining 32 units.

Population estimates increased 31% from 2015 to 2016 in the Northern Forest Zone and 12% in the Central Forest Zone. Zonal estimates increased 12% in the Central Farmland and 1% in the Southern Farmland (Table 1).

Posthunt deer population estimates in the Northern Forest Zone have ranged from ~250,000 deer to >400,000 deer since 2002 and the 2016 posthunt deer population estimate falls close to halfway between this range (Figure 2). Two mild winters in a row (2014-15 and 2015-16) and limited antlerless harvest help to explain the population growth in the northern deer herd in 2016. The Central Forest Zone posthunt population estimates have been largely stable since 2009 at around 65,000 deer on average. The Central Farmland Zone deer population has increased since 2008 and the 2016 posthunt deer population estimate was higher than the population estimate in any of the last 15 years. For a second year in a row, the 2016 posthunt deer population estimate in the Southern Farmland Zone exceeded 250,000 deer (Figure 2).

**Table 1.** White-tailed deer posthunt population estimates for Wisconsin deer management units, 2015-2016 (density in deer per square mile of land area).

Zone & County	2015 posthunt population		2016 posthunt population		% change from 2015
	Number	Density	Number	Density	
<b>Northern Forest</b>					
Ashland	6,700	8	11,300	13	69
Bayfield	18,300	12	29,300	19	60
Burnett	20,200	23	24,100	27	19
Douglas	22,800	17	32,700	24	43
Florence	7,200	14	9,900	20	38
Forest	7,300	7	10,000	10	37
Iron	2,600	3	3,800	5	46
Langlade	12,500	14	17,700	20	42
Lincoln	15,300	17	22,200	24	45
Marinette	20,000	20	23,900	24	20
Oconto	7,500	21	6,800	19	-9
Oneida	19,400	16	22,400	18	15
Price	18,700	15	25,600	20	37
Rusk	19,300	21	26,300	28	36
Sawyer	15,300	12	21,500	17	41
Taylor	22,500	23	24,300	25	8
Vilas	12,700	14	14,700	16	16
Washburn	18,500	22	22,800	27	23
<i>Zone total</i>	<i>266,800</i>		<i>349,300</i>		<i>31</i>
<b>Central Forest</b>					
Adams	16,700	29	19,300	33	16
Clark	14,800	24	18,400	30	24
Eau Claire	4,300	22	4,500	23	5
Jackson	8,800	18	10,900	23	24
Juneau	8,600	18	9,100	20	6
Monroe	4,000	30	3,700	28	-8
Wood	7,900	23	7,100	21	-10
<i>Zone total</i>	<i>65,100</i>		<i>73,000</i>		<i>12</i>
<b>Central Farmland</b>					
Adams	5,000	47	5,400	51	8
Barron	14,400	16	19,800	22	38
Brown	9,100	17	10,300	19	13
Buffalo	26,000	37	27,700	39	7
Calumet	4,200	11	4,400	11	5
Chippewa	13,900	13	19,900	19	43
Clark	10,600	18	13,300	22	25
Door	18,300	37	18,100	37	-1
Dunn	20,100	23	25,100	29	25
Eau Claire	6,800	15	8,600	19	26
Fond du Lac	14,900	19	14,600	19	-2
Green Lake	16,100	42	14,500	38	-10
Jackson	16,400	32	19,900	38	21

**Table 1. Continued.**

Zone & County	2015 posthunt population		2016 posthunt population		% change from 2015
	Number	Density	Number	Density	
Juneau	9,800	29	10,300	30	5
Kewaunee	13,300	39	12,500	36	-6
La Crosse	10,900	23	10,800	23	-1
Manitowoc	13,800	23	12,600	21	-9
Marathon	36,300	23	40,800	26	12
Marinette	12,000	27	17,700	40	48
Marquette	22,300	48	22,400	48	0
Monroe	21,100	27	21,500	28	2
Oconto	17,300	26	24,700	37	43
Outagamie	17,600	27	16,400	25	-7
Pepin	7,300	29	8,400	34	15
Pierce	10,800	18	13,800	23	28
Polk	21,500	22	27,900	29	30
Portage	19,100	23	21,100	26	10
Shawano	44,400	49	43,600	48	-2
Sheboygan	7,800	15	8,400	16	8
St. Croix	10,200	14	12,400	17	22
Trempealeau	25,100	34	30,200	41	20
Waupaca	41,300	54	44,300	58	7
Waushara	20,800	33	22,800	36	10
Winnebago	7,600	13	8,200	14	8
Wood	9,900	21	11,100	24	12
<i>Zone total</i>	<i>576,000</i>		<i>643,500</i>		<i>12</i>
Southern Farmland					
Columbia	22,700	29	25,400	32	12
Crawford	20,000	33	16,100	27	-20
Dane	17,700	14	18,500	15	5
Dodge	13,700	15	14,100	16	3
Grant	23,000	19	26,300	22	14
Green	9,500	16	10,100	17	6
Iowa	21,700	28	24,500	32	13
Jefferson	7,900	14	7,000	12	-11
Kenosha	2,100	8	1,900	7	-10
Lafayette	9,900	16	10,300	16	4
Milwaukee	1,000	4	700	3	-30
Ozaukee	4,000	17	4,000	17	0
Racine	3,200	9	3,000	9	-6
Richland	30,400	52	29,500	50	-3
Rock	6,800	9	6,000	8	-12
Sauk	29,600	35	29,500	35	0
Vernon	26,800	33	26,600	33	-1
Walworth	5,200	9	5,900	10	13
Washington	8,200	19	7,700	18	-6
Waukesha	10,200	18	10,600	18	4
<i>Zone total</i>	<i>273,600</i>		<i>277,700</i>		<i>1</i>
<b>Total</b>	<b>1,181,500</b>		<b>1,343,500</b>		<b>14</b>

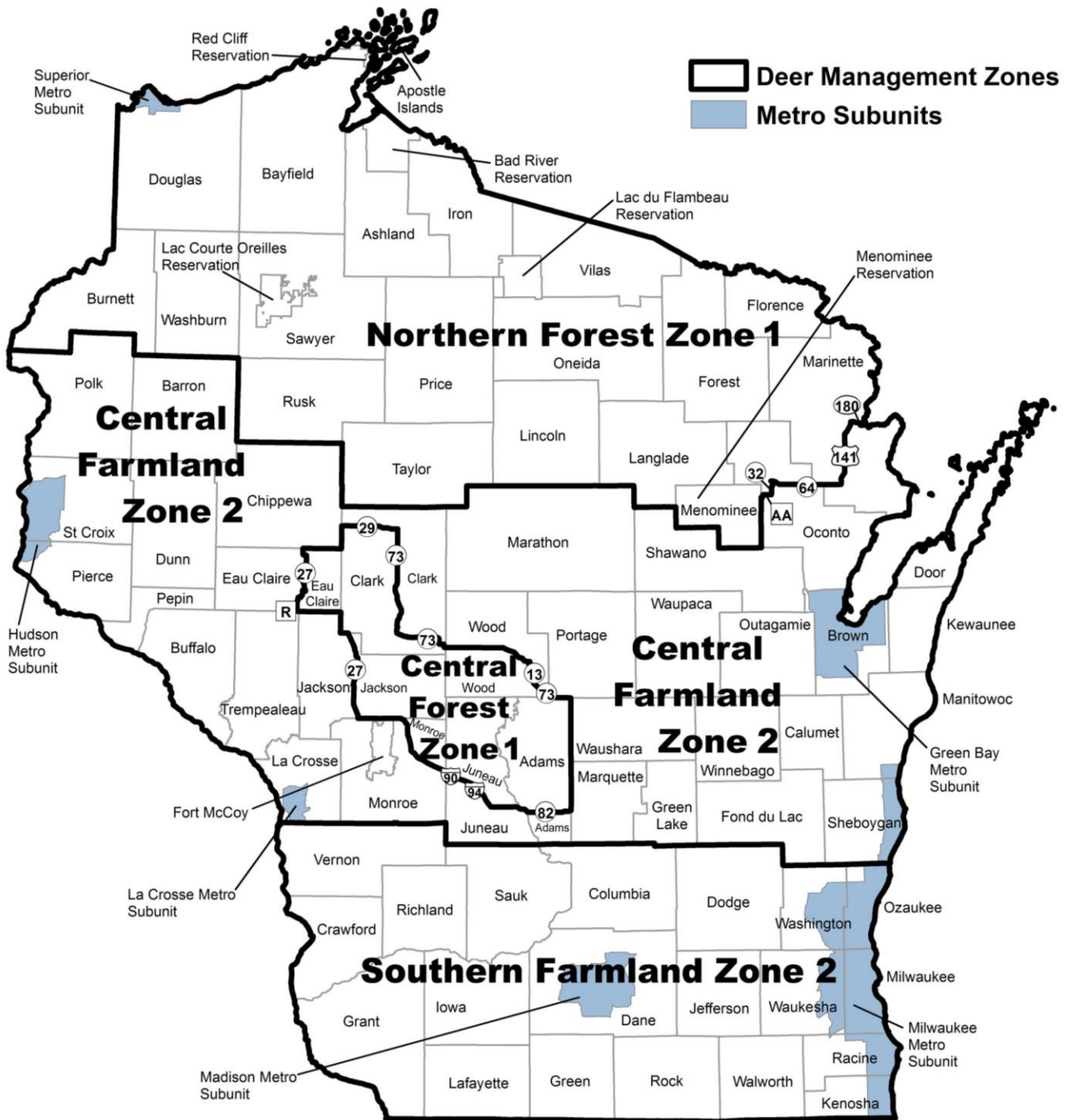
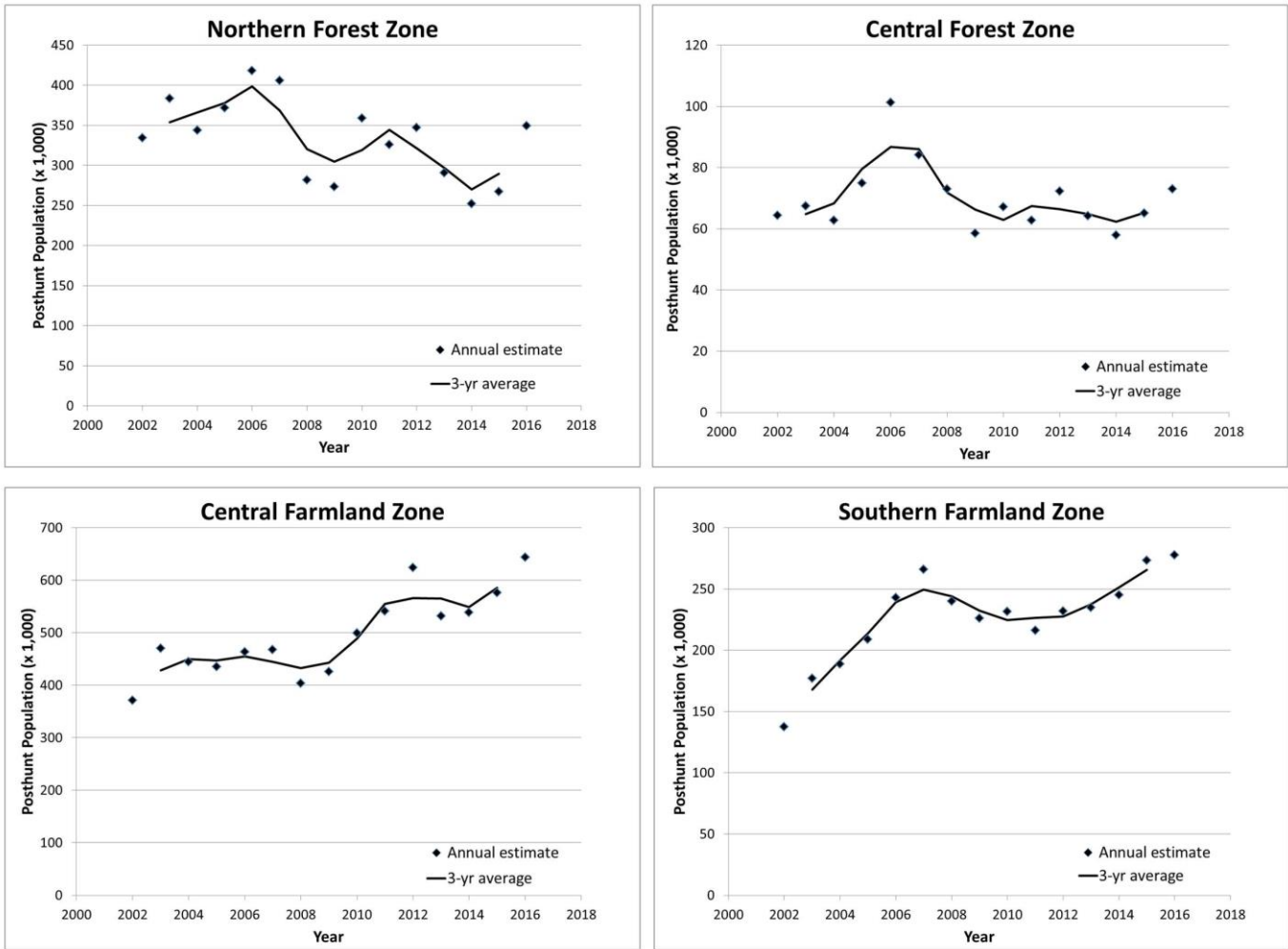


Figure 1. Wisconsin's deer management units and zones.



**Figure 2.** *White-tailed deer population trends in Wisconsin's deer management zones, 2002-2016.*