

White-tailed Deer Population Status 2014

By Robert E. Rolley

Abstract

The statewide posthunt white-tailed deer population estimate for 2014 was approximately 1,094,100, 3% lower than in 2013. Population estimates, based on sex-age-kill calculations, declined 20% or more between 2013 and 2014 in 13 units and increased 20% or more in 8 units. Population estimates decreased 13% from 2013 to 2014 in the Northern Forest and Central Forest zones. Zonal estimates increased 2% in the Central Farmland and 4% 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 the Northern and Central forest 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 2014 for most Wisconsin deer management units. Buck recovery rates for most Northern and Central Forest units were similar to those used in 2013.

The opening day of the firearm season was November 22, the second latest possible opener. Much of north central Wisconsin was covered with 6 or more inches of snow on opening day and portions of extreme northern Wisconsin had over 15 inches of snow on the ground which may have impacted hunter access. Temperatures above freezing on opening morning allowed considerable snow melt across much of the state and lead to the formation of widespread fog affecting visibility on opening morning. Rainfall of ½ inch or more occurred over much of southern Wisconsin on Sunday of opening weekend, likely affecting hunting activity. Significant snow fell across the state on Monday and below freezing temperatures during the early part of the week permitted the snow to hang in trees and shrubs. Consequently, visibility of deer may have been affected in much of the state during the early week. Weather conditions improved by the second weekend of the gun season, with seasonable temperatures and little to no precipitation. Only 78% of the corn harvest was completed by the end of November. This was well behind the 5-year average of 90%. Availability of antlerless permits in the forested zones was very low, which may have affected hunter effort. The Deer Advisory Committee did not recommend making widespread adjustments to buck recovery rates due to hunting season conditions; however, given weather and hunting conditions that may have reduced buck harvest rates across much of the state, population estimates may be conservative.

Deer population estimates for 2013 were originally made for 118 management units defined by roads and rivers. To facilitate comparison with 2014 estimates, the 2013 estimates were converted to the new management units based on the area of deer habitat within the county-portion of each of the former units (Table 1). A similar approach was used to convert population estimates for 2002-2012. Trends in management zone populations during 2002-2014 were estimated by summing unit estimates within zones (Figure 2).

Results and Discussion

Estimates of posthunt deer populations during 2014 were made for 80 deer management units (Table 1). Statewide, the 2014 posthunt population estimate was approximately 1,094,100, which was 3% lower than in 2013. Unit-specific posthunt population densities in 2014 ranged from 2-48 deer/mi² of land area and averaged 21 deer/mi² of land area. Population estimates declined 20% or more between 2013 and 2014 in 13 units and increased 20% or more in 8 units.

Management zone posthunt population estimates declined 13% from 2013 to 2014 in the Northern Forest and Central Forest. Zonal estimates increased 2% in the Central Farmland and 4% 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, despite very limited antlerless harvest in 2014.

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 6 years the Central Forest Zone population has averaged about 65,000 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 2010-2014, the Central Farmland population averaged about 550,000 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. Since 2008, posthunt population estimates in the Southern Farmland Zone averaged approximately 230,000 deer.

Table 1. White-tailed deer posthunt population estimates for Wisconsin deer management units, 2013-14.

Zone & County	2013 posthunt population		2014 posthunt population		% change from 2013
	Num.	Den. ^a	Num.	Den. ^a	
Northern Forest					
Ashland	9,800	11	7,500	9	-23
Bayfield	21,200	14	18,000	12	-15
Burnett	19,800	23	18,100	21	-9
Douglas	23,100	17	21,100	16	-9
Florence	7,600	15	7,500	15	-1
Forest	14,200	14	8,400	8	-41
Iron	6,500	8	2,400	3	-63
Langlade	11,700	13	12,200	14	4
Lincoln	19,100	21	16,100	18	-16
Marinette	21,700	22	20,000	20	-8
Oconto	5,100	14	5,400	15	6
Oneida	19,700	16	18,500	15	-6
Price	19,400	15	16,500	13	-15
Rusk	19,400	21	16,800	18	-13
Sawyer	19,400	16	13,300	11	-31
Taylor	21,000	21	21,600	22	3
Vilas	16,100	17	13,600	15	-16
Washburn	16,300	19	15,200	18	-7
Zone total	291,100		252,200		-13
Central Forest					
Adams	13,000	22	15,400	26	18
Clark	13,800	22	12,400	20	-10
Eau Claire	5,800	29	3,300	16	-43
Jackson	10,500	22	8,000	17	-24
Juneau	10,000	22	7,400	16	-26
Monroe	2,400	18	3,400	26	42
Wood	8,000	23	5,600	16	-30
Zone total	63,500		55,500		-13
Central Farmland					
Adams	4,200	39	4,900	47	17
Barron	14,100	16	13,700	15	-3
Brown	8,200	15	8,600	16	5
Buffalo	23,200	33	27,600	39	19
Calumet	4,600	12	4,200	11	-9
Chippewa	18,200	18	13,300	13	-27
Clark	12,000	20	10,900	18	-9
Door	15,300	31	14,600	30	-5
Dunn	17,500	20	19,100	22	9
Eau Claire	7,700	17	7,800	17	1
Fond Du Lac	11,900	15	13,700	18	15
Green Lake	11,000	29	13,100	35	19
Jackson	15,300	29	16,700	32	9
Juneau	10,700	32	9,900	29	-7
Kewaunee	8,800	26	9,600	28	9

Table 1. Cont.

Zone & County	2013 posthunt population		2014 posthunt population		% change from 2013
	Num.	Den.	Num.	Den.	
La Crosse	11,500	24	10,500	22	-9
Manitowoc	12,200	21	12,600	21	3
Marathon	38,800	25	31,700	20	-18
Marinette	14,900	34	14,800	34	-1
Marquette	16,300	35	19,800	43	21
Monroe	20,600	27	22,200	29	8
Oconto	22,800	35	19,200	29	-16
Outagamie	12,800	20	14,500	22	13
Pepin	5,900	24	6,000	24	2
Pierce	8,900	15	10,400	18	17
Polk	18,600	19	22,900	24	23
Portage	20,000	24	17,700	22	-12
Shawano	39,300	43	39,700	44	1
Sheboygan	7,500	15	6,900	13	-8
St. Croix	8,100	11	9,200	12	14
Trempealeau	22,100	30	24,000	32	9
Waupaca	34,900	46	37,000	48	6
Waushara	17,400	27	17,800	28	2
Winnebago	7,000	12	7,800	14	11
Wood	10,300	22	8,600	18	-17
Zone total	532,600		541,000		2
Southern Farmland					
Columbia	16,000	20	20,400	26	28
Crawford	16,000	27	16,600	28	4
Dane	18,900	15	17,400	14	-8
Dodge	11,000	12	13,400	15	22
Grant	20,400	17	20,700	18	1
Green	9,200	16	8,400	14	-9
Iowa	18,600	24	20,400	27	10
Jefferson	10,100	17	8,500	15	-16
Kenosha	3,000	11	2,200	8	-27
Lafayette	9,000	14	8,700	14	-3
Milwaukee	1,400	6	600	2	-57
Ozaukee	2,500	11	3,400	14	36
Racine	3,200	10	2,800	8	-13
Richland	17,900	30	22,300	38	25
Rock	10,000	14	7,400	10	-26
Sauk	20,500	24	25,200	30	23
Vernon	22,200	27	23,400	29	5
Walworth	7,100	12	5,300	9	-25
Washington	7,300	17	8,000	18	10
Waukesha	10,700	18	10,300	18	-4
Zone total	235,000		245,400		4
Total	1,122,200		1,094,100		-3

^a Deer/mi² of land area.

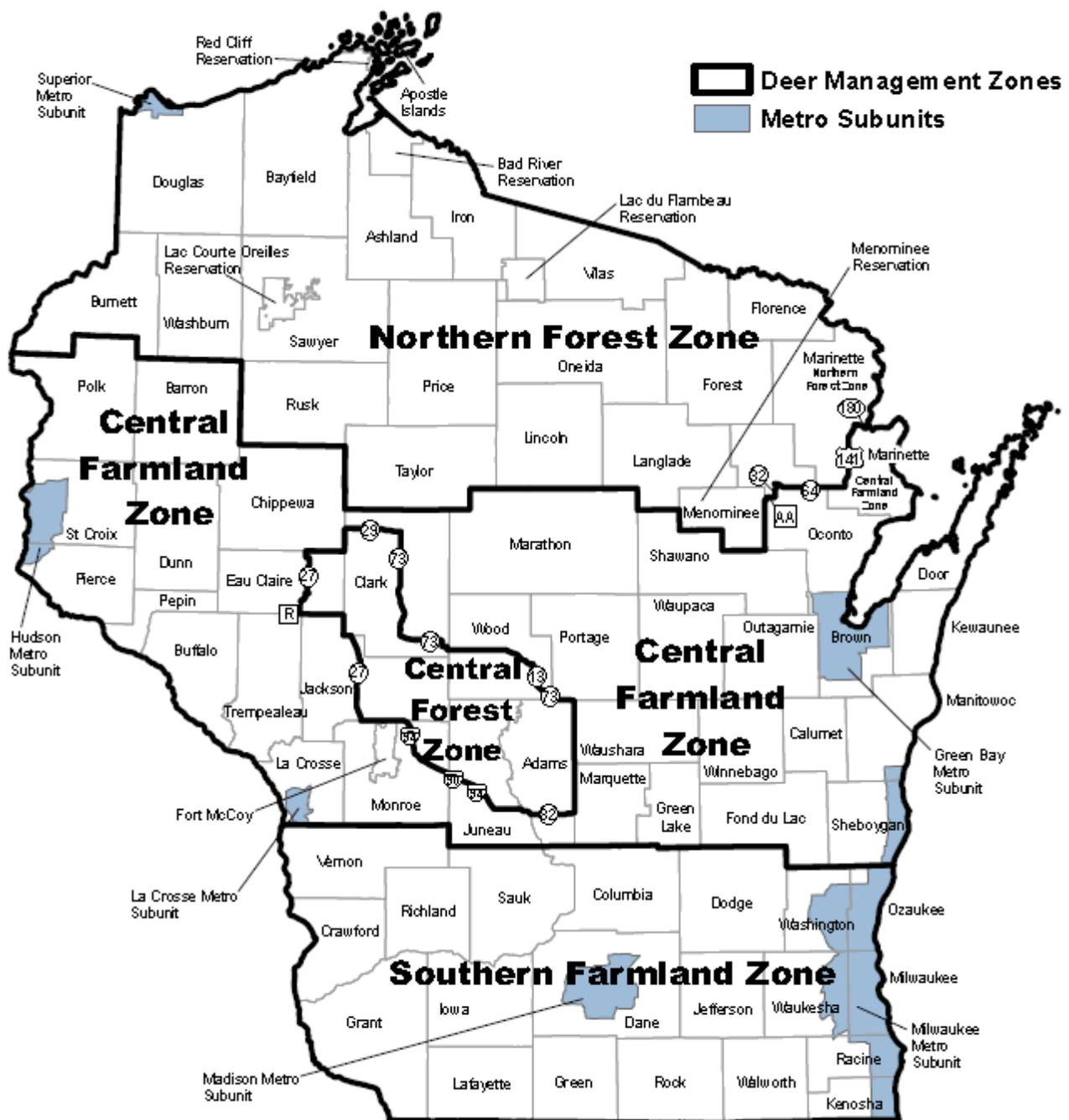


Figure 1. Wisconsin's deer management units and zones.

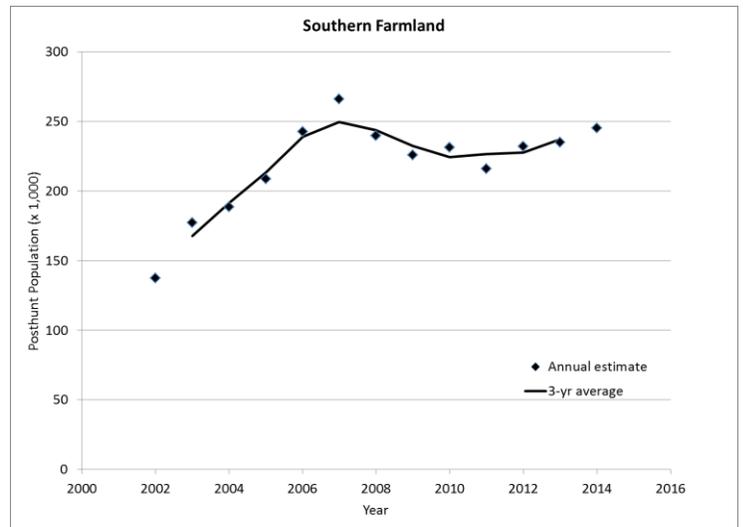
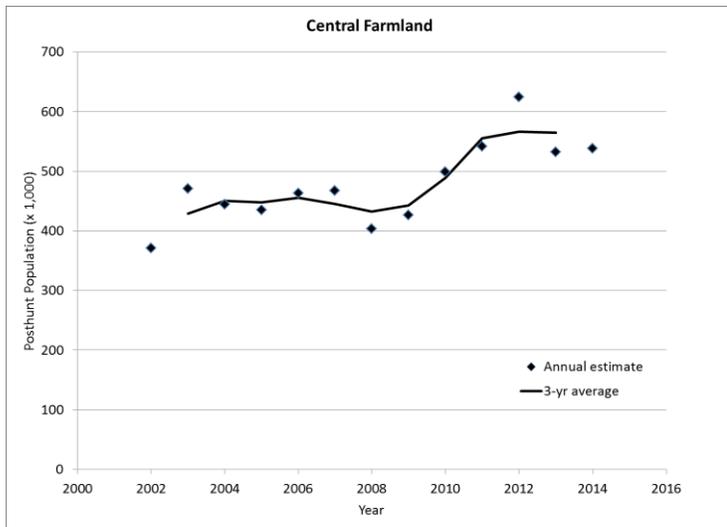
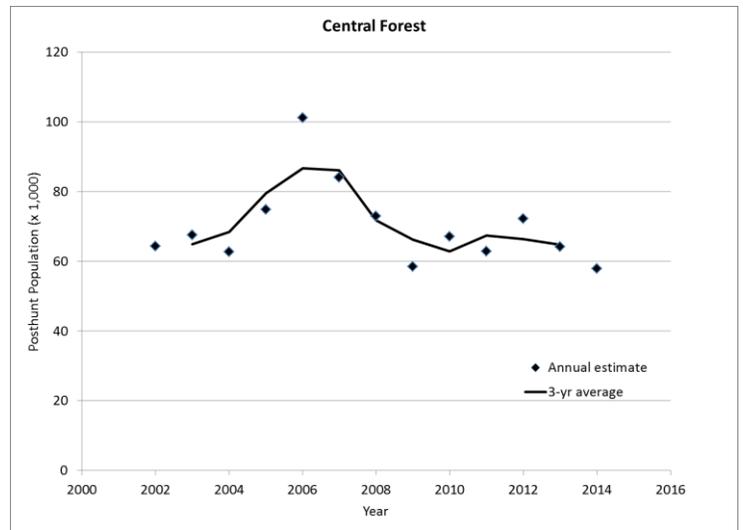
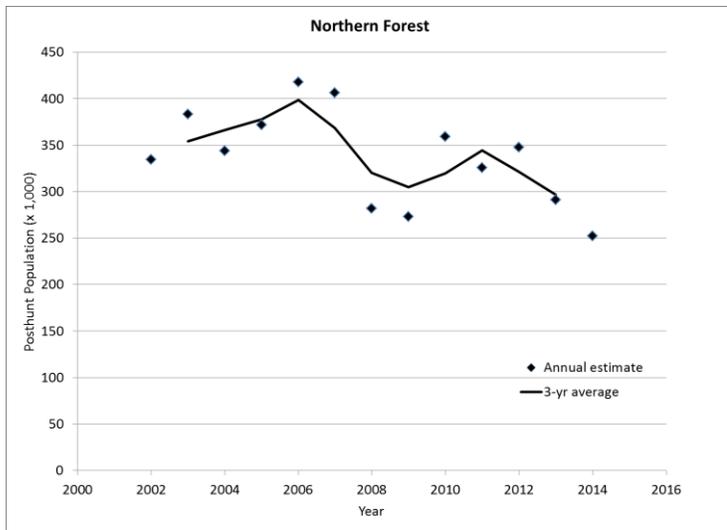


Figure 2. *White-tailed deer population trends in Wisconsin's deer management zones, 2002-2014.*