

White-tailed Deer Population Status 2015

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Abstract

The statewide posthunt white-tailed deer population estimate for 2015 was approximately 1,181,400, 8% higher than in 2014. Population estimates, based on sex-age-kill calculations, declined 10-19% between 2014 and 2015 in 5 units and increased 20% or more in 12 units. Population estimates increased 6% from 2014 to 2015 in the Northern Forest Zone and 17% in the Central Forest Zone. Zonal estimates increased 6% in the Central Farmland and 11% in the Southern Farmland.

Methods

Revisions to Administrative Code in 2013 changed the geographic framework for deer harvest management from deer management units of similar habitat bordered by roads and rivers to units largely based on county boundaries (Figure 1). Management units with similar deer season frameworks were combined into 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: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) fall fawn: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 percents 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 percents.

Fawn: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 percents and buck recovery rates were updated in 2015 for most Wisconsin deer management units. Buck recovery rates for most units were similar to those used in 2014.

The opening day of the firearm season was November 21. The Southern Farmland Region was the only portion of the state with snow cover on opening day. Snow began falling the night before opening day and continued through most of the morning. Amounts varied north to south, but the southernmost tier of counties received 6-12 inches of snow. Falling snow and snow hanging in trees and shrubs may have limited visibility in some counties. Northern Wisconsin remained snow free until Thanksgiving when 1-2 inches fell across most of the north. Temperatures during the day ranged from the upper 20s to low 40s on opening day, but remained below freezing in much of the state on Sunday and Monday. Temperatures moderated during the week, but high temperatures dropped below freezing for the 2nd weekend in central and northern Wisconsin. Heavy rain fell across southern and portions of eastern Wisconsin on Thanksgiving Day. By November 22, 92% of the corn harvest had been completed, which was ahead of the 5-year average of 88%. Availability of antlerless permits in the forested zones was relatively low, which may have affected hunter effort. 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 2015 were made for 80 deer management units (Table 1). Statewide, the 2015 posthunt population estimate was approximately 1,181,400, which was 8% higher than in 2014. Unit-specific posthunt population densities in 2015 ranged from 3-54 deer/mi² of land area and averaged 22 deer/mi² of land area. Population estimates declined 10-19% between 2014 and 2015 in 5 units and increased 20% or more in 12 units.

Posthunt population estimates increased 6% from 2014 to 2015 in the Northern Forest Zone and 17% in the Central Forest Zone. Zonal estimates increased 6% in the Central Farmland and 11% in the Southern Farmland (Table 1).

Posthunt deer population estimates for the Northern Forest Zone generally increased during the early to mid-2000s (Figure 2). Substantial antlerless harvests during the mid-2000s, together with the moderately severe winters of 2007-08 and 2008-09 substantially reduced the Northern Forest population by 2008. Reduced antlerless harvests beginning in 2009, aided by mild winters in 2009-10, 2010-11, and 2011-12 facilitated population growth. The greatly delayed spring green-up in 2013, followed by the very severe winter of 2013-14, reduced posthunt populations in the north to approximately 250,000 by 2014. Limited antlerless harvests in 2014 and 2015, together with a milder winter in 2014-15, may have stabilized the population.

Deer population estimates in the Central Forest increased from 2002 to 2006, peaking at approximately 100,000. Estimates declined during the late 2000s, but have largely stabilized since 2009. During the past 7 years the Central Forest Zone population has averaged about 64,000 deer.

Deer populations in the Central Farmland Zone were relatively stable during the mid-2000s, averaging 435,000 during 2002-2009. Reduced antlerless harvests starting in 2009 allowed population growth. During the past 5 years, the Central Farmland population averaged about 560,000 deer.

Southern Farmland Zone populations generally grew during the early to mid-2000s, peaking at over 250,000 in 2007. Strong antlerless harvests during 2007-2010 stabilized the population. Reduced antlerless harvests since 2011 have allowed for renewed population growth with the 2015 posthunt population again exceeding 250,000.

Table 1. White-tailed deer posthunt population estimates for Wisconsin deer management units, 2014-15.

Zone & County	2014 posthunt population		2015 posthunt population		% change from 2014
	Num.	Den ^a .	Num.	Den ^a .	
Northern Forest					
Ashland	7,500	9	6,700	8	-11
Bayfield	18,000	12	18,300	12	2
Burnett	18,100	21	20,200	23	12
Douglas	21,100	16	22,800	17	8
Florence	7,500	15	7,200	15	-4
Forest	8,400	8	7,300	7	-13
Iron	2,400	3	2,600	3	8
Langlade	12,200	14	12,500	14	2
Lincoln	16,100	18	15,300	17	-5
Marinette	20,000	20	20,000	20	0
Oconto	5,400	15	7,500	21	39
Oneida	18,500	15	19,400	16	5
Price	16,500	13	18,700	15	13
Rusk	16,800	18	19,300	21	15
Sawyer	13,300	11	15,300	12	15
Taylor	21,600	22	22,500	23	4
Vilas	13,600	15	12,700	14	-7
Washburn	15,200	18	18,500	22	22
<i>Zone total</i>	<i>252,200</i>		<i>266,800</i>		<i>6</i>
Central Forest					
Adams	15,400	26	16,700	29	8
Clark	12,400	20	14,800	24	19
Eau Claire	3,300	16	4,300	21	30
Jackson	8,000	17	8,800	18	10
Juneau	7,400	16	8,600	19	16
Monroe	3,400	26	4,000	30	18
Wood	5,600	16	7,900	23	41
<i>Zone total</i>	<i>55,500</i>		<i>65,100</i>		<i>17</i>
Central Farmland					
Adams	4,900	47	5,000	48	2
Barron	13,700	15	14,400	16	5
Brown	8,600	16	9,100	17	6
Buffalo	27,600	39	26,000	37	-6
Calumet	4,200	11	4,200	10	0
Chippewa	13,300	13	13,900	13	5
Clark	10,900	18	10,600	17	-3
Door	14,600	30	18,300	37	25
Dunn	19,100	22	20,100	23	5
Eau Claire	7,800	17	6,800	15	-13
Fond Du Lac	13,700	18	14,900	19	9
Green Lake	13,100	35	16,100	42	23
Jackson	16,700	32	16,400	32	-2

Table 1. Continued.

Zone & County	2014 posthunt population		2015 posthunt population		% change from 2014
	Num.	Den.	Num.	Den.	
Juneau	9,900	29	9,800	29	-1
Kewaunee	9,600	28	13,300	39	39
La Crosse	10,500	22	10,900	23	4
Manitowoc	12,600	21	13,800	23	10
Marathon	31,700	20	36,300	23	15
Marinette	14,800	34	12,000	27	-19
Marquette	19,800	43	22,300	48	13
Monroe	22,200	29	21,100	27	-5
Oconto	19,200	29	17,300	26	-10
Outagamie	14,500	22	17,600	27	21
Pepin	6,000	24	7,300	29	22
Pierce	10,400	18	10,800	18	4
Polk	22,900	24	21,500	22	-6
Portage	17,700	22	19,100	23	8
Shawano	39,700	44	44,400	49	12
Sheboygan	6,900	13	7,800	15	13
St. Croix	9,200	12	10,200	14	11
Trempealeau	24,000	32	25,100	34	5
Waupaca	37,000	48	41,300	54	12
Waushara	17,800	28	20,700	33	16
Winnebago	7,800	14	7,600	13	-3
Wood	8,600	18	9,900	21	15
<i>Zone total</i>	<i>541,000</i>		<i>575,900</i>		<i>6</i>
Southern Farmland					
Columbia	20,400	26	22,700	29	11
Crawford	16,600	28	20,000	33	20
Dane	17,400	14	17,700	14	2
Dodge	13,400	15	13,700	15	2
Grant	20,700	18	23,000	19	11
Green	8,400	14	9,500	16	13
Iowa	20,400	27	21,700	28	6
Jefferson	8,500	15	7,900	14	-7
Kenosha	2,200	8	2,100	7	-5
Lafayette	8,700	14	9,900	16	14
Milwaukee	600	2	1,000	4	67
Ozaukee	3,400	14	4,000	17	18
Racine	2,800	8	3,200	9	14
Richland	22,300	38	30,400	52	36
Rock	7,400	10	6,800	9	-8
Sauk	25,200	30	29,600	35	17
Vernon	23,400	29	26,800	33	15

Table 1. Continued.

Zone & County	2014 posthunt population		2015 posthunt population		% change from 2014
	Num.	Den.	Num.	Den.	
Walworth	5,300	9	5,200	9	-2
Washington	8,000	18	8,200	19	3
Waukesha	10,300	18	10,200	18	-1
<i>Zone total</i>	<i>245,400</i>		<i>273,600</i>		<i>11</i>
Total	1,094,100		1,181,400		8

^a Deer/mi² of land area.

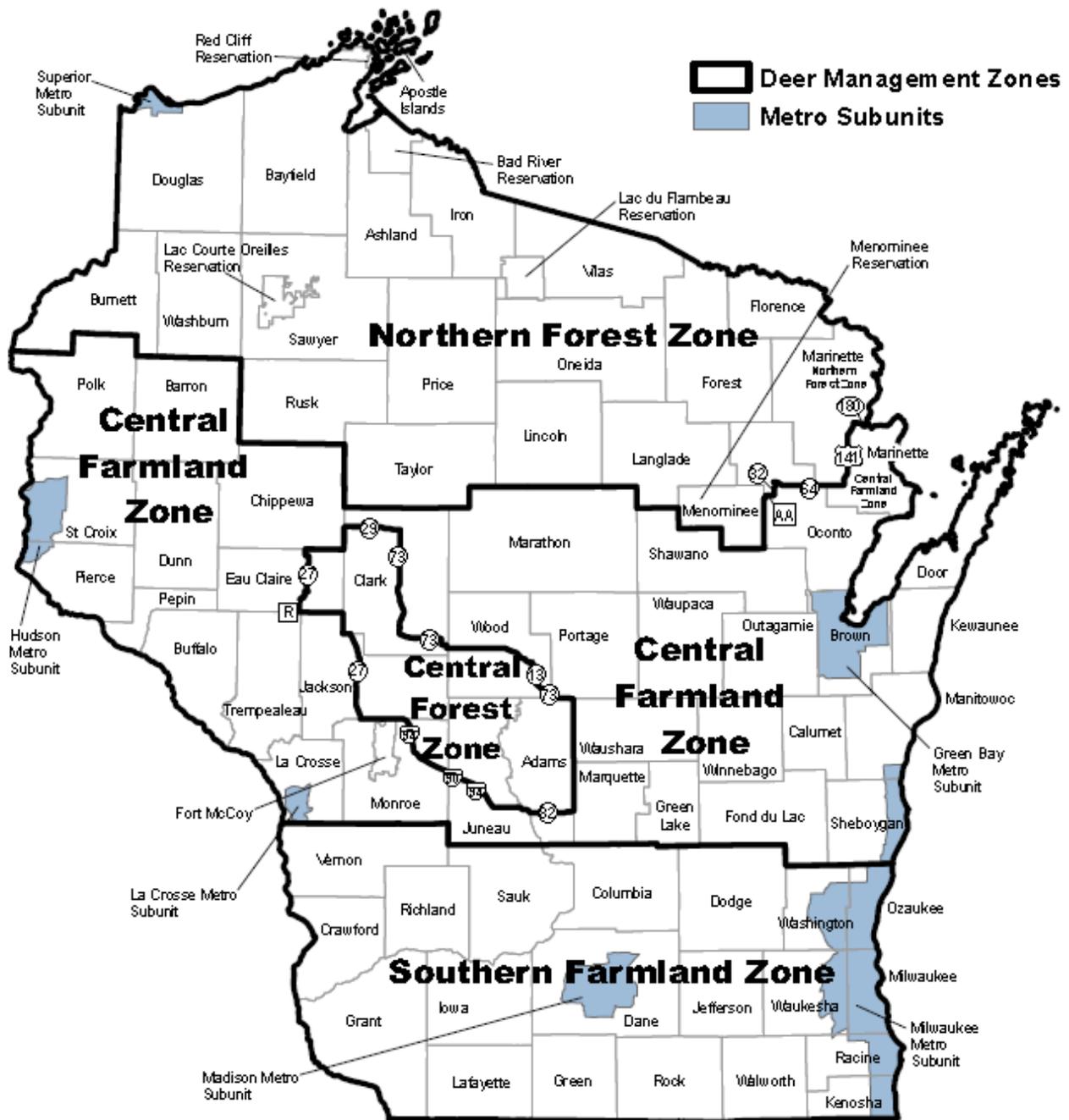


Figure 1. Wisconsin's deer management units and zones.

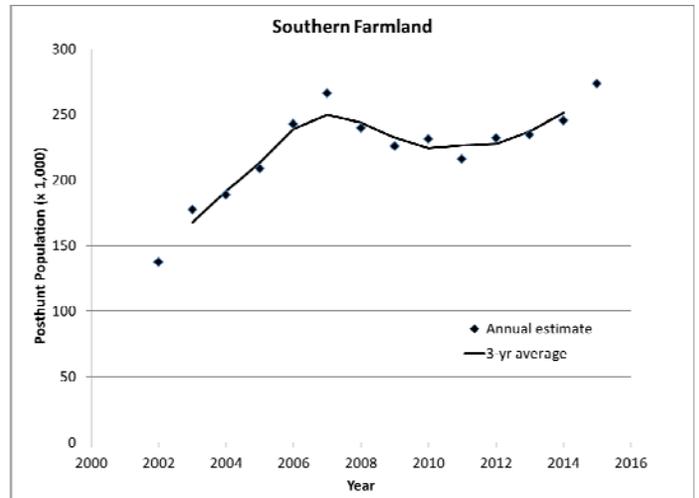
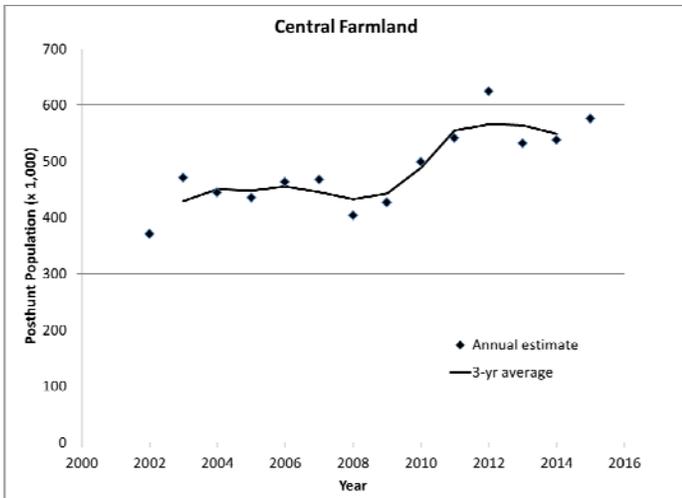
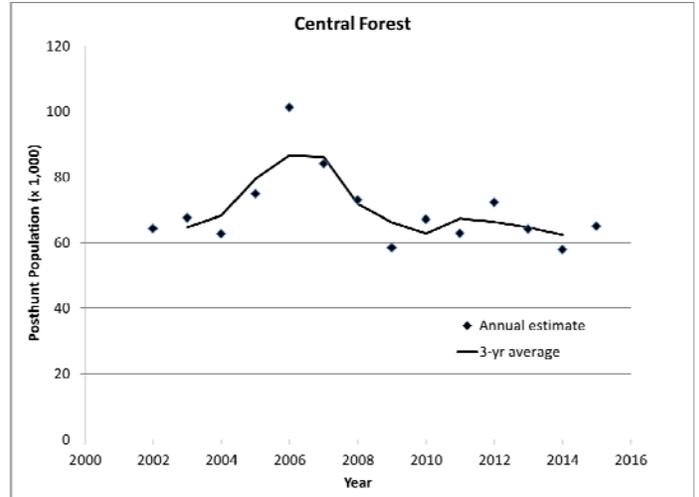
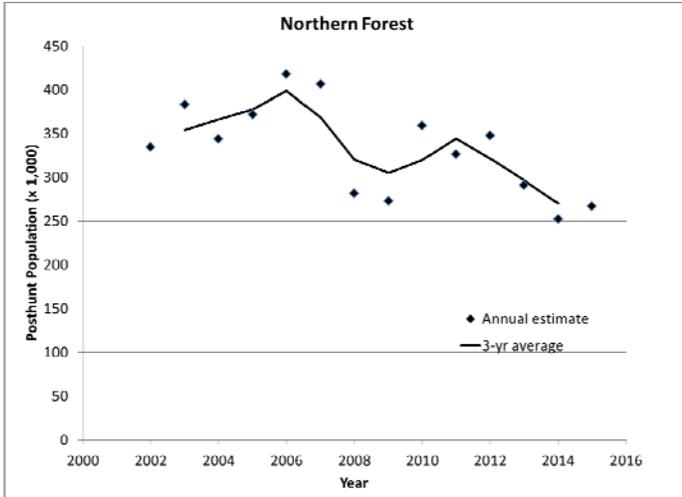


Figure 2. *White-tailed deer population trends in Wisconsin's deer management zones, 2002-2015.*